End-User Course

Data Retrieval and Analysis

Training Guide

Acumatica
The Cloud ERP

Last Revision: 04/29/2021
Acumatica ERP 2021 R1

Contents

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How to Use This Course

This end-user course introduces the functionality of the Acumatica ERP data retrieval tools such as generic inquiries, advanced filters, pivot tables, and dashboards. The course is based on a set of examples demonstrating data retrieval and processing to form data representations. The course is intended for advanced Acumatica ERP users who are familiar with the user interface and main principles of the system. On completing the course, you will have an understanding of how to use Acumatica ERP to retrieve data and manage it.

This course must be completed on Acumatica ERP 2021 R1. For this course, you will use an Acumatica ERP tenant with the *U100* dataset preloaded.

What is in a Guide?

The guide includes the Company Story topic, process activities, and the Additional Reference topics, as needed. Company Story explains the organizational structure of the company preconfigured in the U100 dataset, as well as the company's business processes and requirements.

Each of the course parts is dedicated to a particular Acumatica ERP data retrieval tool or related procedure and consists of lessons you are to complete. Each part begins with an overview topic that explains the main concepts of the Acumatica ERP subject area that you are going to use in the lessons.

What is in Each Lesson?

Each lesson consists of steps that outline the procedures you are completing and describe the related concepts you are learning.

What Are the Documentation Resources?

The complete Acumatica ERP documentation is available on *https://help.acumatica.com/* and is included in the Acumatica ERP instance. While viewing any form used in the course, you can click the **Open Help** button in the top pane to bring up a form-specific Help menu; you can use the links on this menu to quickly access form-related concepts and procedures and to open a reference topic with detailed descriptions of the form elements.

How to Create a Tenant with the *U100* Dataset

To add to an existing Acumatica ERP instance a tenant with the *U100* dataset, which is required for the completion of this course, and prepare the tenant for completing the activities, perform the following instructions:

1. Go to *Amazon Storage*.
2. Open the folder of your Acumatica ERP instance version.
3. In this folder, open the `Snapshots` folder, and download the `u100.zip` file.
4. Launch the Acumatica ERP instance, and sign in.
5. Open the *Tenants* (SM203520) form, and click **Add New Record** on the form toolbar.
6. In the **Login Name** box, type the name to be used for the tenant.
7. On the form toolbar, click **Save**.

8. On the **Snapshots** tab, click **Import Snapshot**.
9. In the **Upload Snapshot Package** dialog box, select the `u100.zip` file, which you have downloaded, and click **Upload**.

   The system uploads the snapshot to the **Snapshots** tab of the *Tenants* form.
10. On the form toolbar, click **Restore Snapshot**.
11. If the **Warning** dialog box appears, click **Yes**.
12. In the **Restore Snapshot** dialog box, make sure that the correct snapshot package is being uploaded, and click **OK**.
13. Sign out of the current tenant.

    You are now on the Sign-In page, and you can sign in to the tenant you have just created.

Licensing Info

For the educational purposes of this course, you will use Acumatica ERP under the trial license, which doesn't require activation and provides all available features. For production, you have to activate the purchased license; each particular feature may be a subject to additional licensing; please consult the Acumatica ERP sales policy for details.

Company Story

This topic explains the organizational structure and operational activity of the company with which you will work during this training.

Company Structure

The SweetLife Fruits & Jams company is a midsize company located in New York City. The company consists of the following branches:

- SweetLife Head Office and Wholesale Center: This branch of the company consists of a jam factory and a large warehouse where the company stores fruit (purchased from wholesale vendors) and the jam it produces. Warehouse workers perform warehouse operations by using barcode scanners or mobile devices with barcode scanning support.

- SweetLife Store: This branch has a retail shop with a small warehouse to which the goods to be sold are distributed from the company's main warehouse. This branch is also planning on selling goods via a website created on an e-commerce platform to accept orders online. The e-commerce integration project is underway.

- Service and Equipment Sales Center: This branch is a service center with a small warehouse where juicers are stored. This branch assembles juicers, sells juicers, installs juicers, trains customers' employees to operate juicers, and provides juicer servicing.

Operational Activity

The company has been operating starting in the *01-2020* financial period. In November 2020, the company started using Acumatica ERP as an ERP and CRM system and migrated all data of the main office and retail store to Acumatica ERP. Because the company has grown, the equipment center has begun its operations in *01-2021*.

Company Purchases

The company purchases fruits and spices from large fruit vendors for sale and for jam production. For producing jams and packing jams and fruits, the company purchases jars, labels, and paper bags from various vendors. For the internal needs of the main office and store, the company purchases stationery (printing paper, pens, and pencils), computers, and computer accessories from various vendors. The company also purchases juicers and juicer parts for sale from a large juicer vendor and either purchases the installation service for the juicers or provides the installation service on its own, depending on the complexity of the installation.

Company Sales and Services

Each company's branch has its own business processes, as follows:

- SweetLife Head Office and Wholesale Center: In this branch, jams and fruit are sold to wholesale customers, such as restaurants and cafés. The company also conducts home canning training at the customer's location and webinars on the company's website.

- SweetLife Store: In the store, retail customers purchase fresh fruit, berries, and jams, or pick up the goods they have ordered on the website. Some of the goods listed in the website catalog are not stored in the retail warehouse, such as tropical fruits (which are purchased on demand) and tea (which is drop-shipped from a third-party vendor).

- Service and Equipment Sales Center: This branch assembles juicers, sells juicers, provides training on equipment use, and offers equipment installation, including site review and maintenance services. The branch performs one-time endeavors as well as complex projects with their own budgets.

Part 1: Managing Generic Inquiries

In this part of the course, you will learn how to create and configure generic inquires that give you possibility to get needed information from the system and serve as a base for dashboard widgets and pivot tables, and as an entry point for data entry forms.

For completing lessons of this part of the course, you will use a company with the *U100* dataset preloaded, which provides a fully configured company with sample data specially designed for this course.

Activities in this part are to be completed under users with specific access rights. Each activity provides the credentials to use for sign-in to the prepared *U100* tenant in the *System Preparation* section.

Lesson 1.1: Discovering DACs

Discovering DACs: General Information

In Acumatica ERP, the data is stored in a database. However, users of Acumatica ERP do not access the database directly. Instead, they access the data access classes (DACs), as shown in the illustration below. A data access class is a programming object used to represent and provide access to a database table in the code of Acumatica ERP.

> In these topics, the terms *data access class*, *data class*, and *table* are used interchangeably. All these terms refer to the data access class but not the database table.

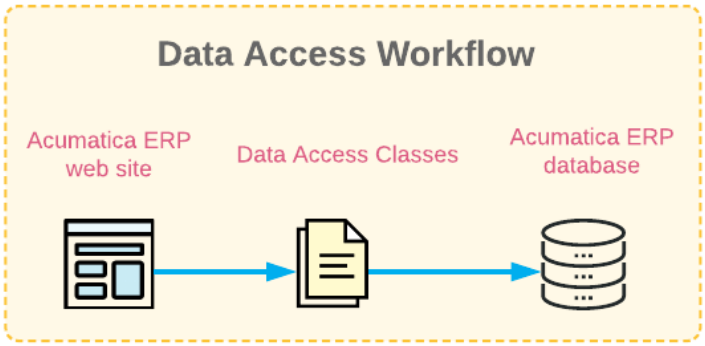


Figure: Data access workflow

When working with generic inquiries, you retrieve data from the data access classes rather than working with the database tables directly.

Data access classes contain data fields that hold different data that has been entered in Acumatica ERP. The data fields that you select to retrieve data from will be the columns of the resulting generic inquiry form.

To work with an inquiry, you need to find the data access classes and data fields that underlie the key elements on the relevant data entry form or forms. To do this, you inspect these user interface elements.

For more information about data access classes, see *DAC Reference*.

Learning Objectives

In this chapter, you will learn how to inspect UI elements to find the underlying data fields.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, and you need to modify an existing generic inquiry to better meet the needs of a particular group of users or all users. Before you start to modify the inquiry, you need to find out what DACs store the data that you want to modify. For this purpose, you need to inspect the needed UI elements.

Inspection of UI Elements

You usually create or modify a generic inquiry to get a certain result. Consequently, you know which data you need to retrieve. Thus, you have to explore which data access classes and data fields you can use to access this data.

To find the underlying data access classes and fields, you can explore the forms related to the needed data. For example, suppose that you want to find the data field that holds the sales order numbers. When a sales order is created on the *Sales Orders* (SO301000) form, a sales order number is assigned to it. Thus, you have to open this form, press Ctrl+Alt and click the **Order Nbr.** element on the form. The **Element Properties** dialog box opens. You are interested in the values in the **Data Class** and **Data Field** boxes (as shown in the following screenshot), which correspond to the data access class and data field you need to specify when you modify the generic inquiry.

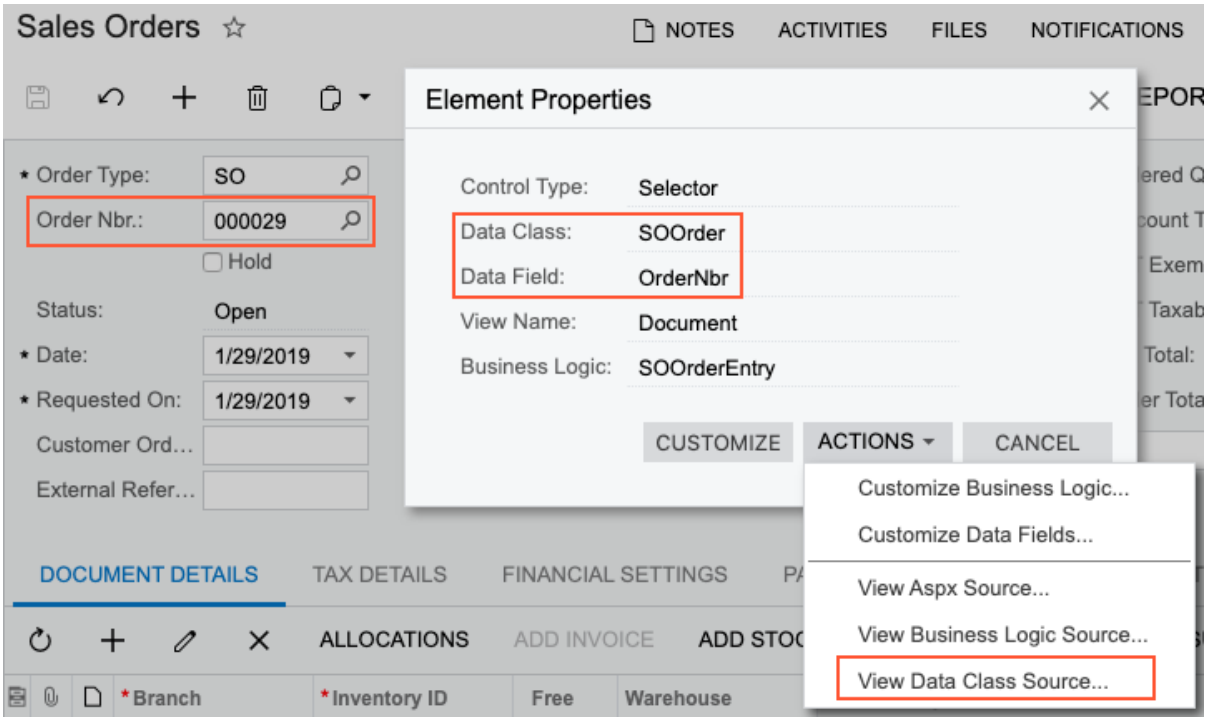


Figure: Form element inspection

> You can get more information about the data access class structure and its data fields by clicking **Actions > View Data Class Source** in the dialog box (also shown in the screenshot above). The system opens the *Source Code* (SM204570) form in a pop-up window with the details of the data access class.

You use the **Data Class** values you discover when you add data access classes on the **Tables** tab of the *Generic Inquiry* (SM208000) form. The selected generic inquiry can access various data fields of the data access classes that are listed on this tab. You will use the **Data Field** value to customize various generic inquiry parameters, conditions, and listed items in the results grid (that is, the table of the generic inquiry form that shows its results).

If you are inspecting an element with a drop-down control, you can also view the list of values for the element (as the following screenshot demonstrates). To do this, in the **Element Properties** dialog box, you click the **Drop Down Values** button and the system displays the **Drop Down Values** dialog box. In the dialog box, you can review the list of options available for the drop-down control. The **Value** column lists the values stored in the database, and the **Description** column lists the corresponding captions that are displayed in the user interface. You use the values from the **Value** column in complex conditions and in formulas in generic inquiries and reports.

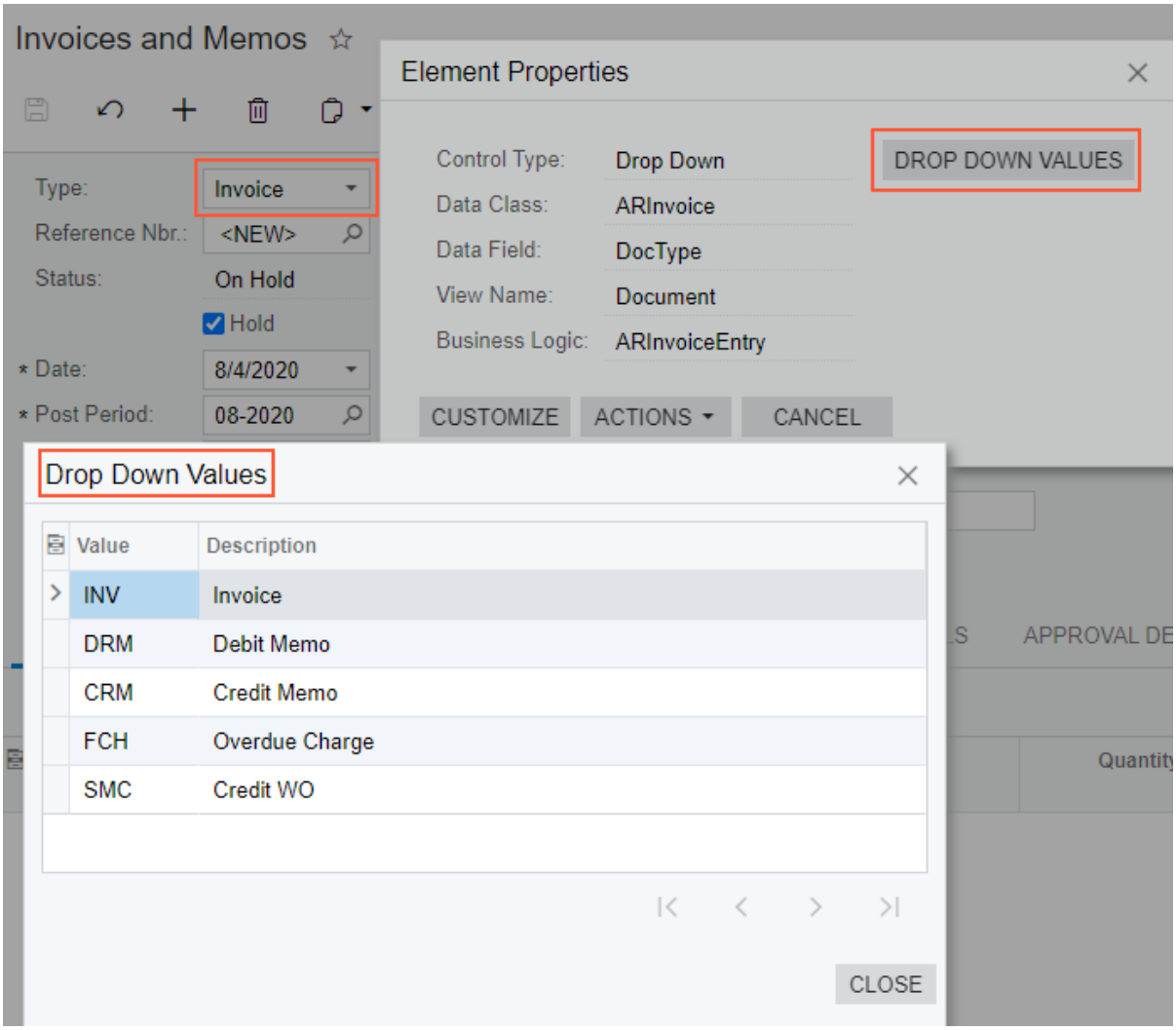


Figure: Inspection of a form element with a drop-down control

DAC Names and Aliases

For each inquiry, the data access classes the system uses to retrieve data are specified on the **Tables** tab of the *Generic Inquiry* (SM208000) form.

The full name of any data access class is quite lengthy, consisting of the namespace and the class name. For example, *PX.Objects.AR.ARPayment* is the full name of the data access class that holds information about accounts receivable payments, where `PX.Objects.AR` is the namespace, and `ARPayment` is the class name.

For each data access class, you can specify a shortened version of the name in the **Alias** column and use it to designate the table. For example, *ARPayment* can be used as alias for the *PX.Objects.AR.ARPayment* data access class. If you do not specify a value in the **Alias** column, the value from the **Table Name** column will be used instead.

The following screenshot shows the list of data access classes and their aliases for the *AR-Payments and Applications* generic inquiry (with the *Payments and Applications* site map title).

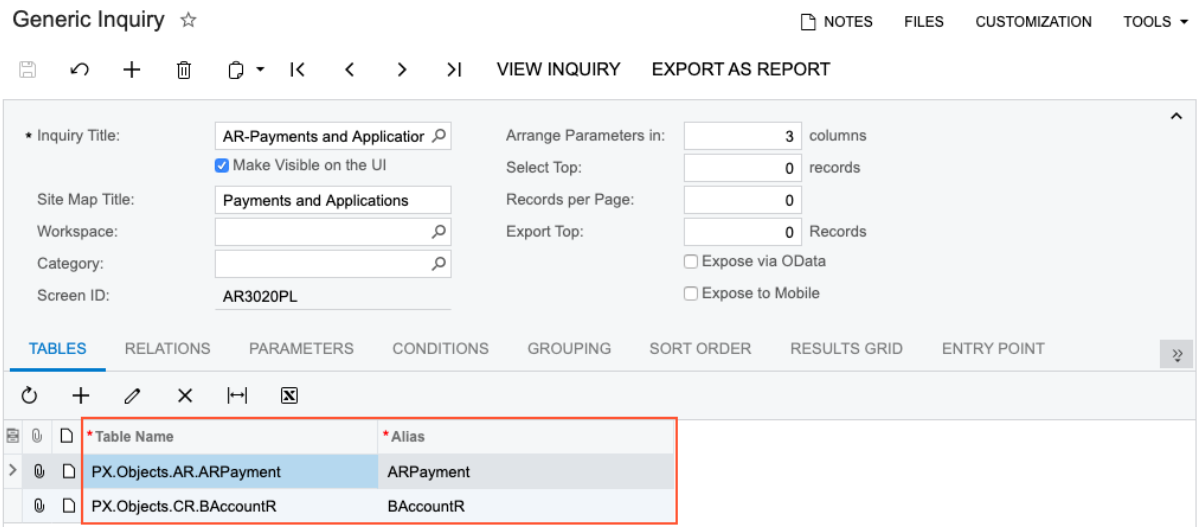


Figure: The list of data access classes and their aliases

You use aliases to specify (on other tabs of the form) which data access class the system will use to access a data field for an inquiry.

Discovering DACs: To Inspect UI Elements

The following activity will walk you through the process of inspecting the user interface elements on Acumatica ERP forms to find the data access classes (DACs) and data fields related to these elements.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. A sales representative has requested that you create a generic inquiry that lists sales orders. The inquiry should include the following data for each listed sales order: the sales order number, the order type, the status, the date, and the customer name.

To get started in this effort, you need to inspect the relevant user interface elements on the *Sales Orders* (SO301000) form and the *Customers* (AR303000) form—the data entry forms on which sales

orders and customers are created—in order to figure out which data access classes and data fields are related to them. (In this activity, you will only inspect the UI elements. You will not develop the generic inquiry.)

Process Overview

In this activity, you will inspect the relevant user interface elements of the entry forms whose data will be used in the generic inquiry. To do this, for each relevant element on the form, you will invoke the **Element Properties** dialog box, which displays the data class and field you will need when you develop the generic inquiry.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Inspecting the UI Elements

To inspect the UI elements, do the following:

1. Open the *Sales Orders* (SO301000) form.
2. Point to the **Order Type** box, press Ctrl+Alt, and then click. The **Element Properties** dialog box opens.

   As an alternative, you can click **Customization > Inspect Element** on the form title bar and then click the **Order Type** element.
3. Note the values of the **Data Class** and **Data Field** elements (*SOOrder* and *OrderType*, respectively), which are the data access class and field you need.

   The **Data Class** value reflects a data access class you need to add on the **Tables** tab of the *Generic Inquiry* (SM208000) form, so that the inquiry can access various data fields of the data access class. You will use the **Data Field** value when you customize various generic inquiry parameters and conditions, as well as listed items on the results grid (that is, the table showing the inquiry results).
4. Close the dialog box.
5. Repeat Instructions 2–4 for the following UI elements on the *Sales Orders* form, making a note of the applicable data access class and data field for each:
   - **Order Nbr.**

- **Status**
- **Date**

6. Open the *Customers* (AR303000) form.
7. Point to the **Customer ID** box, press Ctrl+Alt, and then click. The **Element Properties** dialog box opens.

> Although the **Customer** element appears on the *Sales Orders* form (and contains the relevant customer ID and customer name), you will inspect the **Customer ID** and **Customer Name** elements on the *Customers* form because these are separate elements that hold the details of customer records, which are created on the *Customers* form.

8. Make a note of the values of the **Data Class** and **Data Field** elements (*Customer* and *AcctCD*, respectively), which are the class and field you need.
9. Close the dialog box.
10. Repeat Instructions 7–9 for the **Account Name** box. You will note that the **Data Class** and **Data Field** elements are *Customer* and *AcctName*, respectively.

Lesson 1.2: Copying a Predefined Inquiry

Copying a Predefined Inquiry: General Information

Acumatica ERP includes predefined generic inquiries, whose settings can be viewed on the *Generic Inquiry* (SM208000) form. These predefined generic inquiries are stored in the system data—that is, the data of the *System* tenant, which is the tenant installed by the system.

Learning Objectives

In this chapter, you will learn how to make a copy of an existing generic inquiry.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, and you need to modify a predefined generic inquiry to meet particular specifications.

Modification of a Predefined Inquiry

If you were to directly customize any predefined generic inquiries in the system, the system would not update the settings of any predefined generic inquiries that you have customized. That is, after an upgrade, any predefined generic inquiries that you have customized will not include any changes that may have been made to the system data with this upgrade. For example, if a database table previously included in the generic inquiry was removed in the system data of a newer version of Acumatica ERP, after an upgrade to this version, the customized generic inquiry that includes this table will no longer work.

Thus, we strongly recommend that instead of directly modifying a predefined generic inquiry, you make a copy of the predefined inquiry and modify the copy.

Some predefined generic inquiries are configured as entry point forms on the *Generic Inquiry* (SM208000) form—that is, for these inquiries, the **Replace Entry Screen with this Inquiry in Menu** check box is selected on the **Entry Point** tab, and the navigation path to the corresponding entry form is configured on the **Navigation** tab. When you copy one of these generic inquiries, the system does not copy the settings defined on the **Entry Point** tab. Also, on the **Navigation** tab, the system changes the value in the **Window Mode** box to *Same Tab* for the copied navigation path that was defined for the original generic inquiry on the **Navigation** tab, indicating that the entry point form will be opened instead of the predefined generic inquiry in the same browser tab.

Resetting of Changes Made to a Predefined Inquiry

If you have directly customized a generic inquiry instead of making a copy and customizing the copy, you can revert your changes to the generic inquiry. You reset the settings of the customized generic inquiry to the default settings by clicking **Clipboard > Reset to Default** on the form toolbar of the *Generic Inquiry* (SM208000) form. The system restores the predefined settings of the generic inquiry from the system data.

When you perform this step, all customizations for this generic inquiry in the tenant will be lost.

Copying a Predefined Inquiry: To Copy an Existing Generic Inquiry

In this activity, you will learn how to make a copy of a generic inquiry and create a new inquiry based on the copied generic inquiry.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. An accountant of your company has requested an inquiry that collects data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant has requested some additions to the inquiry. In this activity, acting as the technical specialist, you will copy the predefined generic inquiry to leave it intact, and then you will modify its copy as requested.

The Invoices and Memos (AR3010PL) inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

To make a copy of the generic inquiry for modification while leaving the existing generic inquiry intact, you will use the *Generic Inquiry* (SM208000) form. On this form, you will copy the original inquiry, paste the copy, and save it with its new name. In this activity, you will only make a copy of an existing inquiry; you will not modify it.

We recommend that you use naming conventions for the generic inquiries that you create or copy from predefined inquiries. For example, in this activity the copied inquiry title will start with *DB* to indicate that the inquiry is being added to the database manually, rather than automatically during product installation.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Making a Copy of the Generic Inquiry

To make a copy of the generic inquiry with the inquiry title *AR-Invoices and Memos* and assign a different name to the copy, do the following:

1. Open the Invoices and Memos (AR3010PL) form.
2. On the form title bar, click **Customization > Edit Generic Inquiry**. The system opens the *Generic Inquiry* (SM208000) form with the details of this generic inquiry. The inquiry title is *AR-Invoices and Memos*.
3. On the form toolbar, click the clipboard icon, and select **Copy**.
4. Click **Add New Record**.
5. In the **Inquiry Title** box, type `DB-ARInvoicesMemos`.
6. Press Tab on the keyboard or move the focus to any other box on the form.
7. On the form toolbar, click the clipboard icon, and select **Paste**.
8. Click **Save**. Now you are working with *DB-ARInvoicesMemos*, a copy of the *AR-Invoices and Memos* generic inquiry that has a different name and can be modified as needed without the *AR-Invoices and Memos* inquiry being affected.

Note that the copied inquiry has the same visibility settings as the source inquiry. It can be accessed from the user interface because the **Make Visible on the UI** check box is selected in the Summary area of the form. Also, it has the same site map title, workspace, and category. Because the source and copied generic inquiries have different screen identifiers, both inquiries can be accessed from the same workspace. To avoid the identical titles causing confusion in the workspace, you can change the site map title at any time. You can also clear the **Make Visible on the UI** check box until you are ready to publish your inquiry.

Lesson 1.3: Modifying Inquiry Results

Modifying Inquiry Results: General Information

A generic inquiry has a table (also referred to as a *results grid*) with the inquiry results. To make minor modifications to the results of an existing inquiry, you may want to make changes to two groups of elements on the *Generic Inquiry* (SM208000) form:

- The settings on the **Results Grid** tab, where you can define which data fields the system should display in the inquiry results (that is, which columns will appear in the results grid). You add a row to the table on this tab for each column to appear on the results grid, and in the row, you select the data field whose values the system should display. Also, you can use the **Results Grid** tab to make quick modifications of an inquiry, as described in the following sections.
- The settings in the Summary area of the form, which you can use to specify how many records will be displayed and whether you will include deleted records in the inquiry results.

Learning Objectives

In this chapter, you will learn how to modify an existing generic inquiry in the following ways:

- Hiding or revealing columns
- Adding a data field to the results
- Changing the caption of a column
- Specifying the default navigation setting of a column in the inquiry results
- Adding a quick filter to the inquiry results
- Including deleted records in the inquiry results
- Selecting the table to which files and notes will be attached

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company. You need to modify an existing generic inquiry whose results are similar to those you want the inquiry to have, but you want to make some modifications to the results.

Column Visibility

You hide or reveal columns shown on a generic inquiry form by clearing or selecting, respectively, the **Visible** check box on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form. When you add a new row on this tab (which corresponds to a column in the results grid of the inquiry form), the check box is selected by default. If this check box is cleared, the column will not be visible initially but a user can make the column visible as needed by using the **Column Configuration** dialog box of the table on the inquiry form.

Default Navigation

You enable or disable the built-in navigation by using the **Default Navigation** check box on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form. This functionality works only for fields that

have a default form specified in the source code. With the **Default Navigation** check box selected, the system displays the values in these fields as links in the inquiry results. When a user clicks such a link, the default form is opened in a pop-up window. For example, for the field that holds the invoice reference number, the default form is the *Invoices and Memos* (AR301000) form. When you add a new row to the list on the **Results Grid** tab, the **Default Navigation** check box is selected by default.

Use of Columns in Quick Searches

By selecting or clearing the **Use in Quick Search** check box on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you determine which columns of the resulting generic inquiry form are used by the Acumatica ERP search functionality. When you add a row on this tab, the check box is cleared by default, indicating that the system will ignore the values of the column while searching through the inquiry data. If the check box is selected, the system will search for keywords in the values of the column.

You might use these check boxes, for example, to indicate to the system to search only in columns that hold information about the customer identifier, customer name, and document description. By using only the columns with this information, you avoid possible matches in other columns and give users the most relevant search results.

Column Captions

You can change the default caption to be used on the generic inquiry form for any column. To do this, on the *Generic Inquiry* (SM208000) form, you type the needed caption in the **Caption** column of the corresponding row of the **Results Grid** tab.

Quick Filters

You determine which columns are used as quick filters by default by selecting or clearing the **Quick Filter** check box on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form. With this check box selected, the system adds a quick filter for the column to the filtering area of the resulting generic inquiry form. For more information about filters in Acumatica ERP, see *Filtering and Sorting in Acumatica ERP: General Information*.

Column Width

If needed, you can specify the exact width of a column in pixels in the **Width (px)** column in the corresponding row of the **Results Grid** tab of the *Generic Inquiry* (SM208000) form. If you don't specify the width of a column, the system calculates the value automatically.

The Number of Records Extracted from the Database

You can limit the number of records to be listed in the inquiry results. In the Summary area of the *Generic Inquiry* (SM208000) form, you can specify the following settings:

- **Select Top**: In this box, you specify the maximum number of records to be displayed in the table showing the inquiry results; the remaining rows of the inquiry results will not be shown at all. For example, if the specified value is *20*, the system displays the first 20 results. By default, zero value is specified for the **Select Top** setting, and the system shows all the records in the inquiry results.

  If you specify a value in this box, the sort order you have specified on the **Sort Order** tab is applied before the specified number of records is selected for display. If you have not specified a sort order, the error icon is displayed on the **Sort Order** tab. In this case, at the bottom of the page on the **Sort Order** tab, the system displays the default sort order that is applied. For details, see *Applying Sorting and Grouping*.

- **Records per Page**: In this box, you specify the number of records the system displays per page in the table of the generic inquiry form that shows the inquiry results. You specify this setting to make it convenient for users to view the inquiry results. If you specify a number of records that cannot fit on a page, the scroll bar will be shown. By default, zero value is specified for the **Records per Page** setting, and the system automatically adjusts the number of records to the window in which Acumatica ERP is running.

> ⚠ If you specify numbers that are too large (based on the applicable configuration and inquiry) in the **Select Top** or **Records per Page** box (or in both boxes), these settings can increase the time to process the inquiry and can cause performance degradation in the server.

Attachment of Files and Notes to Tables Used in the Generic Inquiry

While working with a list of records on a generic inquiry form, a user can attach a file, such as a scanned document with a signature, and a note, such as important information for colleagues about a customer, to a particular row of the grid. You can select the table to which files and notes should be attached in the resulting generic inquiry form, or you can instead disable any attachments. In the Summary area of the *Generic Inquiry* (SM208000) form, in the **Attach Notes To** drop-down list, you can select one of the tables listed on the **Relations** tab of the *Generic Inquiry* form, or the *Not Applicable* option.

After you have designed a generic inquiry and specified a table for files and notes, a user who is working with the grid of the generic inquiry form can attach files or notes to any of the listed records. If you have specified the *Not Applicable* option in the **Attach Notes To** drop-down list for the generic inquiry, the user cannot attach files and notes to the listed records of the generic inquiry form.

By default, *Not Applicable* is selected for newly created generic inquiries. For generic inquiries created in Acumatica ERP versions earlier than 2021 R1, no value is specified in the **Attach Notes To** box; in some scenarios, a user who is working with the grid of a generic inquiry form might inadvertently attach a file or note to a record of a different internal table than the record that the user expected.

Inclusion of Deleted Records in Inquiry Results

In some cases, you may want to include deleted records among the inquiry results. For example, suppose that your company provides services for a customer and has generated an invoice for this customer in Acumatica ERP and sent it to the customer. Further suppose that after some time, you find out that the company has complained about the provided services, and a manager has approved the deletion of the invoice so that the customer no longer owes the company for the disputed services. You delete the invoice of the customer. (Because the invoice has not been released yet, it can be edited or deleted.) Then during your company's audit, you generate the *AR Register* (AR621500) report, in which the invoice number is missing. To give the interested parties a way to find and view invoices whose numbers are missing, you have decided to create an inquiry on the *Generic Inquiry* (SM208000) form based on the *AR-Invoices and Memos* inquiry, except that you will include deleted records in the results.

To include deleted records in the inquiry results, on the *Generic Inquiry* form, you do the following:

- On the **Results Grid** tab, add a row, and in this row, specify the DAC name whose deleted records you want to include in the **Object** column and the *DeletedDatabaseRecord* value in the **Data Field** column.

- In the Summary area, select the **Show Deleted Records** check box. By default, this check box is cleared.

With these settings, the system displays the deleted records in the inquiry results, indicating the deleted records by selecting the check box in a new column. By default, this column has the **Is Deleted** caption, but you can change this caption in the **Caption** column of the **Results Grid** tab of the form. We recommend entering a descriptive caption for this column, for example, *Deleted* followed by the type of record.

The following screenshot demonstrates rows added to the **Results Grid** tab to show the deleted records of the `Batch` and `Ledger` tables. Notice that the *Deleted Batch* and *Deleted Ledger* column captions, respectively, have been specified for these tables.

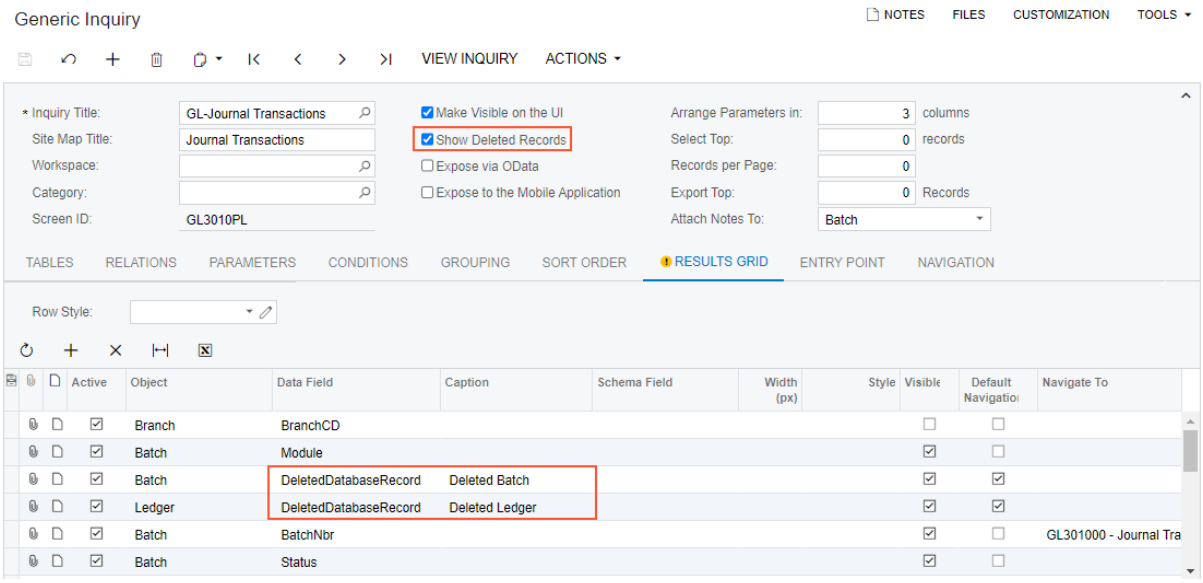


Figure: Rows added to show deleted records in the Journal Transactions inquiry

The following screenshot shows the *Journal Transactions* generic inquiry, in which the records of deleted batches and ledgers are now included. Newly added columns can be used for filtering records, as can other columns.

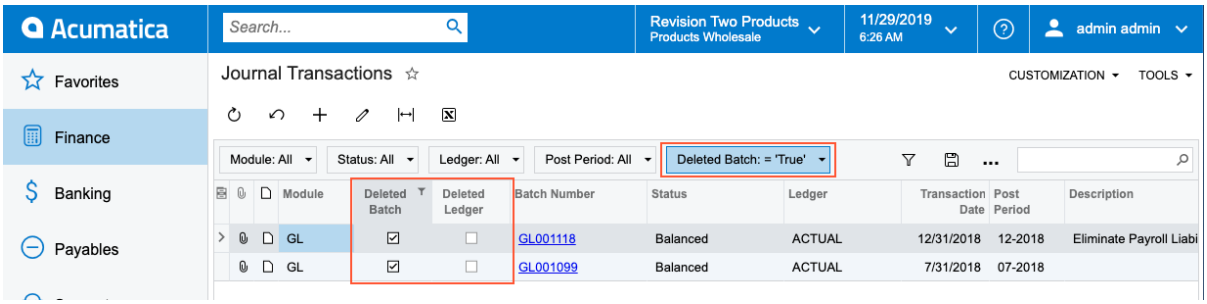


Figure: Records of the Journal Transactions inquiry filtered by the deleted batches

Modifying Inquiry Results: To Include an Additional Output Field

In this activity, you will learn how to modify an existing generic inquiry to include an additional column of data in the results grid.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry that displays data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant has requested the following changes to this generic inquiry:

- Add the identifier of the related project (that is, the project related to the listed invoice) to the inquiry results and name the column **Project ID**
- Add the ability to view the details of any project by clicking its identifier in the **Project ID** column
- Add the ability to filter the inquiry results by an identifier of a project
- Place the **Project ID** column after the column that holds the reference numbers of invoices and memos

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

In the Summary area of the *Invoices and Memos* (AR301000) form, you will inspect the **Project/Contract** element to find the related data access class (DAC) and data field. Then you will make changes to the copied inquiry on the *Generic Inquiry* (SM208000) form. You will add a data field on the **Results Grid** tab of the form.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB1-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Inspecting UI Elements

To discover the data access classes and data fields you will need to use in future steps, do the following:

1. Inspect the **Project/Contract** element in the Summary area of the *Invoices and Memos* (AR301000) form to find the related data access class (DAC) and data field. For the exact steps to do this, see *Discovering DACs: To Inspect UI Elements*.

   > While you are working with a generic inquiry on the *Generic Inquiry* (SM208000) form, it is convenient to have the form or forms containing the UI elements open in a separate browser tab, so that you can quickly switch between the *Generic Inquiry* form and the form you are using to inspect the elements.

2. Make a note of the discovered DAC and data field of the **Project/Contract** element.

Step 2: Adding a Data Field, Changing the Caption, and Setting Up Default Navigation and Filtering

To add a column to the results grid of the existing inquiry, do the following:

> If some columns mentioned in the activity are not available in the table, make them visible by using the **Column Configuration** dialog box of the table.

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB1-ARInvoicesMemos*.
3. In the **Site Map Title** box of the Summary area, type `Invoices and Memos with Projects`.
4. On the **Results Grid** tab, add a row, and specify the following settings in the added row:
   - **Object**: `ARInvoice`
   - **Data Field**: `ProjectID`

   Notice that the **Visible** check box is selected by default, which indicates that the system will display the added column in the inquiry. Also notice that the **Default Navigation** check box is selected by default, indicating that the values in this column will be shown as links, because the *Projects* (PM301000) form is specified for the data field as the default form defined in the source code. In the generic inquiry resulting from these changes, when a user clicks a link in this column, the system opens the *Projects* form in a pop-up window with the selected project details.
5. In the **Caption** column (which is hidden by default), type the caption (name) of the requested column (*Project ID*).
6. In the **Quick Filter** column (which is hidden by default), select the check box for the added row.
7. On the form toolbar, click **Save**.

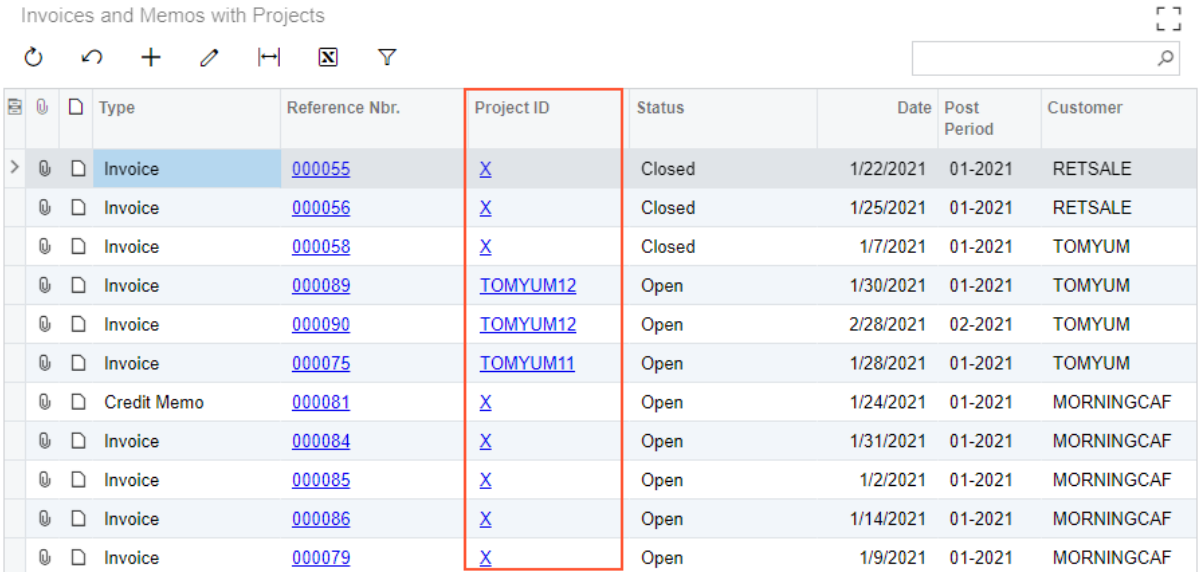
You have added the row that corresponds to the **Project ID** column. Currently, it is the last row, so **Project ID** would be the rightmost column on the generic inquiry form. In the next step, you will move the row so that the column appears in the needed place on the inquiry form.

Step 3: Moving the Rows and Previewing Your Changes

To move rows and preview the inquiry, do the following:

1. While remaining on the *Generic Inquiry* (SM208000) form with the *DB1-ARInvoicesMemos* generic inquiry selected, again open the **Results Grid** tab.

2. Move the focus to any row in the table except the row you added.
3. Drag the added row immediately after the row that holds reference number information (that is, the row with a **Data Field** setting of *RefNbr*).
4. On the form toolbar, click **Save**.
5. Click the eye icon on the side panel to preview how your changes have affected the *DB1-ARInvoicesMemos* inquiry (which has the *Invoices and Memos with Projects* site map title). Notice that the **Project ID** column has been added (see the following screenshot) so that an accountant can see the related projects while viewing the list of invoices and memos in the results grid.



Type	Reference Nbr.	Project ID	Status	Date	Post Period	Customer
Invoice	000055	X	Closed	1/22/2021	01-2021	RETSALE
Invoice	000056	X	Closed	1/25/2021	01-2021	RETSALE
Invoice	000058	X	Closed	1/7/2021	01-2021	TOMYUM
Invoice	000089	TOMYUM12	Open	1/30/2021	01-2021	TOMYUM
Invoice	000090	TOMYUM12	Open	2/28/2021	02-2021	TOMYUM
Invoice	000075	TOMYUM11	Open	1/28/2021	01-2021	TOMYUM
Credit Memo	000081	X	Open	1/24/2021	01-2021	MORNINGCAF
Invoice	000084	X	Open	1/31/2021	01-2021	MORNINGCAF
Invoice	000085	X	Open	1/2/2021	01-2021	MORNINGCAF
Invoice	000086	X	Open	1/14/2021	01-2021	MORNINGCAF
Invoice	000079	X	Open	1/9/2021	01-2021	MORNINGCAF

Figure: The Invoices and Memos with Projects generic inquiry

Lesson 1.4: Applying Sorting And Grouping

Applying Sorting and Grouping: General Information

While viewing the results in the results grid of a generic inquiry (or in any table in Acumatica ERP), a user can sort the output data by using simple filters in column headers. When you create or modify the generic inquiry, you can define how the inquiry data is sorted by default, by specifying the columns to be used for sorting.

Also, you can group inquiry data by specifying grouping settings and by adding rows that return aggregated values for a group.

Learning Objectives

In this chapter, you will learn how to modify an existing generic inquiry in the following ways:

- By grouping the inquiry output
- By aggregating the inquiry output

- By adding a default sort order for the inquiry output

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company. To speed up inquiry creation, you have copied an existing generic inquiry that provides results similar to those you need. Now you want to group and aggregate the inquiry output and add a sort order to suit your needs.

Sorting Settings

You can use the settings on the **Sort Order** tab of the *Generic Inquiry* (SM208000) form to specify how the inquiry data is sorted—that is, the default order in which the results should be displayed on the generic inquiry form. For example, the inquiry results can be sorted by date and by customer name. To do this, on the **Sort Order** tab, you add a row for each data field of each particular column that you want to use for sorting the inquiry results. In these rows, you specify whether the results are sorted in ascending or descending order of the values in the column; the default *Ascending* sort order is selected when you add a row.

> Any user-defined sorting that a user of an inquiry specifies (by clicking the column header and specifying a condition in the dialog box) overrides any default sorting you specify on the **Sort Order** tab.

If an inquiry has no sorting settings specified on the **Sort Order** tab, the system displays a warning in the tab title, as shown in the following screenshot. Until you define sorting settings, the default sorting settings, which are shown at the bottom of the screen, are used for the inquiry.

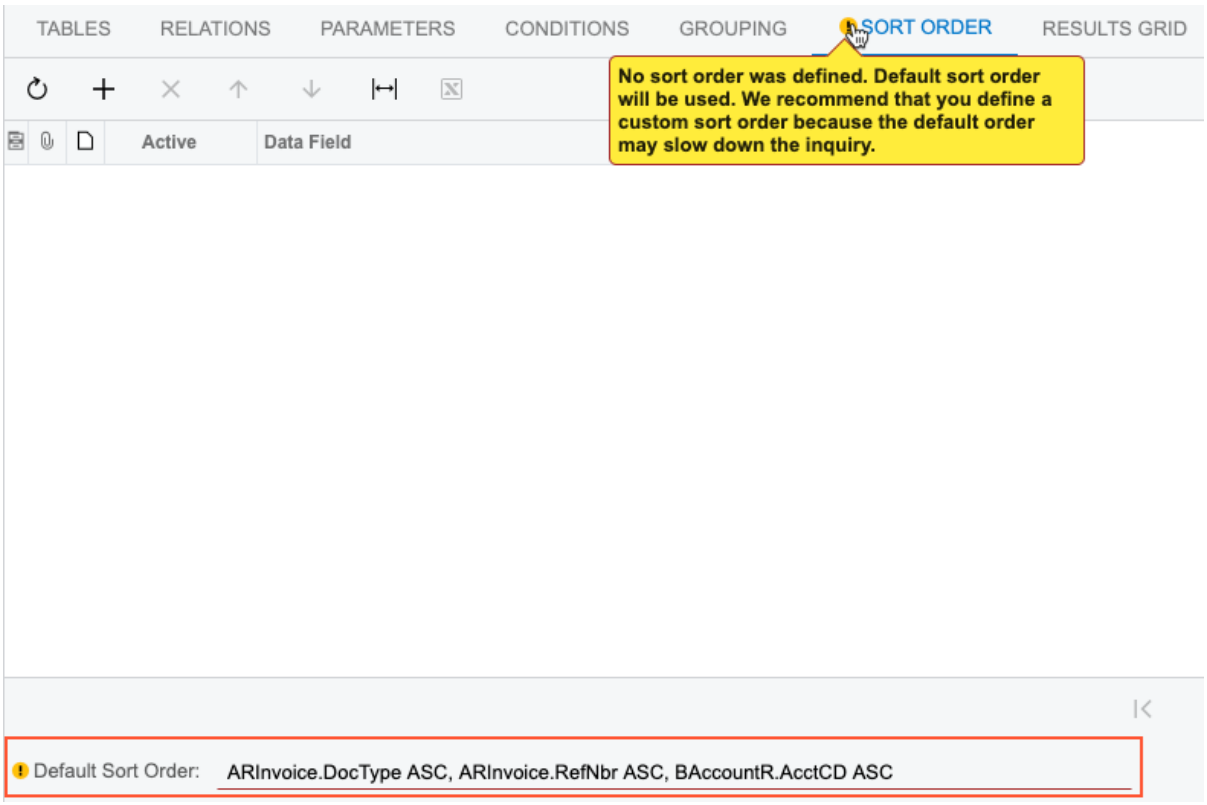


Figure: Warning about the default sort order

Grouping Settings

On the **Grouping** tab of the *Generic Inquiry* (SM208000) form, you can specify the data field or fields by which you would like to group data. On the **Results Grid** tab, you can also add rows that will hold aggregated values of these groups. For example, you may want to group sales orders by date and status to get the count of sales orders, as well as their total and average amounts for each day and status.

For data fields specified on the **Grouping** tab, you use the **Aggregate Function** column on the **Results Grid** tab to define how the resulting values should be calculated for the grouped values. The following aggregate functions are available:

- *AVG*: Returns the average of all non-null values of the group
- *COUNT*: Returns a count of all values of the group
- *MAX*: Returns the maximum value of all values of the group
- *MIN*: Returns the minimum value of all values of the group
- *SUM*: Returns the sum of all values of the group

If no function is selected in the **Aggregate Function** column for a data field used for grouping the following aggregate functions are applied by default:

- *SUM* is applied to the columns with the numeric type.
- *MAX* is applied to the other columns.

The aggregate function must correspond with the type of the field selected in the **Data Field** column. Selecting the *SUM* function for a character data type (such as customer's name, an address, or an email address) causes a run-time error. For the calculated columns, you have to select the appropriate aggregation function manually, because no single function applies to them by default.

Applying Sorting and Grouping: To Group and Sort Inquiry Data

In this activity, you will learn how to modify an existing generic inquiry to add grouping and sorting conditions.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested a generic inquiry that collects data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant would like the results to list not individual invoices but instead the average invoice amount of each customer, with these rows sorted in descending order by the average invoice amount.

> The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form for the copied inquiry, you will look for the row that corresponds to the **Customer Name** column in the inquiry results and note the value in the **Data Field** column. You will add a grouping condition with the noted data field on the **Grouping** tab. Then you will add a row that will hold the average invoice amount on the **Results Grid** tab, and you will sort these rows in descending order by this amount.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB2-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Adding a Grouping Condition

To modify the generic inquiry to add a grouping condition, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB2-ARInvoicesMemos*.
3. In the **Site Map Title** box of the Summary area, type `Average Invoice Amount by Customer`.
4. On the **Results Grid** tab, look for the row with the *AcctName* value in the **Data Field** column, which corresponds to the **Customer Name** column in the inquiry results.

> If the **Visible** check box is cleared for a row, the corresponding column on the inquiry is not visible initially, but you can make the column visible by using the **Column Configuration** dialog box of the table.

5. On the **Grouping** tab, click **Add Row** on the table toolbar; in the **Data Field** column of the added row, specify the value you found (that is, *BAccountR.AcctName*).
6. On the form toolbar, click **Save**.

Step 2: Adding a Row to Hold the Aggregated Value

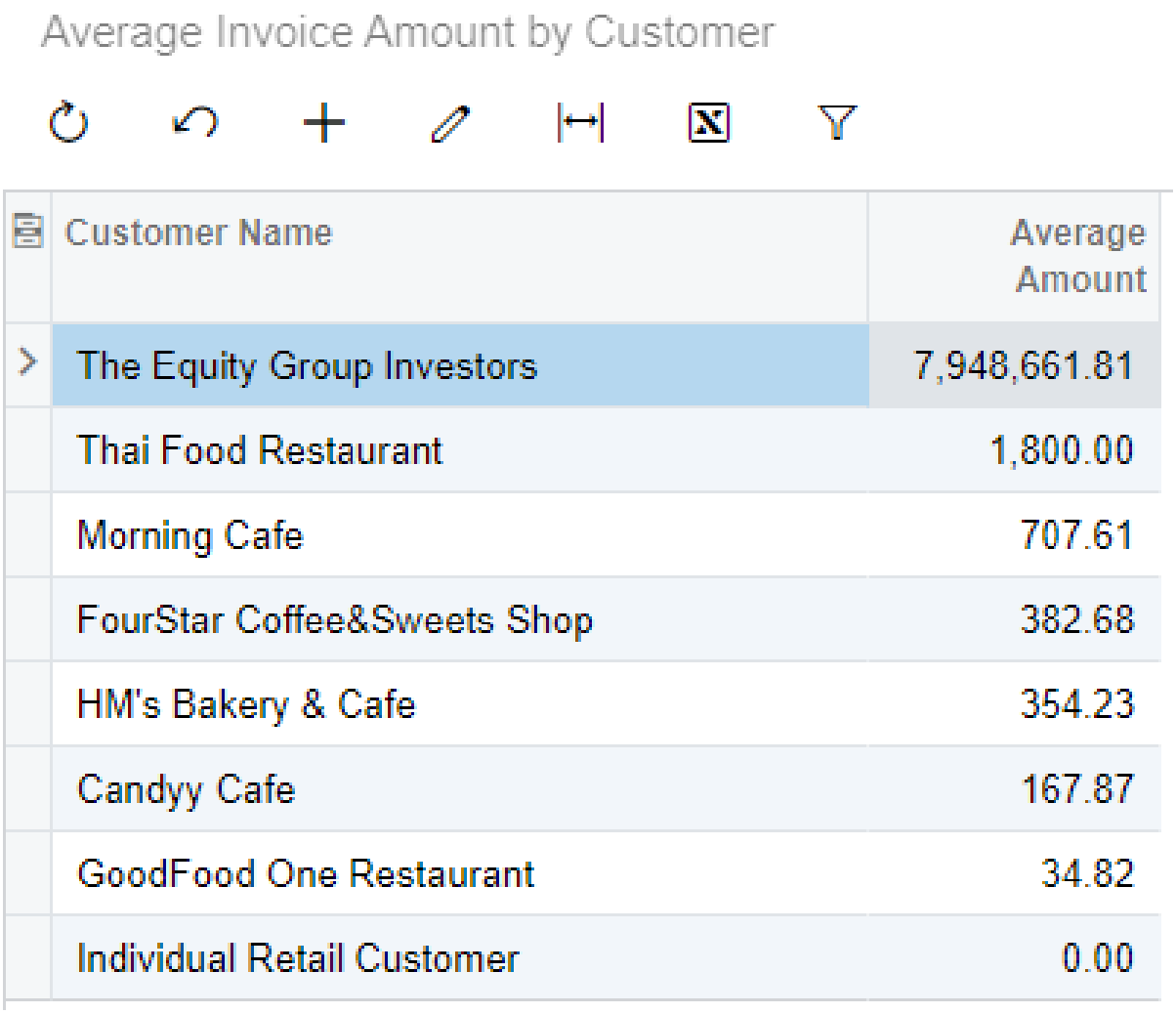
To modify the generic inquiry to add a row with an aggregation function, do the following:

1. While remaining on the *Generic Inquiry* (SM208000) form with the *DB2-ARInvoicesMemos* generic inquiry selected, on the **Results Grid** tab, find the row that holds the document balance (*CuryDocBal*), and specify the following settings:
   - **Visible**: Selected
   - **Caption**: `Average Amount`
   - **Aggregate Function**: *AVG*
2. Clear the **Visible** check box for all rows except for the requested two—that is, except for the rows with *AcctName* and *CuryDocBal* in the **Data Field** column.
3. On the form toolbar, click **Save**.

Step 3: Adding the Default Sorting Order

To modify the generic inquiry to add a sorting condition, do the following:

1. While remaining on the *Generic Inquiry* (SM208000) form with the *DB2-ARInvoicesMemos* generic inquiry selected, on the **Sort Order** tab, to deactivate the sorting condition that was copied from the source inquiry, clear the check box in the **Active** column of the only row.
2. Click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Data Field**: *ARInvoice.CuryDocBal*
   - **Sort Order**: *Descending*
3. On the form toolbar, click **Save**.
4. Click the eye icon on the side panel to preview how your changes have affected the generic inquiry form. The generic inquiry form now has two columns, as shown in the following screenshot. The records are grouped so that the **Customer Name** column displays the customer names, with one row shown for each customer. The values in the **Average Amount** column display the average amount of all invoices of the customer listed in a row instead of the inquiry displaying each invoice value in a separate row. Also notice that the rows are sorted by the amounts in descending order (also shown in the following screenshot).



Customer Name	Average Amount
The Equity Group Investors	7,948,661.81
Thai Food Restaurant	1,800.00
Morning Cafe	707.61
FourStar Coffee&Sweets Shop	382.68
HM's Bakery & Cafe	354.23
Candyy Cafe	167.87
GoodFood One Restaurant	34.82
Individual Retail Customer	0.00

Figure: Generic inquiry with the average invoice amount grouped by customer name

Self-Test Exercise

Now that you have learned how to use sorting and grouping conditions, try to apply this knowledge. Working with the inquiry you have created in this activity, observe how the values in the **Average Amount** column of the inquiry change when you select different functions in the **Aggregate Function** column on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form.

Lesson 1.5: Using Conditions and Parameters

Using Conditions and Parameters: General Information

You can define the results of a generic inquiry—that is, the data in the results grid of the generic inquiry form—by adding default conditions to the inquiry on the **Conditions** tab of the *Generic Inquiry* (SM208000) form. On this form, you can also define parameters that will be shown in the Selection area of the resulting generic inquiry form, thus giving users the ability to specify conditions that limit the data.

Learning Objectives

In this chapter, you will learn how to modify an existing generic inquiry as follows:

- Add a Selection area with parameters so that users of the generic inquiry form can view the most relevant data for their current information needs
- Specify conditions to limit the listed data by default

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company. You want to modify an existing generic inquiry to use conditions to further customize the displayed data, or you want to add or modify parameters so that users can view the needed data.

Using Conditions and Parameters: Conditions and Parameters

For generic inquiries that you develop or modify, you can construct simple or complex conditions to be applied to the data to be displayed. You can also configure parameters that correspond to UI elements on the generic inquiry form. By using these UI elements, users can narrow the inquiry results to meet their current needs for information.

Construction of Conditions

You can limit the data to be displayed in the results of a generic inquiry by adding conditions to the inquiry on the **Conditions** tab of the *Generic Inquiry* (SM208000) form. For example, suppose that you are designing or modifying an inquiry that lists open sales orders that have been created on the *Sales Orders* (SO301000) form. To do this, you will define the following conditions that must be met for inquiry results to be listed: The order type equals *SO*, and the order status equals *Open*.

You construct conditions by adding rows to the table on the **Conditions** tab and by specifying the applicable data fields (from the data access classes specified for the inquiry), logical conditions, and values. For this example, you add the condition to limit the data to only orders with the *Open* status, as shown in the following screenshot.

Data Field	Condition	From Schema	Value 1
SOOrder.Status	Equals	☑	Open

Figure: Condition to display only open sales orders

Specification of Values in Conditions

While constructing conditions in a generic inquiry, you can use the predefined values of data fields in the database, such as document statuses, and the predefined names of options stored in the database, such as document types. (A document status value is generally inserted by the system, based the defined workflow. A document type value is entered by a user, who selects the needed option from the drop-down list.)

To use the predefined values of data fields, on the **Conditions** tab of the *Generic Inquiry* (SM208000) form, you select the **From Schema** check box for the data field and the system will display possible values in the drop-down list in the **Value 1** and, for some conditions (for example, *Is Between*), **Value 2** columns. In the following screenshot, which shows the condition used to display sales orders with the *Open* status that have been created on the *Sales Orders* (SO301000) form, you can see that the **From Schema** check box is selected and the predefined values of the document status are shown in the **Value 1** column.

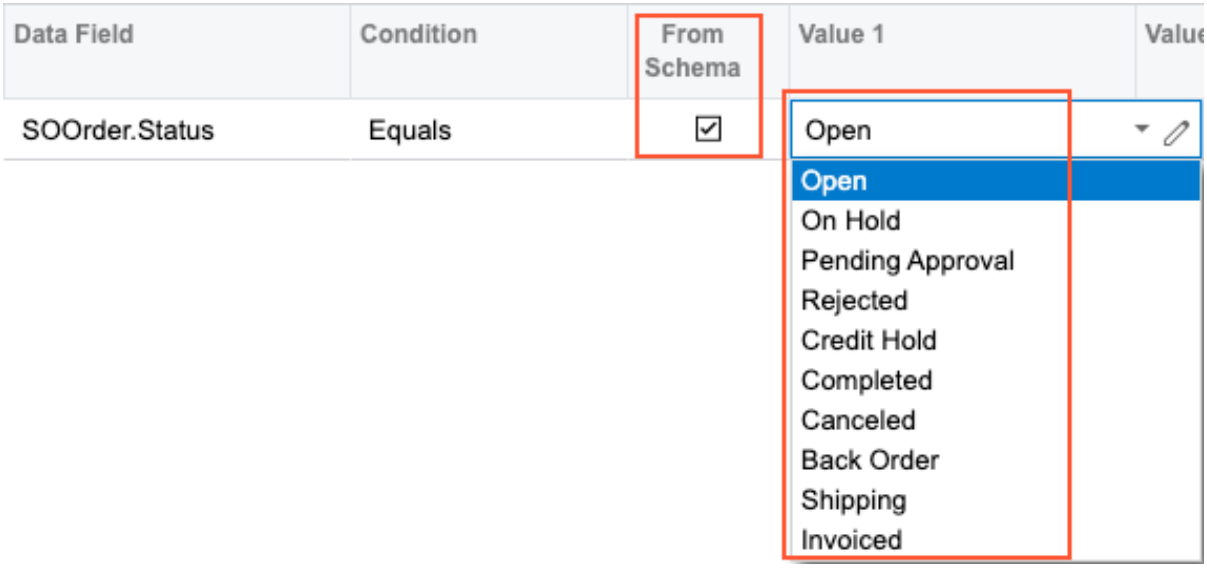


Figure: Condition that uses predefined values in the database

To use the predefined names of options, you perform actions that are similar to those described above. For example, the *Cash Sales* (AR304000) form has the **Type** drop-down list with the *Cash Sale* and *Cash Return* options. On the *AR-Cash Sales* inquiry (with the *Cash Sales* site map title), which lists documents created on the *Cash Sales* form, the **Type** column (which corresponds to the drop-down list on the entry form) lists the values in the `ARCashSale.DocType` data field.

Further suppose that you would like to copy the inquiry and modify the copy to return only cash sales with the *Cash Sale* type, which requires you to define a condition. As the value in the condition, you should use the option name stored in the database, which you can find by inspecting the element, as described in *Discovering DACs*. On the *Cash Sales* form, you inspect the **Type** element, and note that the option name for *Cash Sale* is *CSL*.

Also, you can define a value to be a formula that uses the values of particular data fields. To specify a formula as a value, on the **Conditions** tab of the *Generic Inquiry* form, you click the edit button in the **Value 1** or **Value 2** column to open the Formula Editor dialog box. For details, see *Using Formulas: General Information*. In a formula, if you use a value of a data field with a drop-down control, then you should use the value that is stored in the database, rather than the one that is displayed in the user interface. For details, see *Discovering DACs: General Information*.

If you are designing a condition that is not based on predefined values—as you would for data fields that store amounts or dates, which vary widely and are not predefined in the system—you clear the **From Schema** check box in the row with the data field. For example, suppose that you are designing an inquiry that returns only sales orders that have been created on the *Sales Orders* form with a total amount that is greater than or equal to 2000. You add the condition shown in the following screenshot.

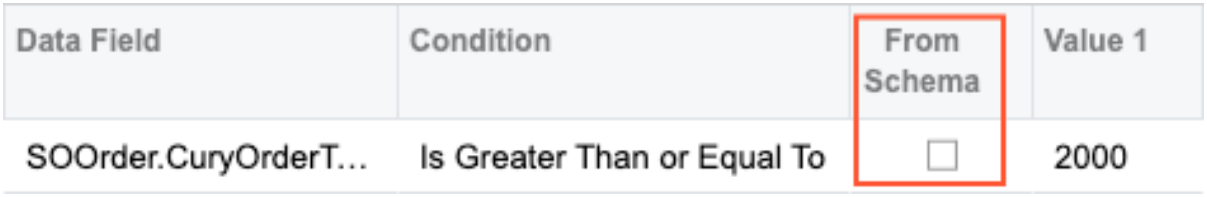


Figure: Condition that uses a value specified by a user

Use of Brackets and Operators

To limit the results of a generic inquiry, you might need to compose complex conditions: logical expressions that consist of multiple conditions. To do this, on the **Conditions** tab of the *Generic Inquiry* (SM208000) form, you use opening and closing parentheses to indicate to the system the order of conditions, as well as the *And* or *Or* operator to join these conditions. By default, when you add a new row, the *And* operator is inserted for a row added to this tab.

The following screenshot displays two active conditions joined with the *And* operator. The resulting complex condition is applied to sales orders that have been created on the *Sales Orders* (SO301000) form. With this complex condition specified, the resulting generic inquiry returns only open sales orders with a total amount greater than or equal to 2000.

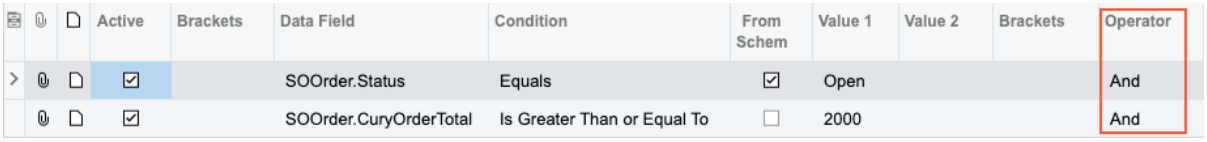


Figure: Two conditions joined with the And operator

Use of Parameters

Although some generic inquiry forms consist of only the table with the results, on others, users have the ability to make selections to view specific data displayed in the table of the inquiry form, such as that for a particular date range or warehouse (or both). To do this, on the **Parameters** tab of the *Generic Inquiry* (SM208000) form, you configure parameters, which correspond to optional or required boxes and other controls that will be placed in the Selection area of the generic inquiry form (above the table with the results) in the order and layout you specify.

On the **Parameters** tab, you add a row for each element to be added to the Selection area, with the appropriate settings so that the inquiry will retrieve the relevant data from the DACs. In the **Name** column, you specify the identifier of the parameter without spaces. You use this identifier to create conditions for the parameter. In the **Display Name** column, you specify the caption to be used for the element.

You define the type of control to be used for the parameter, which can be any of the following, by the value you specify in the **Schema Field** column:

- A selection box (that is, a lookup box that has a corresponding lookup table): If a selection box will be used, in the column, you select the data field whose value you want to use for filtering.
- A check box: In the column, you select the <*Checkbox*> option.
- A drop-down list: In the column, you select <*Combobox*>, as shown in the following screenshot for a parameter being defined for an inquiry for sales orders that have been defined on the *Sales Orders* (SO301000) form. Because the parameter corresponds to the **Status** drop-down list on the

form, you need to select <*Combobox*>. In this case, you also need to define the list of options in the **Combo Box Values** dialog box, which you can invoke by clicking the **Combo Box Values** on the table toolbar.

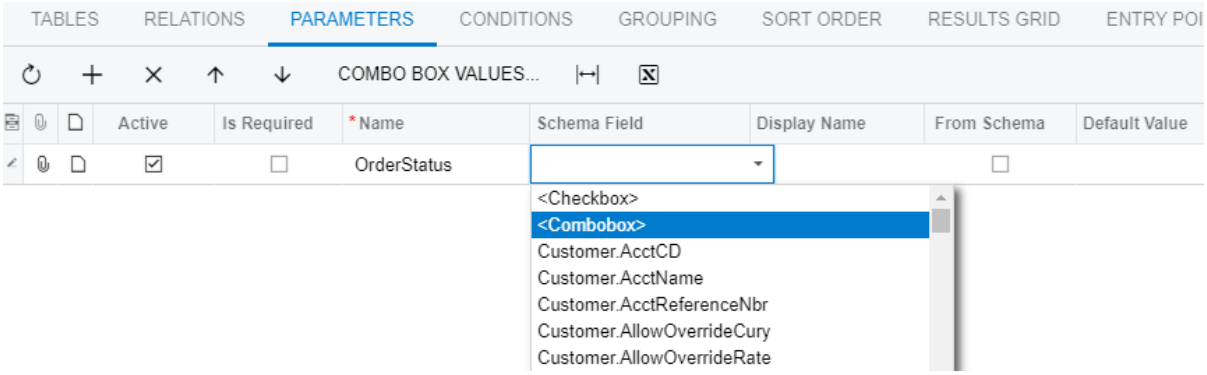


Figure: Selection of the control type of the parameter

Optionally, you can specify a default value for the parameter in the **Default Value** column. The **From Schema** check box works with the **Default Value** column in the same way as the **From Schema** check box works with the **Value 1** column and **Value 2** columns on the **Conditions** tab of this form.

Creation of Conditions for Parameters

You must create corresponding conditions for every parameter that you define on the **Parameters** tab of the *Generic Inquiry* (SM208000) form. If a parameter does not have a corresponding condition specified on the **Conditions** tab, user selections for the element corresponding to the parameter will not affect the records that are returned; however, the element will still be displayed in the Selection area of the resulting inquiry form.

On the **Conditions** tab, the inquiry parameters used in conditions appear in square brackets to distinguish them from data fields. Inquiry parameters are specified in the **Data Field**, **Value 1** and **Value 2** columns. For example, suppose that you are modifying an inquiry that lists sales orders that have been created on the *Sales Orders* (SO301000) form. For the inquiry, you added a parameter with the *OrderStatus* name on the **Parameters** tab of this form. On the **Conditions** tab, you can select the *[OrderStatus]* parameter as a data field or a value.

Suppose that for an inquiry form that lists sales orders, you were asked to add the **Open Only** check box to the Selection area of the inquiry form instead of limiting the output to list only open sales orders by default. When a user selects the check box, the inquiry should display only open sales orders; if the check box is cleared, it should list all available orders. You can add the *OrderStatus* parameter on the *Generic Inquiry* form and define it as a check box that is cleared by default, as shown in the following screenshot.

Figure: The OrderStatus parameter defined as a check box

Then on the **Conditions** tab, you add a complex condition for the parameter you added, as shown in the following screenshot. The condition has the following meaning: If the **Order Status** check box is selected, display only orders with the *Open* status; otherwise, display the records without regard to status.

Active	Brackets	Data Field	Condition	From Schema	Value 1	Value 2	Brackets	Operator
☑	((	[OrderStatus]	Equals	☑	☑	☐		And
☑		SOOrder.Status	Equals	☑	Open		)	Or
☑		[OrderStatus]	Equals	☑	☐	☐	)	And

Figure: A complex condition corresponding to the OrderStatus parameter

If you need the system to display the output results if a user of the generic inquiry form selects no values for a particular element in the Selection area that corresponds to a parameter, you should add a complex condition in which you indicate to the system that the parameter value can be empty. To create the complex condition you add a row following the existing condition with the *OR* logical operator. In this new row you specify the *IsEmpty* condition for the element mentioned in the **Value 1** column of the existing condition. Thus, you indicate that the complex condition is met if the element is left empty.

For example, suppose that for the inquiry you are modifying (which lists sales orders that have been created on the *Sales Orders* form), you have been asked to add the **Date From** and **Date To** boxes to the Selection area of the inquiry form to give users the ability to specify a date range for the sales orders to be listed; you also need to add the parameters on the **Parameters** tab of the *Generic Inquiry* form. If you do not indicate to the system that the values of these parameters can be empty, the system will not display any results if a user clears the **Date From** and **Date To** boxes.

Thus, for each of these date range parameters, you need to add a complex condition on the **Conditions** tab, as shown in the following screenshot, that specifies that the **Date From** and **Date To** boxes can be empty. If you add such a condition and a user leaves the **Date From** box empty and specifies a date in the **Date To** box, for example, the inquiry results display sales orders that have been created before the date specified in the **Date To** box.

If you did not include a condition on the **Conditions** tab to indicate that the parameter can be left empty, and if a user left the **Date From** box empty on the generic inquiry form, the inquiry would compare the empty value with the dates of order creation. Because in the database there are no records with empty order creation dates, the inquiry results would be empty.

TABLES RELATIONS PARAMETERS **CONDITIONS** GROUPING SORT ORDER RESULTS GRID

Activ	Brackets	Data Field	Condition	From Schen	Value 1	Value 2	Brackets	Operator
☑	(	SOOrder.OrderDate	Is Greater Than...	☐	[DateFrom]			Or
☑		[DateFrom]	Is Empty	☐			)	And
☑	(	SOOrder.OrderDate	Is Greater Than...	☐	[DateTo]			Or
☑		[DateTo]	Is Empty	☐			)	And
☑	(	Customer.AcctCD	Equals	☐	[Customer]			Or
☑		[Customer]	Is Empty	☐			)	And
☑	(	SOOrder.Status	Equals	☐	[OrderStatus]			Or
☑		[OrderStatus]	Is Empty	☐			)	And

Figure: Complex conditions to display results if a user clears either parameter value

Arrangement of Elements on the Generic Inquiry Form

You can change the arrangement of the elements that are displayed in the Selection area of the generic inquiry form you are designing by using the **Arrange Parameters in X Columns** box in the Summary area of the *Generic Inquiry* (SM208000) form. In this box, you specify the number of columns in which the elements corresponding to parameters will be placed on the resulting inquiry form.

For example, if an inquiry has two parameters and **Arrange Parameters in X Columns** is set to *1* on the *Generic Inquiry* form, then the system arranges the elements corresponding to the parameters in a single column, as shown in the following screenshot, which shows a generic inquiry that lists invoices that have been created on the *Receipts* (IN301000) form.

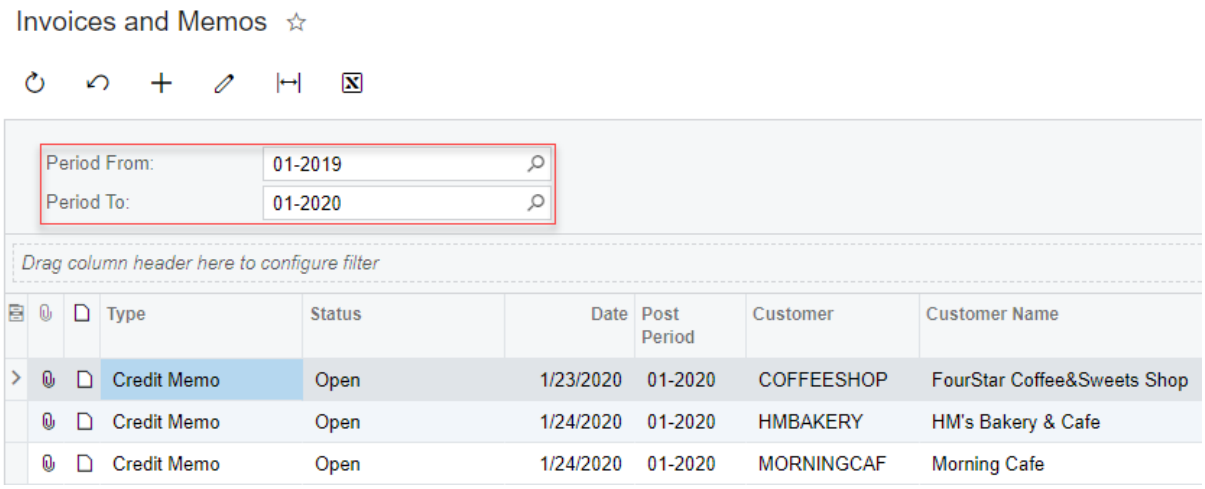


Figure: Elements arranged in one column in the Selection area of the generic inquiry form

If **Arrange Parameters in X Columns** is set to *2* on the *Generic Inquiry* form, then the system arranges the elements corresponding to the parameters in two columns, as the following screenshot demonstrates.

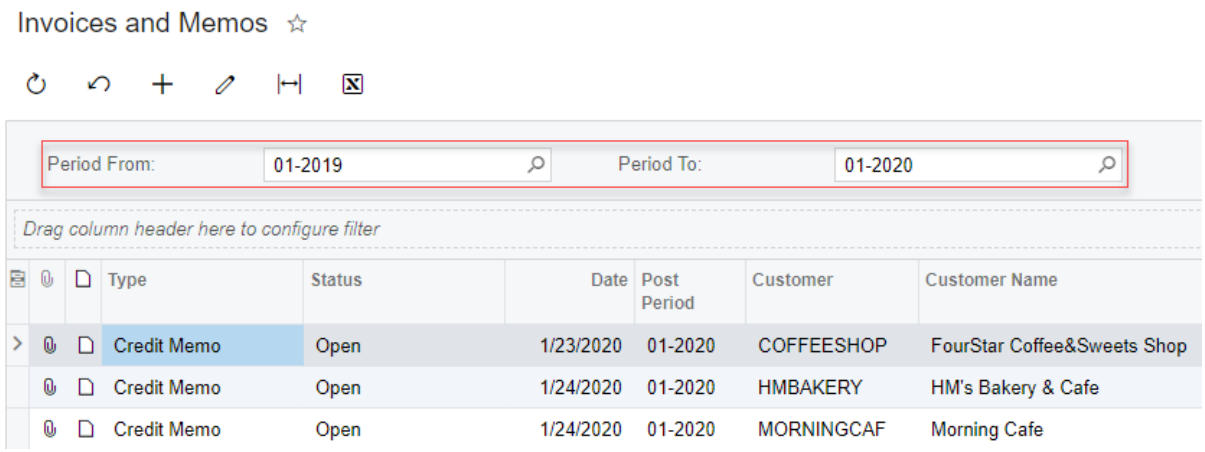


Figure: Elements arranged in two columns in the Selection area of the generic inquiry form

Using Conditions and Parameters: To Add a Date Condition

In this activity, you will learn how to modify an existing generic inquiry to limit the data displayed to a specific range of financial periods—that is, to include a date condition.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry form that displays data about invoices. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant wants the inquiry form to show results limited to a range of financial periods that the accountant wants to analyze. Specifically, the inquiry form should display only invoices (that is, no other document types) posted from the *12-2020* financial period through the *01-2021* financial period (including the starting and ending periods).

The Invoices and Memos (AR3010PL) inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form for the copied inquiry, you will look for the row that corresponds to the **Post Period** column of the inquiry and note the value in the **Data Field** column. You will add the condition for the inquiry on the **Conditions** tab of the *Generic Inquiry* form. With this condition, the results grid will display only documents that fall within the specified range of financial periods.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB3-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Adding a Condition for a Document Type

To modify the generic inquiry by adding a condition for a document type, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB3-ARInvoicesMemos*.
3. On the **Results Grid** tab, look for the row that corresponds to the **Type** column, and make a note of the value in the **Data Field** column.

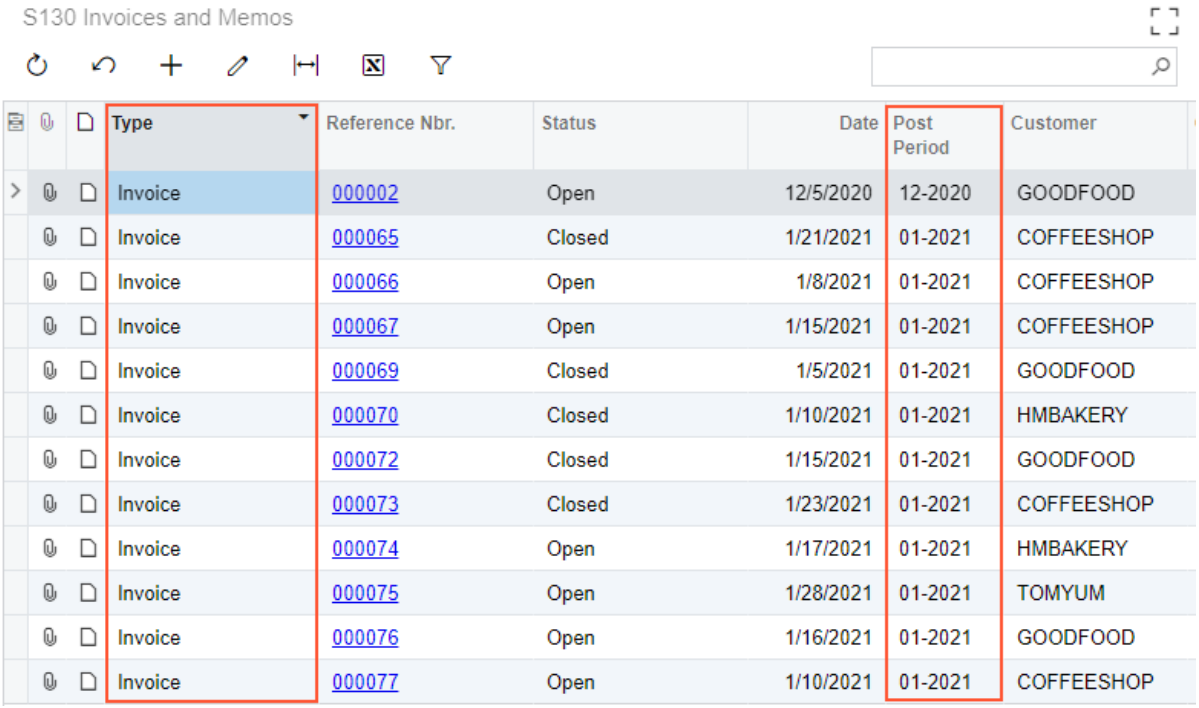
   > To find the row on the **Results Grid** tab that corresponds to the **Type** column, in the resulting generic inquiry form, make a note of the order number of the **Type** column in the set of columns. Suppose the order number is *x*. Then return to the **Results Grid** tab of the *Generic Inquiry* form, and in the **Visible** column, from the top, count only the rows for which the check box is selected. In the row that corresponds to *x* (for example, the fourth row if the order number was 4), the value in the **Field Name** column corresponds to the **Type** column in the resulting generic inquiry form.

4. On the **Conditions** tab, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Data Field**: *ARInvoice.DocType*
   - **Condition**: *Equals*
   - **From Schema**: Cleared
   - **Value 1**: `INV`
5. On the form toolbar, click **Save**.

Step 2: Adding a Date Condition

To modify the generic inquiry by adding a date condition, do the following:

1. While you are still viewing the *DB3-ARInvoicesMemos* inquiry on the *Generic Inquiry* (SM208000) form, on the **Results Grid** tab, look for the row that corresponds to the **Post Period** column, and make a note of the value in the **Data Field** column.
2. On the **Conditions** tab, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Data Field**: *ARInvoice.FinPeriodID*
   - **Condition**: *Is Between*
   - **From Schema**: Selected
   - **Value 1**: `12-2020`
   - **Value 2**: `01-2021`
3. On the form toolbar, click **Save**.
4. Click the eye icon on the side panel to preview how your changes have affected the inquiry. The system has applied the conditions you have added, so that the resulting generic inquiry (see the following screenshot) displays only the invoices within the range of financial periods that you specified for the condition in the **Value 1** and **Value 2** boxes (*12-2020* through *01-2021*).



Type	Reference Nbr.	Status	Date	Post Period	Customer
Invoice	000002	Open	12/5/2020	12-2020	GOODFOOD
Invoice	000065	Closed	1/21/2021	01-2021	COFFEESHOP
Invoice	000066	Open	1/8/2021	01-2021	COFFEESHOP
Invoice	000067	Open	1/15/2021	01-2021	COFFEESHOP
Invoice	000069	Closed	1/5/2021	01-2021	GOODFOOD
Invoice	000070	Closed	1/10/2021	01-2021	HMBAKERY
Invoice	000072	Closed	1/15/2021	01-2021	GOODFOOD
Invoice	000073	Closed	1/23/2021	01-2021	COFFEESHOP
Invoice	000074	Open	1/17/2021	01-2021	HMBAKERY
Invoice	000075	Open	1/28/2021	01-2021	TOMYUM
Invoice	000076	Open	1/16/2021	01-2021	GOODFOOD
Invoice	000077	Open	1/10/2021	01-2021	COFFEESHOP

Figure: Generic inquiry with date condition

Using Conditions and Parameters: To Add Period-Range Parameters to the Selection Area

In this activity, you will learn how to modify an existing generic inquiry to give users the ability to limit the data displayed to a specific range of financial periods—that is, to add boxes corresponding to parameters to define the range.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry form that displays data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant has asked you to design the inquiry form to give users the ability to limit the results to a user-defined range of financial periods—that is, it should be possible for a user to specify the needed range of periods.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form for the copied inquiry, you will look for the row that corresponds to the **Post Period** column of the inquiry and note the value in the **Data**

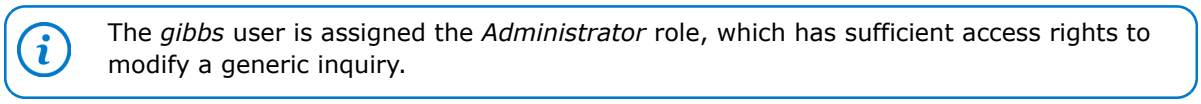
Field column. You will add two parameters (*Period From* and *Period To*) on the **Parameters** tab. Then you will specify how the system should apply the values of these parameters to the inquiry output by adding a condition on the **Conditions** tab.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB4-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   
   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Adding Parameters

To modify the generic inquiry to add parameters, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB4-ARInvoicesMemos*.
3. On the **Results Grid** tab, look for the row that corresponds to the **Post Period** column, and make note of the value in the **Data Field** column.
4. On the **Parameters** tab, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Name**: `PeriodFrom`
   - **Schema Field**: *ARInvoice.FinPeriodID*
   - **Display Name**: `Period From`
   - **From Schema**: Selected
   - **Default Value**: `01-2020`
5. Again click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Name**: `PeriodTo`
   - **Schema Field**: *ARInvoice.FinPeriodID*
   - **Display Name**: `Period To`
   - **From Schema**: Selected

- **Default Value**: `02-2021`

6. On the form toolbar, click **Save**.

Step 2: Adding a Condition for the Parameters

To modify the generic inquiry by adding a condition, do the following:

1. While you are still viewing the *DB4-ARInvoicesMemos* inquiry, on the **Conditions** tab of the *Generic Inquiry* (SM208000) form, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Data Field**: *ARInvoice.FinPeriodID*
   - **Condition**: *Is Between*
   - **From Schema**: Cleared
   - **Value 1**: *[PeriodFrom]*
   - **Value 2**: *[PeriodTo]*
2. On the form toolbar, click **Save**.
3. Click the eye icon on the side panel to preview how your changes have affected the inquiry. The system has added the boxes corresponding to the parameters to the Selection area (see the following screenshot). You can specify a range of financial periods and view only the invoices and memos within the range of specified financial periods.

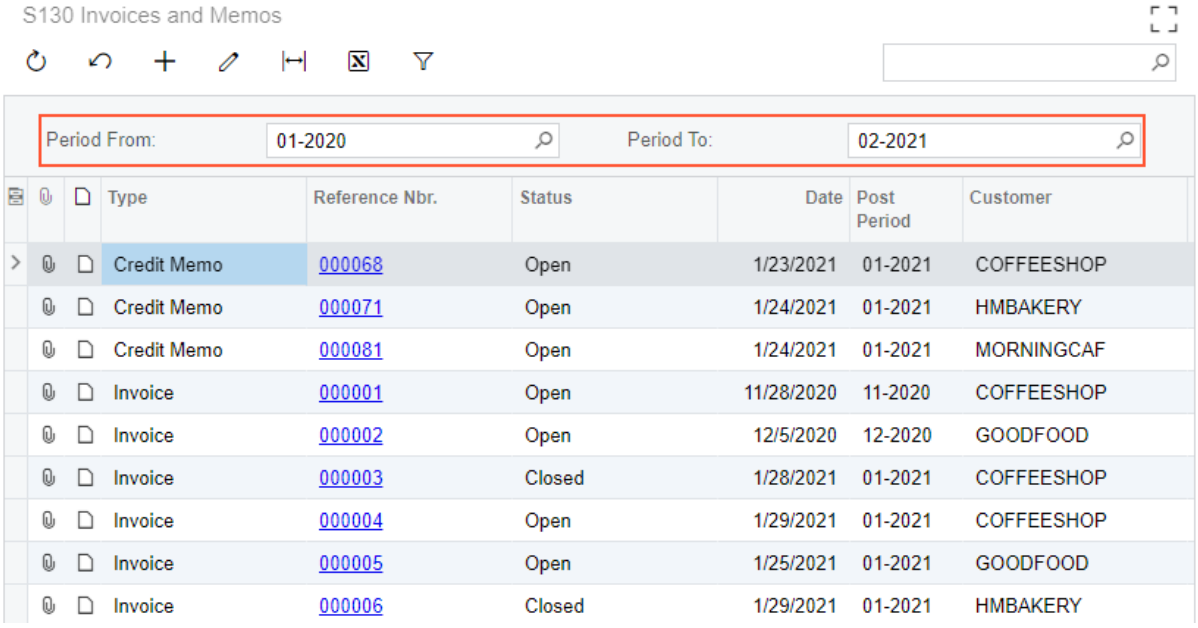


Figure: Generic inquiry with parameters that define a range

Self-Test Exercise

Now that you have learned about conditions and parameters, you should change the condition for the inquiry you have developed in this activity, so that the inquiry will return records if a user has cleared either box or both boxes in the Selection area.

> On the **Conditions** tab of the *Generic Inquiry* (SM208000) form, you need to split the added condition into two complex conditions, one for each parameter. In the complex condition, you should use the *OR* operator and the *Is Empty* condition.

Using Conditions and Parameters: To Add a Field Parameter to the Selection Area

In this activity, you will learn how to modify an existing generic inquiry to give users the ability to limit the data displayed by a value of some data field. To give users the ability to select that value, you will include a parameter for this data field in the Selection area of the inquiry form.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry that displays data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant wants to give users the ability to filter the inquiry results by a particular customer—that is, users should be able to select a particular customer in the Selection area of the resulting generic inquiry form and review only that customer's invoices and memos.

> The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form for the copied inquiry, you will look for the row that corresponds to the **Customer** column of the inquiry and note the value in the **Data Field** column. You will add the *Customer* parameter on the **Parameters** tab. Then you will specify how the system should apply the value of the parameter to the inquiry output by adding a condition on the **Conditions** tab.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB5-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.

2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Adding a Parameter

To modify the generic inquiry to add a parameter, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB5-ARInvoicesMemos*.
3. On the **Results Grid** tab, look for the row that corresponds to the **Customer** column, and note the value in the **Data Field** column.
4. On the **Parameters** tab, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Name**: `Customer`
   - **Schema Field**: *ARInvoice.CustomerID*
   - **Display Name**: `Customer`
   - **From Schema**: Selected
5. On the form toolbar, click **Save**.

Step 2: Adding a Condition for the Parameter

To modify the generic inquiry by adding a condition, do the following:

1. While you are still viewing the *DB5-ARInvoicesMemos* inquiry, on the **Conditions** tab of the *Generic Inquiry* (SM208000) form, click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Brackets**: *(*
   - **Data Field**: *ARInvoice.CustomerID*
   - **Condition**: *Equals*
   - **From Schema**: Cleared
   - **Value 1**: *[Customer]*
   - **Operator**: *Or*
2. Again click **Add Row** on the table toolbar, and specify the following settings in the added row:
   - **Data Field**: *[Customer]*

- **Condition**: *Is Empty*
- **From Schema**: Cleared
- **Brackets**: *)*

3. On the form toolbar, click **Save**.
4. Click the eye icon on the side panel to preview how your changes have affected the inquiry form. The system adds the box corresponding to the parameter to the Selection area (see the following screenshot). You can select a particular customer account and view only invoices and memos for the customer, or you can leave the box empty.

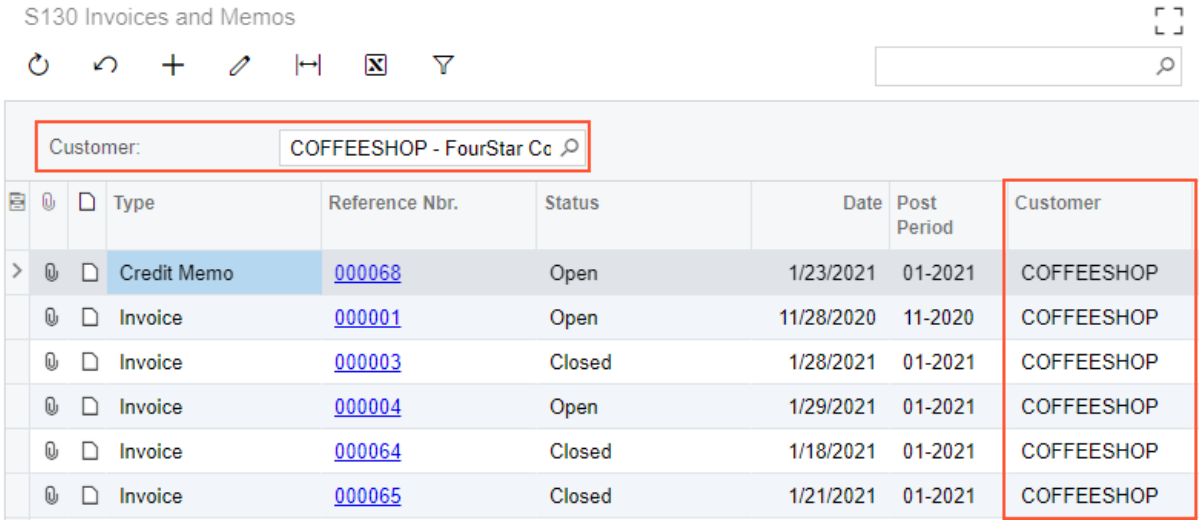


Figure: Generic inquiry with a box that filters data by customer

Lesson 1.6: Using Formulas

Using Formulas: General Information

When you are developing or modifying generic inquiries in Acumatica ERP, you can use formulas to perform different operations with the values in the columns in the results grid, for greater flexibility to present the information users need. To do this, you can type formulas manually into certain boxes, or you can use the Formula Editor dialog box to construct or edit these formulas. The formulas used are similar to the formulas used in Excel. You can define parameters and construct a formula by using operators and functions.

Learning Objectives

In this chapter, you will learn how to modify an existing generic inquiry by using formulas.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. In some situations,

you may want to perform calculations on values before presenting them or transform the data in some way.

Usage of the Formula Editor Dialog Box

You can use formulas on the *Generic Inquiry* (SM208000) form to do the following:

- Define the content of columns and style of rows and cells in the inquiry results—that is, the data displayed in the table (results grid) of the generic inquiry form. In this case, you can invoke the Formula Editor dialog box on the **Results Grid** tab in a cell in the **Data Field** column, in a cell in the **Style** column, and in the **Row Style** box.
- Define conditions for the data that should be included in the inquiry results. In this case, on the **Conditions** tab, you can invoke the Formula Editor dialog box in a cell in the **Value 1** or **Value 2** column.
- Group data in the inquiry results. In this case, on the **Grouping** tab, you can invoke the Formula Editor dialog box in a cell in the **Data Field** column.
- Define a sort order for data in the inquiry results. In this case, on the **Sort Order** tab, you invoke the Formula Editor dialog box in a cell in the **Data Field** column.
- Define navigation to Acumatica ERP forms in generic inquiries. In this case, on the **Navigation** tab, you can invoke the Formula Editor dialog box in a cell in the **Parameter** column.

On the **Results Grid** tab of the *Generic Inquiry* form, each row represents a column in the resulting inquiry form. To use the Formula Editor dialog box (shown in the following screenshot) to specify a formula that determines the value in a column of the resulting inquiry form, you click in the **Data Field** column of the row that represents the column and then click the Edit button.

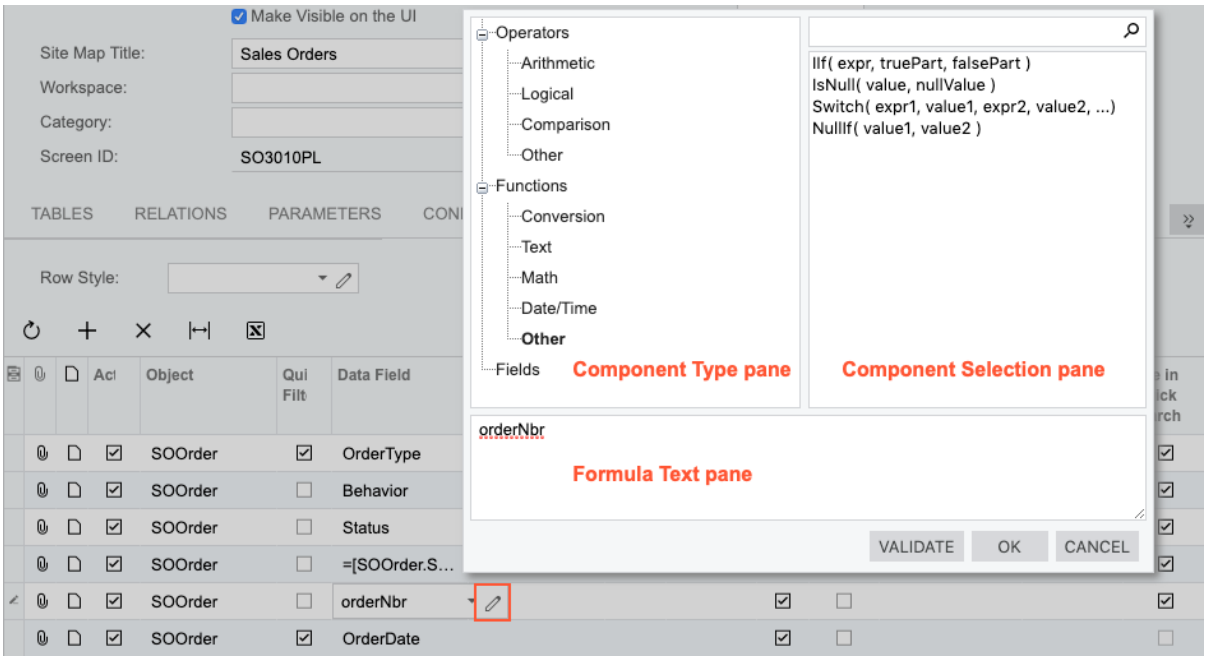


Figure: The Formula Editor components

The Formula Editor dialog box includes the following panes:

- Component Type (upper left): Displays the types of operators, functions, and fields that can be used as formula components. You click any of the types to display the corresponding list of available components in the Component Selection pane.
- Component Selection (upper right): For the component type selected in the Component Types pane, displays the list of available components. You click a component to add it to the formula at the bottom of the dialog box. You can search for the needed component by using the Search box at the top of the Component Selection pane.
- Formula Text (bottom): Contains the text of the formula, which you can edit manually. The formula may include the selected components, arguments of the manually inserted components, and other elements, all arranged in accordance with the syntax of the formula.

You can enter the formula directly in the Formula Text pane or compose it by selecting fields and using operators and functions.

Use of Formulas to Highlight Rows and Columns

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you can use formulas to specify the highlighting color of a row or a particular cell in the inquiry results by invoking the Formula Editor as follows:

- In the **Row Style** box to affect the highlighting color of a row based on the value in a particular column of a row
- In the **Style** column of the row with the data field that holds the value to affect the highlighting color of only a cell based on the value in a particular column of a row

For example, suppose that you have an inquiry that lists open cases and shows the priority of each case in the **Priority** column, and that you would like to highlight with red the entire rows that display cases with a high priority. On the **Results Grid** tab of the *Generic Inquiry* form, you invoke the Formula Editor in the **Row Style** box. You use the `IIf` function for this purpose and compose the following formula: `=IIf([CRCase.Priority]='H', 'red', 'default')`. The system reads the formula as follows: If the value in the **Priority** column equals *H*, then highlight it with red; otherwise, use the default style (which is predefined and has no highlighting).

If you would like to use red highlighting for only the cell in the **Priority** column for a case with high priority, you add the formula to the **Style** column for the row with the data field that holds the value of the case priority.

When you invoke the Formula Editor in the **Row Style** box or in the **Style** column of the **Results Grid** tab, the system displays the **Styles** component type in the Component Type pane of the Formula Editor. The Component Selection pane lists the available styles from this component type, as shown in the following screenshot.

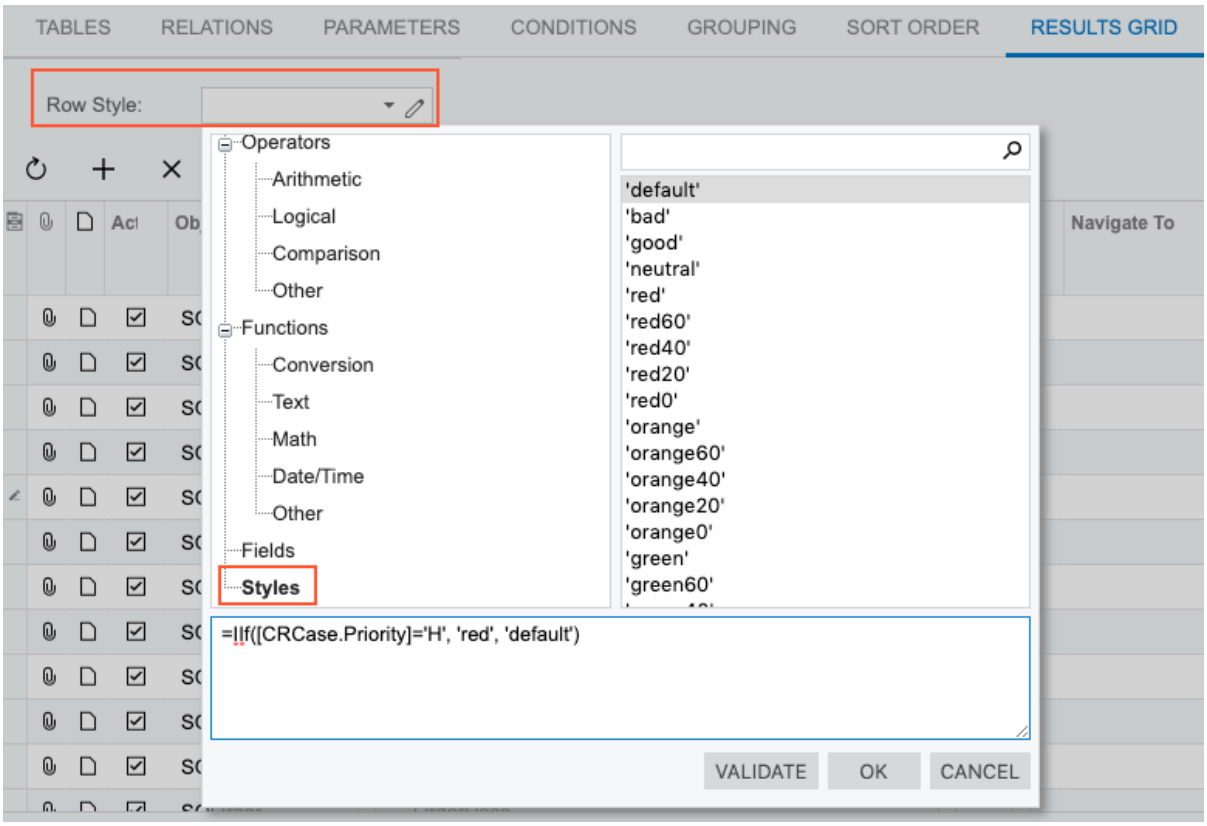


Figure: The Styles component type

Usage of Formulas for String Values

You can use formulas for text strings—for example, to change uppercase to lowercase, to select a part of a string, to replace a string value with a new one, or to concatenate multiple strings. When you select the text category, you can find all the available functions listed in the Formula Editor.

> When you construct a formula in the **Data Field** box of any row, it does not matter what value is specified in the **Object** box in the same row.

Some operations with strings depend on the database management system that you use with Acumatica ERP—MS SQL or MySQL. For example, suppose that in a column, you would like to see a value that is a combination of the sales order identifier and its description, separated by a space. If you are using MySQL, in the **Data Field** box of the corresponding row, you construct the following formula: `= Concat([SOOrder.OrderNbr], ' ', [SOOrder.OrderDesc])`. To perform the same operation in MS SQL, in the **Data Field** box of the corresponding row, you can use the same *Concat()* function (the same manner as in MySQL), or you can type an expression in which strings are connected by a plus sign, as follows: `= [SOOrder.OrderNbr] + ' ' + [SOOrder.OrderDesc]`. The formulas that you construct in the Formula Editor are valid for both database management systems.

Using Formulas: To Highlight Row with Color

In this activity, you will learn how to modify an existing generic inquiry to highlight all rows in the results grid that meet a condition.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry form that displays data about invoices and memos. You offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant has asked you to develop a similar generic inquiry form in which you highlight with yellow the rows of documents whose balance exceeds $1000.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

In this activity, on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you will look for the row that corresponds to the **Balance** column of the copied generic inquiry form and note the value in the **Data Field** column for the row. You will add the formula in the **Row Style** box in the table toolbar of the tab by using the Formula Editor dialog box.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB6-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Invoking the Formula Editor Dialog Box

To invoke the Formula Editor dialog box in order to modify the generic inquiry to add a style formula for certain rows, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB6-ARInvoicesMemos*.
3. On the **Results Grid** tab, look for the row that corresponds to the **Balance** column, and note the value in the **Data Field** column (*CuryDocBal*). Make sure that the **Visible** check box is selected for the row.

> If the **Visible** check box is cleared for a row, the corresponding column is not visible initially on the resulting inquiry form, but users can make it visible as needed by using the **Column Configuration** dialog box of the table.

4. In the **Row Style** box, click the Edit button to invoke the Formula Editor dialog box.

Step 2: Adding a Formula to Highlight Rows

On the table toolbar of the **Results Grid** tab of the *Generic Inquiry* (SM208000) form working with the *DB6-ARInvoicesMemos* generic inquiry, you invoked the Formula Editor dialog box for the **Row Style** box. While you are still in the Formula Editor dialog box, do the following:

1. In the Component Type (upper left) pane of the dialog box, click **Functions > Other**. The system displays the list of available functions in the Component Selection (upper right) pane of the dialog box.
2. In the Component Selection pane, double-click the *IIf(expr, truePart, falsePart)* function. The system copies it to the Formula Text (bottom) pane, where you can edit the formula.
3. In the Formula Text pane, replace the *expr* parameter in the copied expression with the data field that holds the document balance as follows:
   a. In the Component Type pane, click **Fields**.
   b. In the Formula Text pane, select only the *expr* string in the copied expression.
   c. In the search box in the top right of the dialog box, start typing the data field name you noted—*CuryDocBal*—and in the search results in the Component Selection pane, double-click *[ARInvoice.CuryDocBal]*. (When you are indicating a data field in a formula, the DAC name precedes the data field name, and this complex name is enclosed in brackets.)

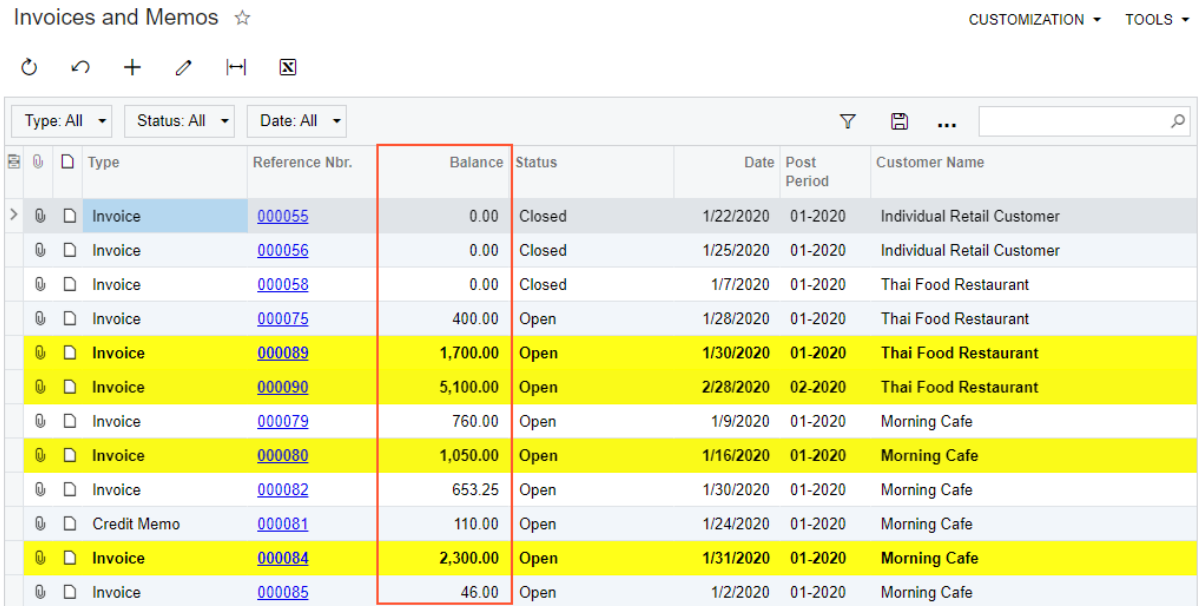
      In the Formula Text pane, notice that the system has replaced the *expr* string with the selected data field name.
   d. After the field name, type `>1000` to specify a condition for the field value exceeding $1000.
4. In the Formula Text pane, replace the *truePart* parameter in the copied expression with the requested color as follows:
   a. In the Component Type pane, click **Styles**.
   b. In the Formula Text pane, select only the *truePart* string in the copied expression.
   c. In the Component Selection pane, double-click the *'yellow'* value.

      Notice that the system has replaced the *truePart* string with the selected value.
5. In the Formula Text pane, replace the *falsePart* parameter in the copied expression with the default color as follows:
   a. In the Component Type pane, click **Styles**.
   b. In the Formula Text pane, select only the *falsePart* string in the copied expression.
   c. In the Component Selection pane, double-click the *'default'* value.

      Notice that the system has replaced the *falsePart* string with the selected value.

The resulting formula should look as follows: *IIf([ARInvoice.CuryDocBal]>1000, 'yellow', 'default')*. That is, highlight with yellow if the value of *ARInvoice.CuryDocBal* is more than 1000, and highlight with the default color if the value is less than 1000.

6. Click **OK** to save your changes and close the Formula Editor dialog box.
7. On the form toolbar, click **Save**.
8. Click the eye icon on the side panel to preview how your changes have affected the inquiry. The system applies the row style you have added, so that the resulting generic inquiry highlights with yellow the rows with documents whose balance exceeds $1000 (see the following screenshot).



Type	Reference Nbr.	Balance	Status	Date	Post Period	Customer Name
Invoice	000055	0.00	Closed	1/22/2020	01-2020	Individual Retail Customer
Invoice	000056	0.00	Closed	1/25/2020	01-2020	Individual Retail Customer
Invoice	000058	0.00	Closed	1/7/2020	01-2020	Thai Food Restaurant
Invoice	000075	400.00	Open	1/28/2020	01-2020	Thai Food Restaurant
Invoice	**000089**	**1,700.00**	**Open**	**1/30/2020**	**01-2020**	**Thai Food Restaurant**
Invoice	**000090**	**5,100.00**	**Open**	**2/28/2020**	**02-2020**	**Thai Food Restaurant**
Invoice	000079	760.00	Open	1/9/2020	01-2020	Morning Cafe
Invoice	**000080**	**1,050.00**	**Open**	**1/16/2020**	**01-2020**	**Morning Cafe**
Invoice	000082	653.25	Open	1/30/2020	01-2020	Morning Cafe
Credit Memo	000081	110.00	Open	1/24/2020	01-2020	Morning Cafe
Invoice	**000084**	**2,300.00**	**Open**	**1/31/2020**	**01-2020**	**Morning Cafe**
Invoice	000085	46.00	Open	1/2/2020	01-2020	Morning Cafe

Figure: The inquiry with the highlighted rows

Self-Test Exercise

Now that you learned how to highlight rows of a generic inquiry form, try to apply this knowledge and highlight only cells that contain values exceeding $1000 in the **Balance** column of the inquiry.

On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you specify the formula in the **Style** column for the row with the *CuryDocBal* value in the **Data Field** column.

Using Formulas: To Concatenate Strings

In this activity, you will learn how to modify an existing generic inquiry to concatenate string values.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. The sales team of your company has requested that on the Sales Orders (SO3010PL) generic inquiry form, which has the *SO-SalesOrder* inquiry title and the *Sales Orders* site map title specified on the *Generic Inquiry* (SM208000) form, you add each sales order's description after its number in the **Order Nbr.** column,

whose name (caption) should be changed to **Order Number and Description**. The column should contain this information in the following format: <order number>––<order description>.

> The Sales Orders (SO3010PL) inquiry form, which is the list of the sales orders that have been created on the *Sales Orders* (SO301000) form, is the substitute form that is opened when you click the *Sales Orders* link in a workspace or a list of search results.

Process Overview

In this activity, on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you will look for the row that corresponds to the **Order Nbr.** column of the copied generic inquiry form. In this row, you will invoke the Formula Editor dialog box in the **Data Field** column and add a formula that corresponds to the requested format.

In this activity, you will use a copy of the predefined Sales Orders (SO3010PL) generic inquiry form. This copy has the *DB1-SalesOrder* inquiry title and the *S130 Sales Orders* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   > The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Invoking the Formula Editor Dialog Box

To invoke the Formula Editor dialog box in order to add a formula for a row, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB1-SalesOrder*.
3. On the **Results Grid** tab, in the **Data Field** column, look for the row that corresponds to the order number; it contains the *OrderNbr* value. Make sure the **Visible** check box is selected for the row.

   > If the **Visible** check box is cleared for a row, the corresponding column is not visible initially on the resulting inquiry form, but users can make it visible as needed by using the **Column Configuration** dialog box of the table.
4. Click the cell that contains *OrderNbr* in the **Data Field** column until you see the Edit button, and then click the button to invoke the Formula Editor dialog box.

Step 2: Adding a Formula for String Values

While working with the *DB1-SalesOrder* generic inquiry on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you invoked the Formula Editor dialog box for the cell with *OrderNbr* in the **Data Field** column. While you are still in the Formula Editor dialog box, do the following:

1. In the Component Type (upper left) pane of the dialog box, click **Functions > Text**. The system displays the list of available functions in the Component Selection (upper right) pane of the dialog box.

2. In the Component Selection pane, double-click the *Concat(str1, str2, ...)* function. The system copies it to the Formula Text (bottom) pane, where you can edit the formula.

3. In the Formula Text pane, replace the *str1* parameter in the copied function with the data field that holds the order number as follows:

   a. In the Component Type pane, click **Fields**.

   b. In the Formula Text pane, select only the *str1* string in the copied expression.

   c. In the search box in the top right of the dialog box, start typing the data field name you noted—*OrderNbr*—and in the search results in the Component Selection pane, double-click *[SOOrder.OrderNbr]*.

      In the Formula Text pane, notice that the system has replaced the *str1* string with the selected data field name. (When you are indicating a data field in a formula, the DAC name precedes the field name, and this complex name is enclosed in brackets.)

   d. After the field name and the comma, type `'--'` to separate the values of two fields.

4. By using actions similar to those in the previous instruction, replace the *str2* parameter in the function with the *OrderDesc* field name.

   Notice that the system has replaced the *str2* with the selected data field name.

5. Delete the dots after the second parameter of the function.

   The resulting formula should look as follows: *Concat([SOOrder.OrderNbr], '--', [SOOrder.OrderDesc])*. That is, in the **Order Number** column, display the concatenated string of the two strings retrieved from the *OrderNbr* and *OrderDesc* data fields.

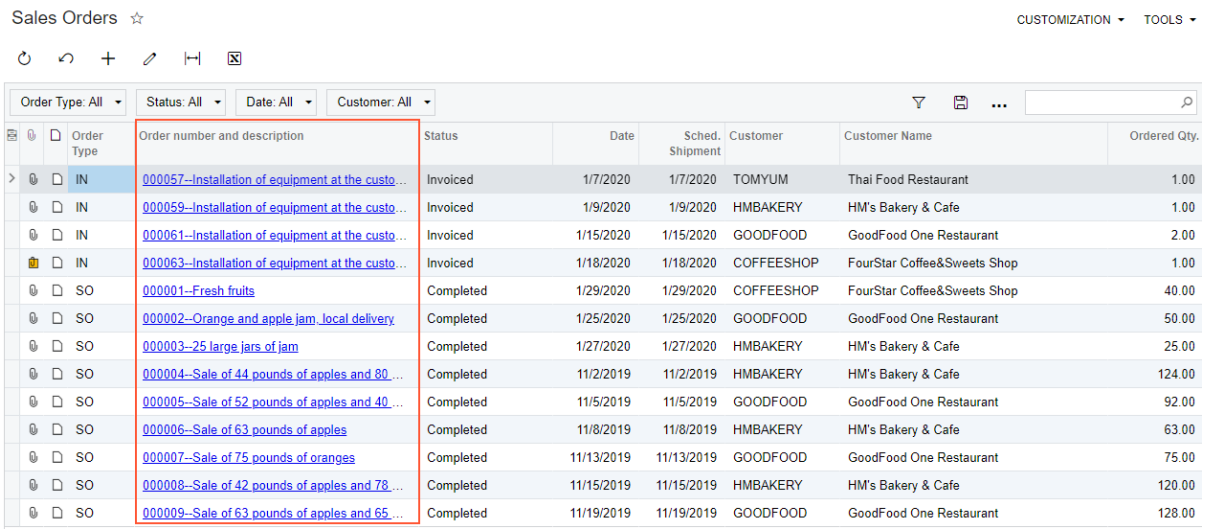
6. In the bottom of the dialog box, click **Validate** to validate the function that you have constructed. Correct mistakes, if there are any.

7. Click **OK** to save your changes and close the Formula Editor dialog box.

8. On the **Results Grid** tab, in the same row with the inserted formula, in the **Caption** column, type the new caption as follows: `Order number and description`.

9. On the form toolbar, click **Save**.

10. Click the eye icon on the side panel to preview how your changes have affected the inquiry. The system applies the changes you have made, so that the resulting generic inquiry displays the order number and order description in the same column (see the following screenshot).



Order Type	Order number and description	Status	Date	Sched. Shipment	Customer	Customer Name	Ordered Qty.
IN	000057--Installation of equipment at the custo...	Invoiced	1/7/2020	1/7/2020	TOMYUM	Thai Food Restaurant	1.00
IN	000059--Installation of equipment at the custo...	Invoiced	1/9/2020	1/9/2020	HMBAKERY	HM's Bakery & Cafe	1.00
IN	000061--Installation of equipment at the custo...	Invoiced	1/15/2020	1/15/2020	GOODFOOD	GoodFood One Restaurant	2.00
IN	000063--Installation of equipment at the custo...	Invoiced	1/18/2020	1/18/2020	COFFEESHOP	FourStar Coffee&Sweets Shop	1.00
SO	000001--Fresh fruits	Completed	1/29/2020	1/29/2020	COFFEESHOP	FourStar Coffee&Sweets Shop	40.00
SO	000002--Orange and apple jam, local delivery	Completed	1/25/2020	1/25/2020	GOODFOOD	GoodFood One Restaurant	50.00
SO	000003--25 large jars of jam	Completed	1/27/2020	1/27/2020	HMBAKERY	HM's Bakery & Cafe	25.00
SO	000004--Sale of 44 pounds of apples and 80 ...	Completed	11/2/2019	11/2/2019	HMBAKERY	HM's Bakery & Cafe	124.00
SO	000005--Sale of 52 pounds of apples and 40 ...	Completed	11/5/2019	11/5/2019	GOODFOOD	GoodFood One Restaurant	92.00
SO	000006--Sale of 63 pounds of apples	Completed	11/8/2019	11/8/2019	HMBAKERY	HM's Bakery & Cafe	63.00
SO	000007--Sale of 75 pounds of oranges	Completed	11/13/2019	11/13/2019	GOODFOOD	GoodFood One Restaurant	75.00
SO	000008--Sale of 42 pounds of apples and 78 ...	Completed	11/15/2019	11/15/2019	HMBAKERY	HM's Bakery & Cafe	120.00
SO	000009--Sale of 63 pounds of apples and 65 ...	Completed	11/19/2019	11/19/2019	GOODFOOD	GoodFood One Restaurant	128.00

Figure: Inquiry results with the concatenated strings

Lesson 1.7: Enabling Navigation

Enabling Navigation: General Information

When you design a generic inquiry by using the *Generic Inquiry* (SM208000) form, you can define navigation options that give users of the inquiry form the ability to quickly access related records and work more effectively. You can add a side panel with tabs that can display related forms and webpages. You can also define any column of the results grid of the inquiry form to contain links to an Acumatica ERP form; users can click these links to view the particular record on its data entry form.

For example, suppose that in a generic inquiry form that lists purchase orders, you have turned on and configured built-in navigation for the **Vendor ID** column, which contains links to the *Vendors* (AP303000) form. On the generic inquiry form, in the row of any purchase order, a user can click the link in this column to view the details of the vendor from which the items were purchased.

The ability to navigate to external webpages can be very useful, for example, in e-commerce solutions to monitor items whose state can change. For example, suppose that your company uses the FedEx delivery services company to deliver packages. You can design a generic inquiry that lists packages and their tracking numbers. In this generic inquiry, you can configure navigation to a tracking page on the FedEx website. On the results grid of the inquiry form, in the column with tracking numbers, a user can click the link of a row of any shipment and open the page on the FedEx website that corresponds to the tracking number.

On the **Results Grid** tab of the *Generic Inquiry* form, you can turn on the built-in navigation for any column of the results grid. You use the **Navigation** tab of the form to specify the list of forms and webpages to which users can navigate from the inquiry. For each screen ID (for an Acumatica ERP form) and URI (for a page) that you list, you can specify navigation parameters and select the way to open the form or page.

Learning Objectives

In this chapter, you will learn how to specify different navigation options from generic inquiries to make the user's work easier.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. You want to give users flexible ways to navigate from generic inquiry forms to other Acumatica ERP forms and to webpages, according to your business requirements.

Built-In Navigation Capabilities

You enable or disable the built-in navigation by using the **Default Navigation** check box on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form. This functionality works only for fields that have a default form specified in the source code. With the **Default Navigation** check box selected, the system displays the values in these fields as links in the inquiry results. When a user clicks such a link, the default form is opened in a pop-up window. For example, for the field that holds the invoice reference number, the default form is the *Invoices and Memos* (AR301000) form. When you add a new row to the list on the **Results Grid** tab, the **Default Navigation** check box is selected by default.

Navigation to Non-Default Forms

You can customize navigation to non-default forms. In this case, on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, you need to select the data field that should be displayed in the inquiry results as a link to a non-default form. For this data field, you cancel the default navigation by clearing the **Default Navigation** check box, and you specify the non-default form in the **Navigate To** column. If you leave the **Default Navigation** check box selected, the form selected in the **Navigate To** column will be ignored—that is, the link will open the default form. If you clear the **Default Navigation** check box and you do not specify a form in the **Navigate To** column for the data field, the data field will not be displayed as a link.

Navigation Settings

On the **Navigation** tab of the *Generic Inquiry* (SM208000) form, you specify the list of navigation targets (with one row for each target) to which users can navigate from the resulting generic inquiry, as well as various other navigation settings. For each navigation target to which you want to support navigation, on this tab, you need to specify the following:

1. The link to which you want to navigate, in the **Navigation Targets** pane of the tab. In the **Link** column of the table in this pane, you select the screen ID and name of an Acumatica ERP form or specify the uniform resource identifier (URI) of the webpage.

   You can specify a form of any of the following types:

   - Inquiry
   - Data entry
   - Report
   - Mass processing
   - Dashboard

   You can specify a form with hidden key fields, as you can any other forms; an example of a form with hidden key fields is the *Email Activity* (CR306015) form.

2. The navigation mode (in the **Window Mode** column of the table in the **Navigation Targets** pane) in which the navigation target in the row is opened; see the next section of this topic for details.

3. The data field values (in the table, on the **Navigation Parameters** tab, on the right pane of the tab) the system should pass to the navigation target when it is opened. For example, if you want the user to click a link to view the details of a sales order on the *Sales Orders* (SO301000) form, you need to pass the order type and the order number.

   The system maps the fields of the form or the parameters from the URI you have added in the **Navigation Targets** pane to the fields of the generic inquiry that you are configuring.

   > In the original URI of the target resource, you surround each parameter with double parentheses.

   For example, suppose that the URI of the page to which you are configuring navigation is the following: `https://www.google.com/search?q=((query))&lang=((language))`. Then in the **Field** column of the **Navigation Parameters** table, the drop-down list contains the following elements:

   - *((query))*
   - *((language))*

   When you select a field of the form or a parameter from the URI in the **Field** column of the **Navigation Parameters** table, the system makes the following options available for selection in the **Parameter** column, depending of the type of the navigation target:

   - For an inquiry form, a mass processing form, or a page referred to by the specified URI: Fields of all data access classes used in the inquiry
   - For a data entry form: Key fields of the entry form
   - For a report form: Report parameters
   - For a dashboard: Dashboard parameters

   An example of the options available for selection in the **Parameters** column is shown in the following screenshot.

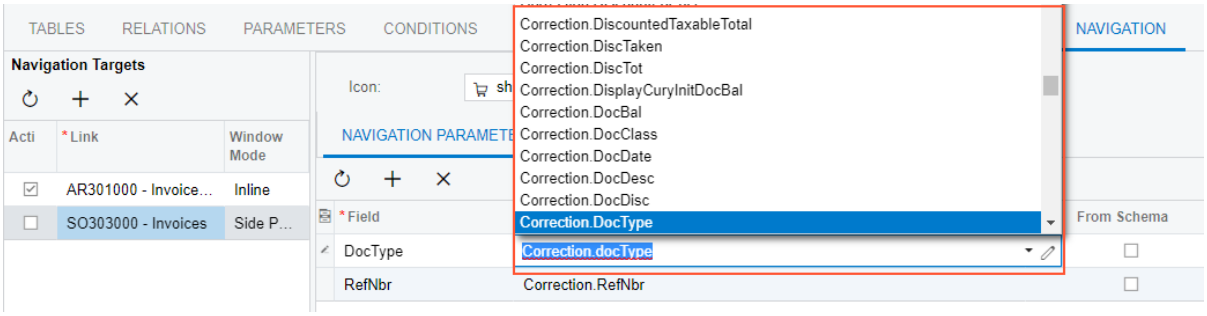


Figure: Navigation parameters provided for selection by the system

Ways That Forms Can Be Opened

In the **Navigation Targets** pane of the **Navigation** tab of the *Generic Inquiry* (SM208000) form, you can specify the navigation mode of each form or webpage that can be opened from the generic inquiry form. The navigation mode determines how the form or page is opened when the user of the inquiry form clicks the link. For each navigation target, you select one of the following options in the **Window Mode** column of the table in the **Navigation Targets** pane:

- *Same Tab* (default): The navigation target is opened in the same browser tab, replacing the inquiry form.
- *New Tab*: The navigation target opens in a new tab of the same browser.
- *Pop-Up Window*: The navigation target opens in a pop-up window.
- *Side Panel*: The navigation target opens in the side panel.

Use of a Side Panel

When the *Side Panel* option is selected in the **Window Mode** column of the table in the **Navigation Targets** pane of the **Navigation** tab of the *Generic Inquiry* (SM208000) form, while a user is still viewing the main generic inquiry form, the user can quickly view (and edit, if applicable) the form or webpage related to a record that has been selected in the inquiry results.

If the *Side Panel* option is selected in the **Navigation Targets** pane of the **Navigation** tab, the **Icon** box is displayed in the right pane, above the table with navigation parameters. In the **Icon** box, you can select the icon to be displayed on the side panel bar. On the resulting generic inquiry form, if the user selects a record in the inquiry results and clicks the icon, the system opens the side panel with the navigation target to which navigation has been configured. If the **Navigation Targets** pane contains multiple active rows with the *Side Panel* window mode, each of these rows is represented as a tab on the side panel.

You can add multiple side panel navigation settings to a generic inquiry. (Only one side panel can be displayed at a time.) The only factor limiting the number of side panel navigation settings is the set of data fields that can be passed as parameters (specified on the **Tables** tab of the form). If a navigation target requires a parameter for which you have no data to pass, the navigation will not work—that is, on the side panel of the generic inquiry form, the system will not display the record of the form or webpage to which navigation has been configured. You can expand the set of data fields that can be passed as parameters by adding new tables on the **Tables** tab and setting up table relations on the **Relations** tab.

You may need to deactivate a side panel tab temporarily—for example, while editing its settings. To do this, on the **Navigation** tab of the *Generic Inquiry* form, in the **Navigation Targets** pane, you clear the check box in the **Active** column of the row whose side panel tab should be deactivated. This check box is available for only the navigation targets for which **Window Mode** is set to *Side Panel*. Once you save these changes to the generic inquiry, when a user opens the resulting generic inquiry form, the side panel is no longer displayed (if there are no other active rows with the *Side Panel* window mode in the **Navigation Targets** pane) or the icon corresponding to the now-deactivated side panel tab is not displayed (if there are other active rows with the *Side Panel* window mode). Thus, the user cannot view the corresponding navigation target in the side panel.

You can quickly reorder the icons for the tabs in the side panel if multiple navigation targets have been configured to be displayed there. You can easily display the icons for the navigation targets in the order that corresponds to the order in which users usually work with the navigation targets, based on the company's business processes. To reorder icons in the side panel, on the **Navigation** tab of the *Generic Inquiry* form, in the **Navigation Targets** pane, you drag the rows in the list to the needed place; you then save the generic inquiry. In the resulting generic inquiry form, the icons in the side panel are displayed in an order that corresponds to the order of the navigation targets in the list in the **Navigation Targets** pane.

You can specify the conditions that must be met for a side panel to be visible. In the **Navigation Targets** pane, on the **Navigation** tab of the *Generic Inquiry* form, you can click any row with *Side Panel* selected in the **Window Mode** column, which makes the **Visibility Conditions** tab available in the right pane. On this tab, you can specify a condition or a set of conditions that must be met for the side

panel to be visible for users. The table on the **Visibility Conditions** tab has the same structure as the table on the **Conditions** tab of the same form.

Enabling Navigation: To Enable the Side Panel

In this activity, you will learn how to modify an existing generic inquiry to add the ability to view the details of a record selected in the inquiry results in the side panel.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has requested an inquiry form that displays data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant has asked you to give users the capability to view the details of any listed invoice or memo in a side panel.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Navigation** tab of the *Generic Inquiry* (SM208000) form, you will specify the *Invoices and Memos* (AR301000) form to be displayed in a side panel of the resulting inquiry form. You will also provide the navigation settings the system should use to display the details of the invoice or memo whose identifier the user clicks in the inquiry results.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB7-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry* form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step: Specifying Navigation Settings for the Side Panel

To modify the copied generic inquiry to specify the needed navigation settings for the side panel, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB7-ARInvoicesMemos*.
3. On the **Navigation** tab, in the **Navigation Targets** pane, add a row, and in the **Link** column, select *AR301000 - Invoices and Memos* as the row value. To do this, you click the selector icon; in the lookup table, type `AR301000` in the Search box, and double-click the row with the form.
4. In the **Window Mode** column, select *Side Panel*.
5. On the form toolbar, click **Save**.
6. On the **Navigation** tab, while the row you added is still selected in the **Navigation Targets** pane, in the **Icon** box of the right pane, select *account details*.

   This box appears when you select *Side Panel* in the **Window Mode** column.
7. In the **Navigation Parameters** table (also in the right pane), add a row, and specify the following settings in the added row:
   - **Field**: *DocType*
   - **Parameter**: *ARInvoice.DocType*
8. Add another row, and specify the following settings:
   - **Field**: *RefNbr*
   - **Parameter**: *ARInvoice.RefNbr*
9. On the form toolbar, click **Save**.
10. On the form toolbar, click **View Inquiry** to preview how your changes have affected the inquiry.
11. Click a row with an invoice or memo, and notice that the system displays its details in the side panel (see the following screenshot).

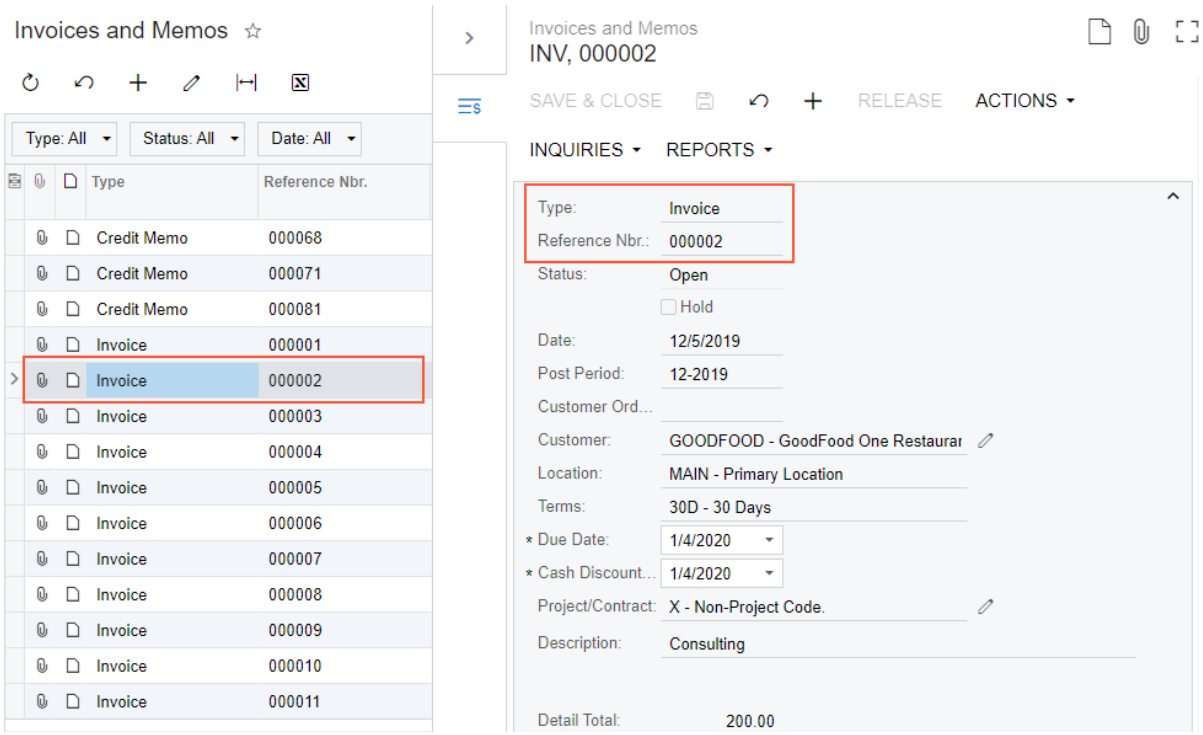


Figure: Generic inquiry with a side panel

Self-Test Exercise

Now that you learned how to enable the side panel and specify navigation parameters, try to apply the knowledge and add the *Customers* (AR303000) form to the side panel to a copy of the AR-Invoices and Memos generic inquiry. On the resulting inquiry, by clicking a row, users should be able to view the details of a customer account associated with any invoice or memo listed in the inquiry results.

On the **Navigation** tab of the *Generic Inquiry* (SM208000) form, in the **Navigation Targets** pane, you add a row with the *Customers* form, select the window mode, select an icon, and specify the navigation parameters suggested by the system.

Enabling Navigation: To Specify Visibility Conditions for a Side Panel

In this activity, you will learn how to specify visibility conditions for a side panel.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. A sales representative of your company has requested an inquiry form that displays data about business accounts. You have offered the predefined Business Accounts (CR3030PL) generic inquiry form, which has the *CR-BusinessAccounts2018R1* inquiry title and the *Business Accounts* site map title specified on the *Generic Inquiry* (SM208000) form, but the sales representative has asked you to give users the capability to view the following detailed information on the side panel:

- For business accounts of vendor type: Vendor details on the *Vendors* (AP303000) form

- For business accounts of customer type: Customer details on the *Customers* (AR303000) form
- For business accounts of business account type: Business account details on the *Business Accounts* (CR303000) form

> The Business Accounts (CR3030PL) generic inquiry form, which is the list of the business accounts that have been created on the *Business Accounts* (CR303000) form, is the substitute form that is opened when you click the *Business Accounts* link in a workspace or a list of search results.

Process Overview

On the **Navigation** tab of the *Generic Inquiry* (SM208000) form, you will configure the *Vendors* (AP303000) form, the *Customers* (AR303000) form, and the *Business Accounts* (CR303000) form to be displayed in the side panel of the resulting inquiry form. You will provide the navigation settings that the system should use to display the details of the business account whose identifier the user clicks in the inquiry results. You will also specify visibility the conditions of the side panel for which the system will display the details of the business account that the user clicks in the inquiry results.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   > The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step 1: Specifying the Navigation Settings for the Side Panel

To specify the needed navigation settings for the side panel of the generic inquiry, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB1-CRBAccounts*.

   This generic inquiry is a copy of the generic inquiry with the *CR-BusinessAccounts2018R1* inquiry title and the *Business Accounts* site map title, which is associated with the predefined Business Accounts (CR3030PL) generic inquiry form. Notice that the *S130 Business Accounts* site map title is specified for it.
3. On the **Navigation** tab, in the **Navigation Targets** pane, add a row, and in the **Link** column, select *AP303000 - Vendors*.

   > When you add a row on the **Navigation Targets** pane and select *Side Panel* in the **Window Mode** column, the check box in the **Active** column is selected, which means that the side panel is enabled.

4. Add one more row, and select *AR303000 - Customers* in the **Link** column.
5. Add one more row, and select *CR303000 - Business Accounts* in the **Link** column.
6. In the **Window Mode** column for all the added rows, select *Side Panel*.
7. On the form toolbar, click **Save**.
8. In the **Navigation Targets** pane, click the row with the *AP303000 - Vendors* link, and in the **Icon** box of the right pane, select *directions car*.

   > The **Icon** box appears when you select a row for which *Side Panel* is selected in the **Window Mode** column.

9. In the **Navigation Targets** pane, click the row with the *AR303000 - Customers* link, and in the **Icon** box of the right pane, select *shopping cart*.
10. In the **Navigation Targets** pane, click the row with the *CR303000 - Business Accounts* link, and in the **Icon** box of the right pane, select *badge*.
11. On the form toolbar, click **Save**.
12. In the **Navigation Targets** pane, click *AP303000 - Vendors*, and in the **Navigation Parameters** table (in the right pane), add a row, and specify the following settings in the added row:
    - **Field**: *AccCD*
    - **Parameter**: *BAccount.AcctCD*
13. On the form toolbar, click **Save**.
14. In the **Navigation Targets** pane, click *AR303000 - Customers*, and in the **Navigation Parameters** table, add a row, and specify the following settings in the added row:
    - **Field**: *AccCD*
    - **Parameter**: *BAccount.AcctCD*
15. On the form toolbar, click **Save**.
16. In the **Navigation Targets** pane, click *CR303000 - Business Accounts*, and in the **Navigation Parameters** table, add a row, and specify the following settings in the added row:
    - **Field**: *AccCD*
    - **Parameter**: *BAccount.AcctCD*
17. On the form toolbar, click **Save**.

Step 2: Configuring Visibility Conditions for the Side Panel

To configure visibility conditions for side panels, do the following:

1. While you are still viewing the *DB1-CRBAccounts* inquiry on the **Navigation** tab of the *Generic Inquiry* (SM208000) form, in the **Navigation Targets** pane, click the row with the *AP303000 - Vendors* link, and in the right pane, select the **Visibility Conditions** tab.

> When the *Side Panel* option is selected in the **Window Mode** column, the **Visibility Conditions** tab is displayed on the right pane.

2. On the **Visibility Conditions** tab, add a row, and specify the following settings:
   - **Data Field**: *BAccount.Type*
   - **Condition**: *Equals*
   - **From Scheme**: Selected
   - **Value**: *Vendor*
3. On the form toolbar, click **Save**.
4. In the **Navigation Targets** pane, click the row with the *AR303000 - Customers* value, and on the **Visibility Conditions** tab of the right pane, add a row, and specify the following settings:
   - **Data Field**: *BAccount.Type*
   - **Condition**: *Equals*
   - **From Scheme**: Selected
   - **Value**: *Customer*
5. On the form toolbar, click **Save**.
6. In the **Navigation Targets** pane, click the row with the *CR303000 - Business Accounts* value, and on the **Visibility Conditions** tab of the right pane, add a row, and specify the following settings:
   - **Data Field**: *BAccount.Type*
   - **Condition**: *Equals*
   - **From Scheme**: Selected
   - **Value**: *Business Account*
7. On the form toolbar, click **Save**.
8. On the form toolbar, click **View Inquiry** to preview how your changes have affected the resulting inquiry form. In the inquiry results, click a row with a business account of the *Vendor* type, and notice that on the side panel, only one icon (the *directions car* icon) is displayed. Click this icon, and notice that in the side panel, the system displays detailed information about the selected vendor on the *Vendors* (AP303000) form (see the following screenshot).

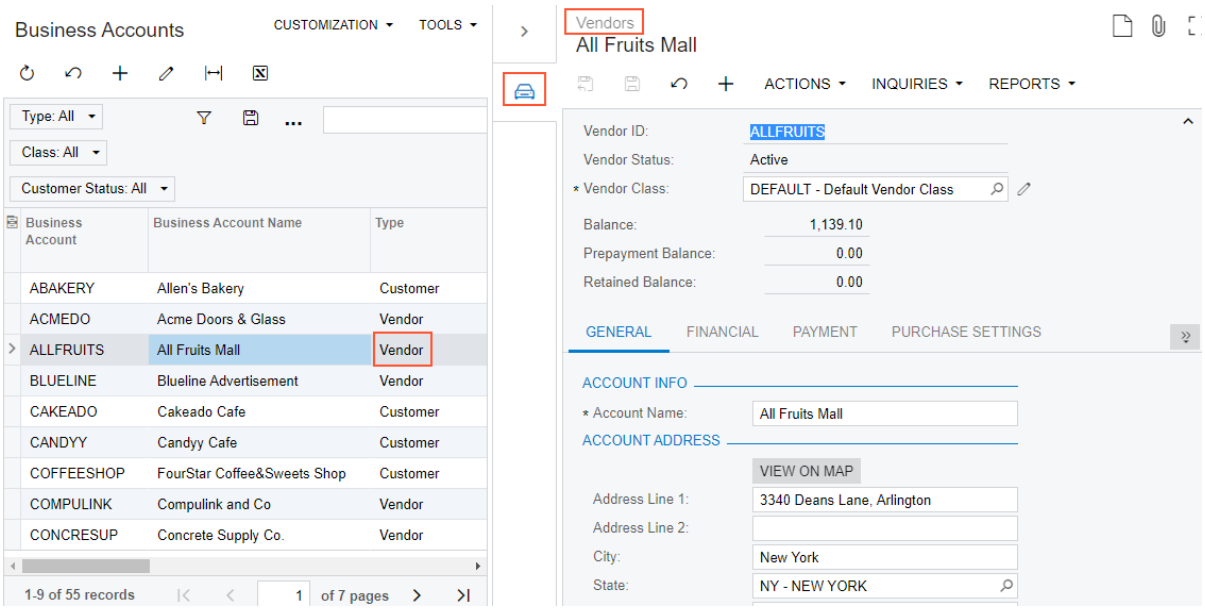


Figure: The list of business accounts on the left and the Vendors form in the side panel

9. In the inquiry results, click a row with a business account of the *Customer* type, and notice that on the side panel, only one icon (the *shopping cart* icon) is displayed. In the side panel, which is already opened, notice that the system displays detailed information about the selected customer on the *Customers* (AR303000) form.

10. In the inquiry results, click a row with a business account of the *Business Account* type, and notice that on the side panel, only one icon (the *badge* icon) is displayed. In the side panel, notice that the system displays detailed information about the selected business account on the *Business Accounts* (CR303000) form.

Enabling Navigation: To Configure Navigation to an External URI

In this activity, you will learn how to configure navigation from a generic inquiry form to an external URI.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. A sales manager of your company has requested an inquiry form that displays a list of shipped packages. This generic inquiry should allow the manager to monitor delivery of the packages by FedEx delivery services company. The sales manager has asked you to make it possible to open a page on the FedEx site with details of the package, based on the tracking number.

Process Overview

For the generic inquiry, on the **Navigation** tab of the *Generic Inquiry* (SM208000) form, you will specify the link with the tracking number parameter to a page on the FedEx site. You will also provide the navigation settings the system should use to display the details of the package whose tracking number the user clicks in the inquiry results.

In this activity, you will use the generic inquiry that has the *DB1-SOPackages* inquiry title and the *S130 Packages* site map title specified on the *Generic Inquiry* (SM208000) form. You will modify this generic inquiry as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step: Configuring Navigation to an External URI

To configure navigation to an external URI, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB1-SOPackages*.
3. In the **Navigation Targets** pane of the **Navigation** tab, add a row, and in the **Link** column of the row, enter the following URI:

   ```
   https://www.fedex.com/apps/fedextrack/?action=track&trackingnumber=((TrackingNumber))
   ```
4. In the **Window Mode** column of the row, select *Pop-Up Window*.
5. On the **Navigation Parameters** tab of the right pane, add a row, and specify the following settings in the added row:
   - **Field**: *((TrackingNumber))*
   - **Parameter**: *SOPackageDetail.TrackNumber*
6. On the form toolbar, click **Save**.
7. On the **Results Grid** tab, in the row with *TrackNumber* in the **Data Field** column, clear the **Default Navigation** check box.
8. In the same row, in the **Navigate To** column, select the URI that you have entered in the **Navigation Targets** pane—that is, *https://www.fedex.com/apps/fedextrack/?action=track&trackingnumber=((TrackingNumber))*.

   Thus, in the resulting generic inquiry form, the system will display values in the **Tracking Number** column with tracking numbers as links. When a user clicks a link in this column, the system will open the window with the FedEx tracking information based on the tracking number.
9. On the form toolbar, click **Save**.

10. Click the eye icon on the side panel to preview how your changes have affected the resulting generic inquiry form. In the **Tracking Number** column, click *398305336614*, and notice that the system navigates to the *https://www.fedex.com/apps/fedextrack/?action=track&trackingnumber=398305336614* URI (see the following screenshot).

> The data on third-party webpages is subject to change. Therefore, the resulting generic inquiry form may differ from the data shown in the screenshot.

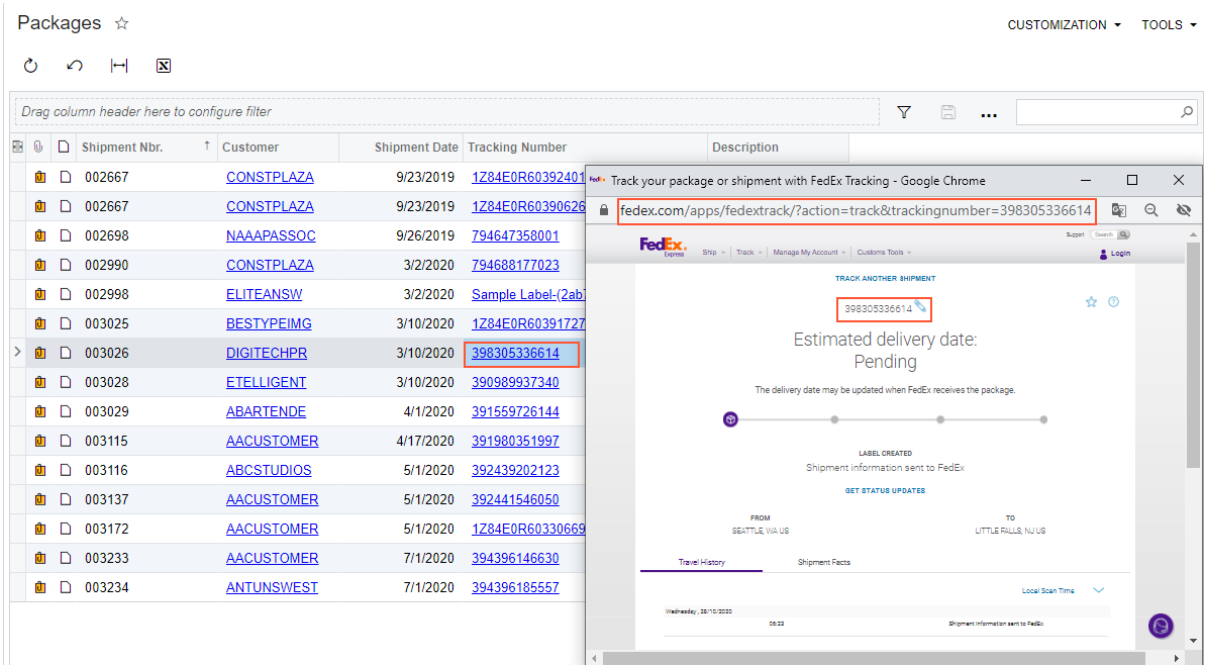


Figure: The resulting generic inquiry form with the page associated with the external URI

Lesson 1.8: Making a Generic Inquiry a Substitute Form

Making a Generic Inquiry a Substitute Form: General Information

In Acumatica ERP, you can create a generic inquiry that presents a list of records that were entered on a particular data entry form (which is called the *primary form* in this context). Once you have created the generic inquiry form, you can use it as an *entry point* to the primary form. This means that when you click the name of the primary form while searching for or navigating to it, you will instead access the generic inquiry form that contains the list of records. If you click the link of a record identifier in the list, the primary form (that is, the data entry form) opens with that record displayed. The generic inquiry form is called the *substitute form* in this context.

Learning Objectives

In this chapter, you will learn how to substitute an inquiry form for a data entry form.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. You need to give users the ability to scan lists of records and find needed records quickly. You will accomplish this task by substituting inquiry forms (lists of records) for the related data entry forms.

Substitution of an Inquiry Form for a Primary Form

You configure the replacement of a primary form with a substitute form on the **Entry Point** tab of the *Generic Inquiry* (SM208000) form. To do this, in the **Entry Screen Settings** section of the form, you specify the primary form in the **Entry Screen** box and then select **Replace Entry Screen with This Inquiry in Menu** check box.

> Replacing a primary form with a substitute form in this way does not remove the primary form, which can still be used. This setting affects only which form is *initially* opened when a user clicks the form name in a workspace menu or search results.

When you replace a primary form with an inquiry form, the system automatically adds the corresponding navigation settings for this inquiry on the **Navigation** tab. It also sets the **Window Mode** for the path to the *Inline* option (as shown in the following screenshot), which is not available for selection by users.

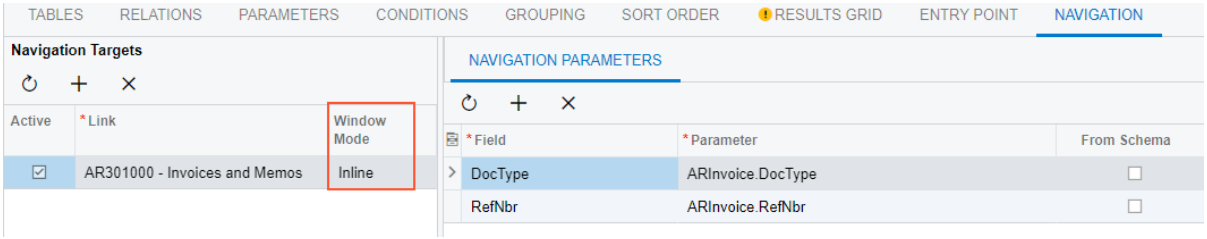


Figure: The Window Mode setting of Inline

When you save an inquiry with the replacement of a data entry form configured for this inquiry, the system adds a row to the *Lists as Entry Points* (SM208500) form. This row contains the entry screen identifier and name in the **Entry Screen ID** column, the substitute screen identifier and name in the **Substitute Screen ID** column, and the indicator of whether the replacement is active in the **Active** column.

Suspension of the Replacement of an Entry Form with a Substitute Form

You can activate or suspend the replacement of any entry form any time you want. You could, for example, do this temporarily, to make an inquiry form invisible to other users while you are making modifications to it. You can suspend the replacement in either of the following ways:

- On the *Lists as Entry Points* (SM208500) form, by clearing the check box in the **Active** column in the row for the entry form that was replaced
- On the *Generic Inquiry* (SM208000) form, by clearing the **Replace Entry Screen with Inquiry in Menu** check box on the **Entry Point** tab (**Entry Screen Settings** section) for the generic inquiry that was used as a substitute form

Suspending the replacement does not remove the entry with the pair of forms from the list on the *Lists as Entry Points* form. For details about suspending the replacement of an entry form, see *Making a Generic Inquiry a Substitute Form: To Suspend the Replacement of a Primary Form*.

On the *Lists as Entry Points* form, if you delete the row containing the entry form and the corresponding substitute form, the following changes occur in the system:

- The replacement is canceled, but the forms are not deleted.
- On the *Generic Inquiry* form, the **Replace Entry Screen with Inquiry in Menu** check box on the **Entry Point** tab (**Entry Screen Settings** section) is cleared.

Publication of a Generic Inquiry Form as a Substitute Form

You can use only a published generic inquiry form as a substitute form. When an inquiry has been created, you can publish it. To publish the generic inquiry, in the Summary area of the *Generic Inquiry* (SM208000) form, you select the **Make Visible on the UI** check box. When you save your changes, the system automatically assigns a screen identifier to the generic inquiry form. The system also automatically assigns the default workspace (that is, *Data Views*) and the default category (that is, *Inquiries*) to this inquiry form. After you activate the substitution of a data entry form with this generic inquiry form, the generic inquiry form inherits the workspace and category settings from the data entry form.

Modification of a Published Substitute Form

If you want to modify an inquiry that is currently used as a substitute form, you can temporarily hide it —that is, make the inquiry not visible to other users.

You can hide a published inquiry form that has been configured as a substitute form in one of the following ways:

- By clearing **Active** on the *Lists as Entry Points* (SM208500) form
- By clearing the **Replace Entry Screen with Inquiry in Menu** check box on the **Entry Point** tab on the *Generic Inquiry* (SM208000) form

We strongly recommend leaving the **Make Visible on the UI** check box selected on the *Generic Inquiry* form for a generic inquiry that has been published already. Clearing the check box also causes the system to clear the value of the **Screen ID** box, which may cause issues with any widgets and pivot tables based on the published generic inquiry.

Additional Operations on a Substitute Form

With the settings in the **Operations with Records** section of the **Entry Point** tab of the *Generic Inquiry* (SM208000) form, you can specify additional operations that a user can perform on a substitute form. By selecting the appropriate check boxes in this section, you enable the following capabilities for the inquiry form:

- Mass actions on records (the **Enable Mass Actions on Records** check box): When you select this check box, the **Mass Actions** tab appears on the *Generic Inquiry* form. On this tab, you can select any of the available options from the drop-down list according to your needs. The available options depend on the content of the entry form for which you have created the inquiry form. For example, the following options might be available for the form: *Validate Address* and *Mark As Validated*.

After you have selected the required options and saved your changes to the generic inquiry, the selected commands will appear on the **Actions** menu on the form toolbar of the substitute form. A user can select one record or multiple records on the **Actions** menu and then apply any available command to the selected records. Some actions can cause pop-up windows to be displayed. You can define the types of these actions when you test your customization.

> In Acumatica ERP, mass actions that involve redirection to other forms and display of pop-up windows are not supported because this scenario may cause performance issues.

- Mass removal of records (the **Enable Mass Record Deletion** check box): If you select this check box, the **Delete** button and the Included column will be available on the substitute form. A user can select one record or multiple records and then delete them. (Additionally, you can configure the system to automatically confirm the deletion of records after this button is clicked and before the records are actually deleted, as described in the next list item).

- Automatic confirmation of record deletion (the **Auto-Confirm Custom Delete Confirmations** check box): If you select this check box, when a user tries to delete one record or multiple records, the system deletes the records without confirmation.

- Mass update of records (the **Enable Mass Record Update** check box): If you select this check box, the **Update** and **Update All** commands will be available in the **Actions** menu on the form toolbar of the substitute form; also, the Included column will be available on the substitute form, so that the user can select a record or multiple records for updating.

  If the **Enable Mass Record Update** check box is selected on the **Entry Point** tab, the **Mass Update Fields** tab appears on the *Generic Inquiry* form. On this tab, you select the field or fields that should be updated if a user clicks one of the commands on the **Actions** menu. A user can select one record or multiple records on the substitute form and then change the specified fields of the selected records.

- Creation of new records (the **Enable New Record Creation** check box): If you select this check box, the **New Record** button will be available on the form toolbar of the substitute form. When a user clicks the button, the entry form opens so that the user can add a new record.

  > If you enable the creation of new records on the substitute form, you can define default values for the fields that appear when you add a record. The system will automatically enter these values in the corresponding UI elements when a user adds a new record. You define the default values in the **New Record Defaults** table on the **Entry Point** tab.

> If you need to use additional operations on a substitute form (that is, if you select any of the check boxes described above), we recommend that you modify the predefined generic inquiry instead of creating a copy of the predefined generic inquiry and modifying the copy.

Access Rights to Substitute Forms

In Acumatica ERP, every form has its own levels of access rights that you can specify for the user roles in the system by using the *Access Rights by Screen* (SM201020) form. You can change the level of access rights to the data entry and generic inquiry forms independently of each other. However, when an inquiry form replaces the corresponding data entry form, it becomes the substitute form and inherits the level of access rights the users of each role have to the data entry form. Thus, to change the access rights users have to the substitute form, you need to change the access rights to the entry

form. You can manage access rights to substitute forms in the same ways as you manage access rights to other generic inquiries. For more information about access rights, see *Managing Access Rights To Generic Inquiries*.

If you suspend an inquiry form's replacement of a data entry form, the level of access to the inquiry form reverts to its initial state (that is, the levels of access rights roles had to the inquiry form before it was defined to replace a data entry form).

Making a Generic Inquiry a Substitute Form: To Configure an Inquiry as an Entry Point

In this activity, you will learn how to modify an existing generic inquiry to make it a substitute form for a primary data entry form. Once you have done this, when a user clicks the name of the entry form in a workspace or a list of search results, the system will open the substitute form. If the user clicks a record name in the inquiry results, the entry form will open.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has asked you to replace the *Invoices and Memos* (AR301000) form with a generic inquiry. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form; this form is the substitute form for the *Invoices and Memos* form by default. The accountant said that this inquiry form generally provides the needed functionality, but that the new form should also give users the abilities to view the total tax amount and to create a new document directly on the inquiry form.

In the system preparation for this activity, you will copy the predefined inquiry to leave the original inquiry intact; you will modify its copy as requested.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the **Entry Point** tab of the *Generic Inquiry* (SM208000) form, you will specify the requested generic inquiry as a substitute form for the *Invoices and Memos* (AR301000) form, and enable the creation of new records and deletion of multiple records.

In this activity, you will use a copy of the predefined Invoices and Memos (AR3010PL) generic inquiry form. This copy has the *DB8-ARInvoicesMemos* inquiry title and the *S130 Invoices and Memos* site map title specified on the *Generic Inquiry*form. You will modify this copy as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.

2. You have signed in to Acumatica ERP with the following credentials:

- Username: *gibbs*
- Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to modify a generic inquiry.

Step: Defining the Generic Inquiry as an Entry Point

To modify the generic inquiry to replace the primary form, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *DB8-ARInvoicesMemos*.
3. In the **Site Map Title** box of the Summary area, type `Invoices and Memos (Substitution)` or a title of your choice.
4. On the **Results Grid** tab, add a row with the following settings:
   - **Object**: *ARInvoice*
   - **Data Field**: *TaxTotal*
   - **Caption**: `Total Tax`
5. On the **Entry Point** tab, in the **Entry Screen Settings** section, do the following:
   a. Make sure that, in the **Entry Screen** box, the *Invoices and Memos* (AR301000) form is selected.
   b. To replace the selected entry form with the substitute form (that is, to direct the system to display the generic inquiry form instead of the entry form when a user clicks the menu item), select the **Replace Entry Screen with this Inquiry in Menu** check box.
   c. In the dialog box, which opens, click **Yes**.
6. To give a user the ability to add new records from the substitute form, in the **Operations With Records** section, select the **Enable New Record Creation** check box. With this check box selected, the **New Record** button appears on the form toolbar of the substitute form (that is, the inquiry form). When the user clicks this button, the system opens the entry form so that the user can add a new record.
7. On the form toolbar, click **Save**.
8. On the **Navigation** tab, review the navigation settings, which have been added automatically, and notice that the **Window Mode** is set to *Inline* and unavailable for editing. This means that the substitute form opens in the same browser tab when a user is adding a new record or viewing the details of an existing record.
9. Click the eye icon on the side panel to preview how your changes have affected the inquiry. The system has added to the form toolbar the actions you have enabled. If you double-click a row in the table, the system opens the *Invoices and Memos* form with the details of the selected record.
10. Search for the *Invoices and Memos* form by its name, *Invoices and Memos*, and notice that the search results do not contain the name of the form. Then search for the form by its identifier,

AR301000, and notice that when you click the resulting form, the system opens the inquiry form that is configured as the substitute form.

Making a Generic Inquiry a Substitute Form: To Suspend the Replacement of a Primary Form

In this activity, you will learn how to suspend the replacement of a primary form with a substitute form. Once you have done this, when a user clicks the name of the entry form in a workspace or a list of search results, the system will open the entry form instead of the substitute form it currently opens.

Story

Suppose that you are a technical specialist in your company who is working on customizations. Earlier, you configured Acumatica ERP in your company so that the *Invoices and Memos* (AR301000) form is replaced with the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. Now an accountant of your company has asked you to make changes to the generic inquiry that is defined as a substitute form. Before you begin making these changes, you need to suspend the replacement of the primary form, so that the generic inquiry form is not opened while you are in the process of making changes to it.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the *Lists as Entry Points* (SM208500) form, you will clear the replacement for the *Invoices and Memos* (AR301000) form.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Suspending the Replacement of an Entry Form

To suspend the replacement of the entry form, do the following:

1. Open the *Lists as Entry Points* (SM208500) form.

2. In the table, locate the row with *AR301000 - Invoices and Memos* in the **Entry Screen ID** column, and clear the check box in the **Active** column for the row.

3. On the form toolbar, click **Save**.

Lesson 1.9: Transferring an Inquiry

Transferring an Inquiry: General Information

You can transfer a generic inquiry to another company or application instance as an XML file. To do this, you first need to export the inquiry as an XML file and then need to import the file in the target company or instance. Besides, you can export a generic inquiry form as an RPX file.

Also, you can export inquiry results (that is, the data in the results grid of a generic inquiry form) to an XLS file. Later you can transfer these inquiry results to another system that is not Acumatica ERP. In Excel, you can perform calculations for some columns and rows.

Learning Objectives

In this chapter, you will learn how to export and import a generic inquiry form as an XML file, how to export a generic inquiry form as an RPX file, and how to export inquiry results to an XLS file.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. You need to export an existing generic inquiry to transfer it to another company or application instance.

Export of a Generic Inquiry with Advanced Filters

If you export to an XML file a generic inquiry with advanced filters of any type configured—an advanced personal filter, an advanced shared filter, or an advanced default filter—the generic inquiry is exported with all of the advanced filters. If you then import the XML file to another tenant in which a user with the same username exists, all the filters are available in the generic inquiry results. If a user with another username imports the XML file, only the advanced shared filters are available for the user.

Export of a Generic Inquiry that a Pivot Table Is Based On

If you export to an XML file a generic inquiry for which a pivot table is saved as a filter tab, the system exports this inquiry with this pivot table. When you import this inquiry, the system also imports the related pivot table as a filter tab.

If you have configured a pivot table by using the *Pivot Tables* (SM208010) form—that is, if you have configured a pivot table as a form—then during export and import operations of the generic inquiry that the pivot table is based on, this pivot table is not transferred. If you want to have the pivot table transferred with the inquiry, you need to export and then import the pivot table separately on the *Pivot Tables* form.

When you import a pivot table on the *Pivot Tables* form, the **Make Visible on the UI**, **Site Map Title**, and **Workspace**, **Category** settings are not set.

Export of Inquiry Results to an XLS File

You can export top records of inquiry results to XLS file. You specify a number of records to export in the Summary area, in the **Export Top** box. By default, in this box, a value is not set. Inquiry results can include thousands of records. Processing of a large number of records impacts server performance and increases the time to perform the inquiry. In this case, you can limit a large number of records by specifying a value in the **Export Top** box.

If you specify the values that can increase the time to process the inquiry and can cause the server performance degradation, the system displays a warning.

Export of a Generic Inquiry that Is the Source of a Report

The exported inquiry can be used as a source for building a report by using the Acumatica Report Designer tool. You can export a generic inquiry as an RPX file to be used for creating a report in Acumatica Report Designer. To do this, on the *Generic Inquiry* (SM208000) form with the inquiry selected, click **Export as Report** on the form toolbar. The system will export the generic inquiry as an RPX file. The name of the RPX file corresponds to the name in the **Inquiry Title** box, but can include only letters and digits. If other symbols are used in the **Inquiry Title** box, they are deleted when the name is assigned to the RPX file. The resulting exported file will contain information about the data access classes (DACs) of the generic inquiry, such as the list of DACs, the relations between the DACs, the sort order, and the grouping.

Transferring an Inquiry: To Export and Import an Existing Inquiry as XML File

In this activity, you will learn how to export an existing inquiry as an XML file and then import the inquiry.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. Further suppose that your company uses multitenant configuration, and that the predefined Invoices and Memos (AR3010PL) generic inquiry form was deleted from one tenant by mistake. The accounting department that uses the tenant has asked you to recover the inquiry form. You have decided to transfer the predefined generic inquiry form from one tenant of your company to another.

Process Overview

To perform this activity, you need two tenants to be configured in your system: the one from which you export the generic inquiry form, and the one to which you import the generic inquiry form. You will configure these tenants during system preparation. (For more information on managing tenants, see *Managing Tenants*.) On one tenant, you will export the Invoices and Memos (AR3010PL) generic inquiry form as an XML file by using the *Generic Inquiry* (SM208000) form. Then on another tenant, you will import the XML file with the inquiry.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with two tenants that have the *U100* dataset. (Although you can name these tenants as you wish, in this activity, they will be referred to as *U1* and *U2* for simplicity.) A system administrator can perform this task for you.

2. You have signed in to the Acumatica ERP tenant *U1* with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> User *gibbs* is assigned the *Administrator* role, which has sufficient access rights to manage system configuration.

Step 1: Exporting the Existing Generic Inquiry

To export the generic inquiry, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box, select *AR-Invoices and Memos*.
3. On the form toolbar, click the clipboard icon, and select **Export as XML**.
4. Perform the necessary steps, which depend on your browser and settings, to download the `AR-Invoices and Memos.xml` file with the exported data.

The file is downloaded to the folder that is configured in your browser as a default folder.

Step 2: Importing the Generic Inquiry

To import the generic inquiry, do the following:

1. In the right corner of the top pane on the Acumatica ERP screen, click the User menu button, and select **Sign Out**.
2. Sign in to Acumatica ERP tenant *U2* with the following credentials:
   - Username: *gibbs*
   - Password: *123*
3. Open the *Generic Inquiry* form.
4. On the form toolbar, click **Clipboard > Import from XML**.
5. In the **Upload XML File** dialog box, click **Choose File**, and select the `AR-Invoices and Memos.xml` file to import.
6. Click **Upload** to upload the file to the system.

The system saves the generic inquiry automatically.

Lesson 1.10: Creating a Generic Inquiry

Creating a Generic Inquiry: General Information

A generic inquiry collects the data from the Acumatica ERP database based on the settings you specify when you design the inquiry. It then sorts, filters, and displays the inquiry results according to the

settings you have specified, so that a user does not have to perform all these steps manually. Because generic inquiries provide so much flexibility, the inquiry design process depends on your organization's specific business needs.

Learning Objectives

In this chapter, you will learn how to do the following:

- Prepare to create an inquiry
- Create a simple inquiry with one table
- Publish an inquiry

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. You need to deliver different inquiry forms that your colleagues may need for getting their jobs done.

Preparation for Creating a Generic Inquiry

To design a generic inquiry in Acumatica ERP, you need to have general knowledge of data access classes (DACs). In Acumatica ERP, the data is stored in a database, but users do not access the database directly; instead, they access it through data access classes. When building inquiries, you retrieve data from the data access classes rather than working with the database tables directly.

Before you begin creating the generic inquiry, you gather the needed information by doing the following:

1. *Identifying the DACs to be used for the inquiry*: The data to be used in a generic inquiry is available through DACs, which represent specific data from the system database. Based on the business needs the inquiry will meet, you need to decide what general type of data you want to collect from the system database in order to list it in the results grid of the inquiry form. Thus, you need to know on which form this data is entered.

2. *Inspecting UI elements to find the DACs and data fields*: Based on the data you will use in the generic inquiry, you have to open the data entry forms where the data is entered and explore the user interface elements of the forms to find out which classes and data fields you can use to access this data.

   For example, to discover the data access class that provides access to the sales order numbers, you need to inspect the form elements of the *Sales Orders* (SO301000) form.

For more information, see *Discovering DACs: General Information*.

Creation of a Generic Inquiry

To create a generic inquiry, you perform the following general steps:

1. Creating a generic inquiry: You create a generic inquiry on the *Generic Inquiry* (SM208000) form. For easier navigation between inquiries, we recommend that your organization define and follow naming conventions for the inquiry titles that you will enter in the **Inquiry Title** box.

> On the *Generic Inquiry* form, if you define user-selectable parameters that give users the ability to narrow the inquiry results, you can optionally specify the number of columns in which the inquiry parameters will be arranged on the resulting generic inquiry form, the maximum number of records to be displayed in the inquiry results, and the number of records to be displayed on every page of the inquiry results.

2. Specifying DACs: On the **Tables** tab of this form, you select the DACs (which are referred to as *tables* in most user interface elements) to be used in your generic inquiry. For each table, you specify a value in the **Alias** column. This value will be used in SQL statements to designate the table. You can type the value in the **Alias** column manually or leave it empty; if you do not specify a value, the value from the **Table Name** column will be used instead.

3. Configuring the results grid: On the **Results Grid** tab of the form, you select the column values from the DACs to display data. On this tab, you can specify how the results of the search in the database tables should be displayed, with each row on this tab corresponding to a column in the results grid of the inquiry form. You can specify formulas in the **Data Field** column to calculate the values of columns in the results grid by using the Formula Editor dialog box. In this dialog box, the formula can be entered directly in the formula editing area or composed by selecting fields and using operators and functions. For details, see *Modifying Inquiry Results: General Information* and *Using Formulas: General Information*.

Preview of Generic Inquiry

After you have completed the basic steps of creating the generic inquiry on the *Generic Inquiry* (SM208000) form and saved the settings that you have specified on the form, you can preview the generic inquiry form to make sure it meets your expectations. You can preview an inquiry directly from this form by clicking the eye icon on the side panel of the *Generic Inquiry* form. In this case, the system displays the resulting generic inquiry form on the panel of the form in the same browser tab. You can also preview an inquiry by clicking the **View Inquiry** button on the form toolbar. In this case, the system displays the resulting generic inquiry form in a new browser tab.

> You can preview an inquiry form by clicking the eye icon on the side panel of the form except in the following cases:
>
> - The *Side Panel* option is selected in the **Window Mode** column of any row on the **Navigation Targets** pane of the **Navigation** tab of the *Generic Inquiry* form
> - Advanced filters have been created on the resulting inquiry form

Refinement of a Generic Inquiry

The creation of a generic inquiry can involve additional specifications, based on the business needs of the users. In this case, you can use other tabs of the *Generic Inquiry* (SM208000) form to achieve the needed results, previewing the refined inquiry form as you make changes.

To further refine the generic inquiry you are designing, you can use the following functionality:

- Table relations: You can specify table relations between data access classes on the **Relations** tab, so that the system can generate SQL requests to get the required data from the tables involved. In the **Table Relations** area of this tab, you can specify the relations between **Parent** and **Child** tables by selecting a **Join Type**. In the **Data Field Links for Active Relations** area of this tab, for each pair of related tables, you can specify the link condition between the columns of the tables. For more details about table relations, see *Getting Data from Multiple DACs: General Information*.

- Parameters: On the **Parameters** tab, you select and configure the parameters to be placed in the Selection area of the generic inquiry form. The user can make selections in this area to filter the data displayed in the table. For more details about the parameters and conditions, see *Using Conditions and Parameters: General Information*.

- Conditions: You can use the **Conditions** tab to specify conditions that filter the data to be displayed. For example, an inquiry displaying a customer's balance, based on the specified conditions, can hide invoices with a balance of zero. For more details about the parameters and conditions, see *Using Conditions and Parameters: General Information*.

- Sorting: You can use the **Sort Order** tab to specify how the inquiry data is sorted—that is, the default order in which the results should be displayed on the inquiry form. For more details about the sorting and grouping, see *Applying Sorting and Grouping: General Information*.

- Grouping: You can group inquiry data by specifying grouping conditions on the **Grouping** tab. For example, you can group sales orders by date and status to get the count of sales orders, and their total and average amounts for each day and each status.

- Navigation: On the **Navigation** tab, you can optionally configure inquiry columns to contain links to Acumatica ERP forms and webpages. For example, you can configure a generic inquiry so that a user will be able to open the *Invoices and Memos* (AR301000) form with the details of a particular document in a new browser tab or in the side panel by clicking the link in the **Reference Nbr.** column of the inquiry. For details, see *Enabling Navigation: General Information*.

- Entry point: By using the **Entry Point** tab, you can optionally define the generic inquiry to be an entry point (that is, a substitute form) instead of the existing primary Acumatica ERP form. If you do this, when a user clicks the name of the primary form while navigating or searching, the system will open the generic inquiry form containing the list of records, and when you click the name of a record in the list, the primary form will open with that record selected. For more details about making a generic inquiry an entry point, see *Making a Generic Inquiry a Substitute Form: General Information*.

You might also want to change the inquiry title you have initially specified. To do this, you click **Actions > Change Inquiry Title** on the form toolbar of the *Generic Inquiry* form. In the dialog box that opens, you enter the new inquiry title for the generic inquiry and click **OK**. If this inquiry title is not unique, the system displays an error; you can enter another inquiry title. If the title is unique, the dialog box closes and the new title is inserted in the **Inquiry Title** box. You need to save your changes to the generic inquiry for this new title to be saved to the database.

Publication of a Generic Inquiry

When an inquiry has been created and all the necessary settings have been specified, you can preview and then publish it, so that it can be used by other users. To publish the generic inquiry form, in the Summary area of the *Generic Inquiry* (SM208000) form, you select the **Make Visible on the UI** check box for the generic inquiry to be published. Also in the Summary area, the system automatically assigns the default workspace (that is, *Data Views*) and the default category (that is, *Inquiries*) to this inquiry form, but you can override these settings at any time. For details on the automatic assignment of a workspace and category, see *Categories and Workspaces for Entities of Specific Forms*.

For details on the publication of a generic inquiry that is configured as a substitute form, see *Making a Generic Inquiry a Substitute Form: General Information*.

When you save the inquiry with the **Make Visible on the UI** check box selected, the system assigns the inquiry form an automatically generated screen ID in a format similar to that of the screen IDs of other forms in the system, with *GI* as the two-letter module code, followed by a six-digit number that

is one greater than the number portion of the most recently assigned screen ID for a generic inquiry. The system then adds the inquiry form to the site map so that it can be accessed from the specified workspace.

To change the automatically assigned screen identifier of a generic inquiry, you can click **Actions > Change Screen ID** on the form toolbar of the *Generic Inquiry* form. In the dialog box that opens, you enter the new screen ID for the generic inquiry and click **OK** to close the dialog box and begin the processing of the screen ID change. If this screen ID is not unique, the system displays an error on the form toolbar indicating that you need to enter another screen ID. If the processing of the change is successful, the system saves the generic inquiry with the new screen ID and changes this screen ID in all the system objects that are related to this generic inquiry

Also, the screen ID, site map title, workspace, and category of an inquiry can be modified on the *Site Map* (SM200520) form.

Specification of Access Rights to the Generic Inquiry

After you have published the generic inquiry, you can manage access rights to generic inquiries. On the *Access Rights by Screen* (SM201020) form, you select a role and one of the predefined levels of access rights. For more information, see *Managing Access Rights to Generic Inquiries: General Information*.

Modification of a Published Generic Inquiry

Users of a published generic inquiry form or their supervisors may request changes to the form.

In some cases, you will modify the generic inquiry directly. In other situations, you will leave the original inquiry intact, copy it, and make changes to a copy of it.

If you want to modify a generic inquiry form, you can temporarily hide it (that is, make it not visible to other users). To temporarily hide the inquiry, you clear the values of the **Workspace** and **Category** boxes on the *Site Map* (SM200520) form or on the *Generic Inquiry* (SM208000) form.

We strongly recommend that on the *Generic Inquiry* form, you leave the **Make Visible on the UI** check box selected for an inquiry that has been published already. Clearing the check box also clears the value of the **Screen ID** box, which may cause issues with the widgets or pivot tables based on the published inquiry.

Creating a Generic Inquiry: To Create an Inquiry Based on One DAC

In this activity, you will learn how to create a simple generic inquiry that collects data from one data access class (DAC). The activity describes the steps of designing a sample generic inquiry for testing purposes, so that you can develop a better understanding of the process.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms. An accountant of your company has requested an inquiry form that collects data about invoices and memos. You have offered the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, but the accountant instead wants a simpler inquiry that displays columns with the

document type, reference number, and the balance of the invoice with that number. The accountant has asked you to leave the default access rights to the inquiry.

Process Overview

The generic inquiry that you are going to create will have three columns to display the invoice reference number, the balance, and the document type. Thus, you will start by inspecting the *Invoices and Memos* (AR301000) form to explore which data access classes you can use to access the needed data.

Once you obtain these details, you will create a generic inquiry on the *Generic Inquiry* (SM208000) form and configure its results grid (that is, the columns and rows with data to be displayed).

When the inquiry has been created and all the necessary settings have been specified, you preview and then publish the inquiry.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Discovering DACs and Data Fields

To inspect user interface elements, do the following:

1. Open the *Invoices and Memos* (AR301000) form.
2. Point to the **Reference Nbr.** element, press Ctrl+Alt, and then click. The **Element Properties** dialog box opens. You are interested in two elements, **Data Class** and **Data Field**; these elements correspond to the data access class and data field you need, which are, respectively, *ARInvoice* and *RefNbr*.

   As an alternative, you can click **Customization > Inspect Element** on the form title bar and then click the **Reference Nbr.** element.
3. While you are pointing at the **Balance** element, press Ctrl+Alt and click to open the **Element Properties** dialog box. Notice that the **Data Class** is again *ARInvoice*, while the **Data Field** is *CuryDocBal*.
4. Inspect the **Type** element, and notice that its **Data Field** is *DocType* and that the **Data Class** is again *ARInvoice*.

   You have discovered that the data access class you need is *ARInvoice* and the data fields you need are *DocType*, *RefNbr*, and *CuryDocBal*.

Step 2: Creating the Generic Inquiry

To begin the process of creating the generic inquiry, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the Summary area, in the **Inquiry Title** box, type the name for the inquiry: `DB-SampleGenericInquiry`.
3. Leave the **Select Top** box blank, so that you can display all the inquiry results.
4. On the **Tables** tab, do the following:
   a. On the table toolbar, click **Add Row**.
   b. In the **Table Name** column of the added row, select *PX.Objects.AR.ARInvoice*. (In this example, you need to add a row for only this DAC, because the fields that are going to be used are in this DAC.)

      > The list has about 600 DACs, so in the lookup table, you should use the Search box (upper right) to find the DAC.

   c. In the **Alias** column, type `ARInvoice`.
5. On the form toolbar, click **Save**.

Step 3: Configuring the Results Grid

To configure the results grid (that is, the columns showing the data in the generic inquiry form), do the following:

1. On the **Results Grid** tab of the *Generic Inquiry* (SM208000) form with *DB-SampleGenericInquiry* selected, on the table toolbar, click **Add Row** to add a new row, and do the following:

   > To speed up the selection of items from the list, start typing the names of the values. The system will filter the list based on your input.

   a. In the **Object** column of the added row, select *ARInvoice*.
   b. In the **Data Field** column, select *DocType*.
2. Again click **Add Row** to add a new row, and do the following:
   a. In the **Object** column of the added row, select *ARInvoice*.
   b. In the **Data Field** column, select *RefNbr*.
3. Again click **Add Row** to add a new row, and do the following:
   a. In the **Object** column of the added row, select *ARInvoice*.
   b. In the **Data Field** column, select *CuryDocBal*.

   Notice that the **Visible** and **Default Navigation** check boxes are selected by default for all rows. That is, the system will display the added columns in the inquiry.

4. On the form toolbar, click **Save**.

Step 4: Previewing the Generic Inquiry Form

To preview the generic inquiry form you have created, click the eye icon on the side panel of the *Generic Inquiry* (SM208000) form while you are viewing the generic inquiry.

Step 5: Making the New Inquiry Visible to Other Users

To add the inquiry you have created to the site map, do the following:

1. On the *Generic Inquiry* (SM208000) form, open the *DB-SampleGenericInquiry* generic inquiry to be published.
2. Select the **Make Visible on the UI** check box in the Summary area of the form.

   The system automatically assigns the default workspace (*Data Views*) and category (*Inquiries*) to the inquiry, which you can override any time.
3. Optional: In the **Site Map Title** box, modify the inquiry title.
4. On the form toolbar, click **Save**.

   Note that the **Screen ID** box is populated with the identifier of the generic inquiry. The system assigns the inquiry form an automatically generated identifier in a format similar to that of the screen identifiers of other forms, with *GI* as the two-letter module code: *GI0000mn*. When the identifier is assigned, the system adds the inquiry to the site map and it can be accessed from the workspace.
5. In the main menu, select the **Data Views** menu item, and under the **Inquiries** category, make sure the created inquiry is listed.

Lesson 1.11: Getting Data from Multiple DACs

Getting Data from Multiple DACs: General Information

In most cases, generic inquiry forms need to give users the ability to review the data of some entity along with the data from other related entities. For example, suppose that you are creating a generic inquiry that lists open sales orders by customer. To build such an inquiry, you need to combine data from two data access classes (DACs): one that holds information about sales orders, and another that holds information about customers. For details on data access classes, which are referred to as *tables* on the user interface of the *Generic Inquiry* (SM208000) form, see *Discovering DACs: General Information*.

We recommend that before you work with table relations, you obtain basic knowledge of SQL (which is used for storing, manipulating, and retrieving data in databases), so that you can understand how inquiries retrieve data.

Learning Objectives

In this chapter, you will learn how to retrieve data from multiple related data access classes.

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries to give users information they need to do their jobs. You need to deliver different inquiries that your colleagues may need to perform their jobs effectively. Many of these inquiries require the retrieval of data from multiple related data access classes.

Construction of a Data Request from Multiple Tables

You perform the following general steps to build a data request from multiple tables:

1. Inspect the related forms (that is, the data entry forms of the data you will use) to determine the list of data access classes and fields you need to have in the results grid and use in formulas.
2. Select a parent and child table.
3. Specify the parent and child table in the system.
4. Specify a join type between the parent and child table.
5. Discover the key fields of the data access classes you have determined for your inquiry.
6. Specify links between the key fields of the parent and child table.

If you want to use more than two tables in your inquiry, you repeat Steps 2–6 for each pair of tables that you are going to use in your generic inquiry.

You can perform Steps 5–6 automatically, by means of the **Related Tables** dialog box, or manually. You can also change automatically configured settings by using the instructions for the manual procedure. For more information, see *Getting Data from Multiple DACs: Manual Configuration of Relations Between Tables*.

Selection of a Parent and Child Table

After you have determined all tables you need for your inquiry, you need to decide which table is considered the parent table and which is the child one. Usually, the parent table is the one that provides the primary data and the child table provides additional information. For example, for an inquiry that lists sales orders by customers, you specify `SOOrder` as the parent table, because the primary data that the inquiry is displaying is provided by the `SOOrder` class. The `Customer` class provides additional information, so you select it as the child table.

Specification of the Parent and Child Table

You can specify the parent and child tables on the *Generic Inquiry* (SM208000) form in the following ways:

- On the **Relations** tab, by selecting a parent table in the **Parent Table** column and a child table in the **Child Table** column. The drop-down lists in these columns include the tables that you have added on the **Tables** tab.
- In the **Related Tables** dialog box, which opens when you click **Add Related Table** on the table toolbar of the **Tables** or **Relations** tab.

We recommend that you use the **Related Tables** dialog box to specify the parent and child tables, because only in this case the system will automatically configure relations between these tables.

In the **Related Tables** dialog box, you do the following:

1. Specify the parent table: You select the parent table in the list of tables and then click **Select Parent Table** on the table toolbar. To find the necessary parent table in the list, you can use the search box below the list. As a result, the name of the selected table is displayed in the **Parent Table** box (at the top of the dialog box).

   > If you opened the **Related Tables** dialog box (by clicking **Add Related Table** on the table toolbar on the **Tables** tab) when a table was first selected on the **Tables** tab, then the name of this table is already selected as a value in the **Parent Table** box.

2. Specify a child table. (You can select a child table only after selecting a parent table.) You select a child table in the list of tables (which includes only the tables that can be linked to the selected parent table) and then click **Select Related Table** on the table toolbar. As a result, the name of the selected table is displayed in the **Child Table** box (at the top of the dialog box).

   Tables in the system are linked by means of key fields. A key field is a field in a record that holds unique data that identifies that record from all the other records in the database. The information about the key fields of the data access classes you need is stored in the source code.

   As with a parent table, to find the necessary child table in the list, you can use the search box below the list.

You can manage the column set to be displayed in the list of tables by using the **Column Configuration** dialog box. You click the Column Configuration button, which is located in the header row of the leftmost table column, to open this dialog box. For example, you can add the **Description** column, which contains the data access class description and can be useful when you select tables.

In the **Related Tables** dialog box, you can select the **Include Hidden Tables** check box to include hidden tables in the list of tables for selecting a parent or child table.

Automatic Configuration of a Relation Between a Pair of Tables

When you have specified the parent table and the child table in the **Related Tables** dialog box, the system does the following:

- Automatically assigns and displays aliases for the tables in the **Alias** box next to the **Parent Table** box and the **Child Table** box.
- Displays the relation between the parent table and the child table in the **Relation** box. The relation is described as a part of the SQL statement and includes a type of join and data field links. By default, the *Inner* join type is used.

To approve the specified configuration and close the **Related Tables** dialog box, you click the **Add** button in the bottom right. As a result, the system does the following:

- Adds the parent and child tables on the **Table** tab of the *Generic Inquiry* (SM208000) form
- Adds the relation on the **Relations** tab of the *Generic Inquiry* form

After the relation between the pair of tables has been configured, you can change the following settings, which have been inserted by the system:

- Join type: On the **Relations** tab, in the **Join Type** column of the **Table Relations** table
- Data field links: On the **Relations** tab, in the **Data Field Links for Active Relation** table

At any time after the relation between the parent and child tables has been configured, you can view the relation by clicking **Add Relations** on the table toolbar of the **Data Field Links for Active Relation** table on the **Relations** tab. In this case, the system displays the **Related Tables** dialog box with the boxes filled in with values. Even though the boxes in the **Related Tables** dialog box are filled with values, in this dialog box, you can configure the relation between a new pair of tables.

Getting Data from Multiple DACs: Manual Configuration of Relations Between Tables

You can manually configure the relation between each pair of tables that you are going to use in your inquiry form. In this case, you should perform the following additional actions: to decide what type of join to use, to discover the key fields of the tables, and to define what conditions to specify for links between key fields.

Selection of a Join Type

After you have selected a parent and child table, you can specify a type of join for these tables. Even if a type of join has been specified automatically by means of the **Related Tables** dialog box, you can override the join type for each pair of tables.

The system automatically inserts the *Inner* join type when you specify a relation between a pair of tables in the **Related Tables** dialog box.

On the **Relations** tab, in the **Table Relations** table, you select a join type in the **Join Type** column. You can select one of the following options:

- *Inner*: An *Inner* join creates a result by combining the records of the parent and child tables when there is at least one match in both tables (see the figure below). For example, suppose that for an inquiry that lists open sales orders by customers, you join `SOOrder` and `Customer` with an *Inner* join. The system will return only those open sales orders (from `SOOrder`) for which there are customer records in the `Customer` table. The system will not display customers who do not have open sales orders.

- *Left*: A *Left* join returns all the records from the parent table combined with any matching records of the child table (see the figure below). For example, suppose that for the inquiry that lists open sales orders by customers, you join `SOOrder` (the parent table) and `Customer` (the child table) with the *Left* join. The system returns all open sales orders. For an open sales order for which the customer record was not found, the system returns an empty value in the customer column.

- *Right*: A *Right* join returns all the records from the child table combined with any matching records from the parent table (see the figure below). For example, suppose that for the inquiry that lists open sales orders by customers, you join `SOOrder` (parent table) and `Customer` (child table) with the *Right* join. The system will return all customers. For a customer for which a sales order record was not found, the system returns an empty value in the sales order column.

- *Full*: A *Full* join returns all the records from both the parent table and the child table when there is a match in a parent or child table record (see the figure below). For example, suppose that for the inquiry that lists open sales orders by customers, you join `SOOrder` and `Customer` with a *Full* join. The system will return all open sales orders (from `SOOrder`) and all customers (from the `Customer` table). A *Full* join can return a huge number of records.

- *Cross*: A *Cross* join returns each record from the parent table combined with each record from the child table. Thus, the number of records in the result set is the number of records in the parent

table multiplied by the number of records in the child table (see the figure below). Unlike the *Inner*, *Left*, *Right*, and *Full* join, the *Cross* join does not require a joining condition.

Figure: Join types

> The inquiry result can be empty due to your access rights to Acumatica ERP forms, or due to the deletion of some data in the database. For example, with the *Inner* join, the system will not display the open sales orders of the customers to whose accounts your access is restricted or whose accounts were deleted for some reason.

> The join types selected in the **Join Type** column work exactly the same as the corresponding SQL JOIN statements.

Discovery of Key Fields

The information about each key field—the field in the applicable record that holds unique data identifying that record from all the other records in the database—of the data access class you need is stored in the source code. You can get more information about the data access class you need on the *Source Code* (SM204570) form, which you can access in the following ways:

- From the **Element Properties** dialog box, as you are using it to explore a UI element on a particular form, by clicking **Actions > View Data Class Source**. The form opens in a pop-up window. The specified data access class is shown on the **Data Access** tab (Item 1 in the screenshot below).
- By directly navigating to the form. Then in the **Table Name** box on the **Data Access** tab, you select the data access class you need.

All fields of a data access class are listed on the **Data Access** tab, as shown in the following screenshot. You can explore any field further as you look for the key field; you generally focus on fields whose names seem to allude to numbers or identifiers. In the example shown in the screenshot, you would click `#region OrderNbr` to expand its attributes (Item 2 in the screenshot). Here you can find the string `IsKey = true`, which means that *OrderNbr* is included in the key of this class (Item 3).

Figure: Exploration of a data access class on the Source Code form

Particular types of key fields are distinguished as follows:

- On the application level, key fields are the fields that marked with `IsKey = true`.
- On the database level, key fields are the fields that are marked with the `PXDBIdentity` attribute and with `IsKey = true`. Key fields of this type are used to join data access classes. The key field with the `PXDBIdentity` attribute is a part of the database index, so the queries with the fields with the `PXDBIdentity` attribute execute faster than the queries with fields with only the `IsKey` attribute do.

Acumatica ERP master classes (which are categorized as **Profiles** in the UI in workspaces and search results), such as `Customer` and `InventoryItem`, usually have two key fields—that is, one with the `IsKey` attribute, and another with the `PXDBIdentity` attribute. The key fields of the *InventoryItem* class are *InventoryID*, which is marked with the `PXDBIdentity` attribute, and *InventoryCD*, which is marked with the `IsKey` attribute. For these classes, you use the field with the `PXDBIdentity` attribute to join classes in queries and the field with the `IsKey` attribute in other cases, such as for inquiry or report parameters.

Acumatica ERP document and transaction classes (which are mentioned as **Transactions** in the UI in workspaces and search results)—such as `SOOrder`, `ARInvoices`, and `ARPayment`—usually have two

or more key fields, which are marked with the `IsKey` attribute. For example, the key fields of the `ARInvoices` class are `RefNbr` and `DocType`. You can use both of these fields to join data access classes in queries.

It is a bit more complicated to find the key fields of the `Customer` class than to find the key fields of the `SOOrder` class (Item 1 in the following screenshot). `BAccountID` is the key field of the `Customer` class, but you cannot find the string `IsKey = true` if you expand the `#region BAccountID` data field (Item 2).

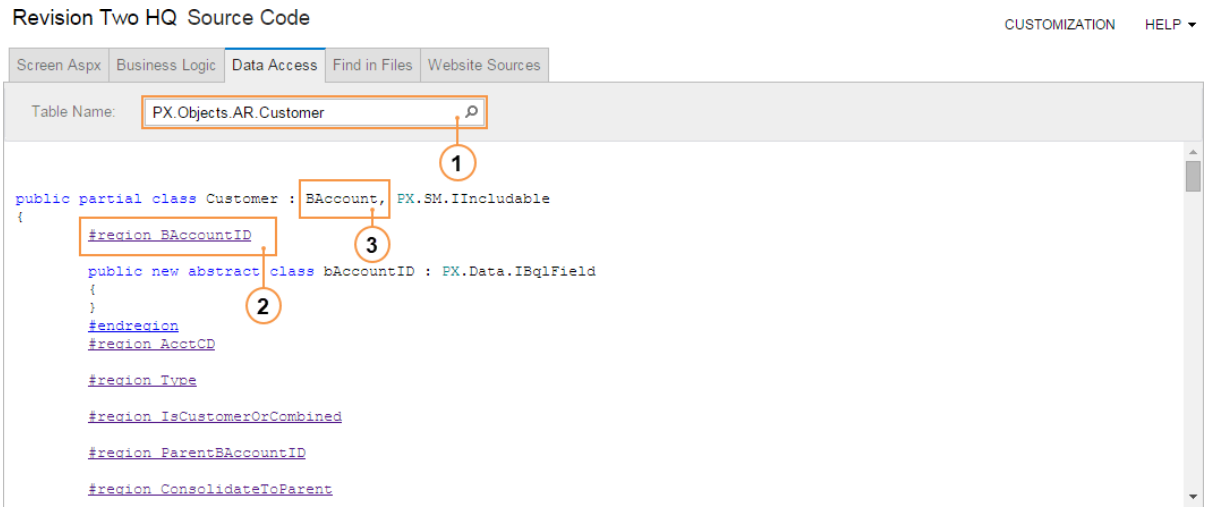


Figure: Exploration of the Customer class on the Source Code form

Note that the `Customer` data access class inherits the `BAccount` data access class (Item 3 in the screenshot above). You can further examine the `Customer` data access class, scrolling down on the form, and find its parent `BAccount` data access class (Item 1 in the following screenshot). If you expand the `#region BAccountID` data field (Item 2) of the `BAccount` class, you can find the string `[PXDBIdentity()]` (Item 3), which means that `BAccountID` is the key field of the `BAccount` data access class and all data access classes that inherit the `BAccount` data access class. Thus, `BAccountID` is the key field of the `Customer` data access class.

Figure: Further exploration of the Customer class on the Source Code form

You can perform similar actions to explore any element you need for your inquiry. For the key fields of the data access class, you have to observe the data access class and the database table. To reveal the relationships between the data access classes, you inspect the fields of the main data access class and the related data access classes and review the structure of the corresponding database tables.

> Some data access classes have virtual data fields, whose values are not stored in the database as values of ordinary data fields. Similarly, an entire class can be virtual—that is, all the data fields of this class are virtual. For example, the *Inventory Transaction Details* (IN404000) form uses the *InventoryTranDetEnqResult* data access class, which is virtual, to show summary information about inventory transactions posted within a selected financial period. If you use a virtual data field in your inquiry or report, this data field returns no data.

Links Between Data Fields

After you have specified how the system should combine the data, you need to specify what data needs to be combined. To link the parent and child tables, you should specify the key fields and conditions to link them. You specify these options in the **Data Field Links for Active Relation** table of the **Relations** tab of the *Generic Inquiry* (SM208000) form.

For example, suppose that for the inquiry that lists open sales orders by customers, you joined `SOOrder` as parent table and `Customer` as child table (the type of join does not matter for linking fields). This means that the system should combine the records of these two tables by adding data from the child table to the parent one. The child table provides customer details, so you should indicate to the system that the data of the particular customer needs to be joined with the data of particular open sales order of this customer. To do this, you add the link that indicates to the system that the `customerID` field from the `SOOrder` table equals the `BAccountID` field from the `Customer` table. The `BAccountID` field is a key field in the `Customer` table. The system finds an open sales order, identifies the value of the `customerID` field, and searches for the same value in the `BAccountID` column of the `Customer` table. When the customer record is found, the system combines these two records into one and proceeds to the next open sales order. The following screenshot shows the `SOOrder` and `Customer` tables and the result of their combination.

SOOrder DAC

OrderType	OrderNbr	OrderDate	CustomerID	OrderQty	OrderTotal	Status
SO	000029	1/29/2019	20	20.00	56.45	Open
IN	000063	1/18/2019	19	1.00	4,100.00	Open
IN	000061	1/15/2019	17	2.00	6,700.00	Invoiced
IN	000059	1/9/2019	16	1.00	2,600.00	Open
IN	000057	1/7/2019	21	1.00	4,100.00	Open
SO	000028	1/24/2019	16	135.00	327.01	Invoiced
SO	000027	1/21/2019	17	92.00	210.66	Completed
SO	000026	1/17/2019	16	57.00	151.76	Completed
SO	000025	1/14/2019	17	157.00	382.23	Open
SO	000024	1/10/2019	16	129.00	316.25	Invoiced

Customer DAC

BAccountID	AcctCD	AcctName	Status	CustomerClassID	CreditLimit
19	COFFEESHOP	FourStar	Active	DEFAULT	0
17	GOODFOOD	GoodFood One	Active	DEFAULT	0
16	HMBAKERY	HM's Bakery &	Active	DEFAULT	0
18	LAKECAFE	Lake Cafe	Active	INTLCA	0
48	MORNINGCAF	Morning Cafe	Active	DEFAULT	0
20	RETSALE	Individual Client	Active	DEFAULT	0
21	TOMYUM	Thai Food	Active	DEFAULT	0

Combined Data From Both Tables

OrderType	OrderNbr	OrderDate	CustomerID	OrderQty	OrderTotal	Status	BAccountID	AcctCD	AcctName	Status	CustomerClassID	CreditLimit
SO	000029	1/29/2019	20	20.00	56.45	Open	20	RETSALE	Individual Client	Active	DEFAULT	0
IN	000063	1/18/2019	19	1.00	4,100.00	Open	19	COFFEESHOP	FourStar	Active	DEFAULT	0
IN	000061	1/15/2019	17	2.00	6,700.00	Invoiced	17	GOODFOOD	GoodFood One	Active	DEFAULT	0
IN	000059	1/9/2019	16	1.00	2,600.00	Open	16	HMBAKERY	HM's Bakery &	Active	DEFAULT	0
IN	000057	1/7/2019	21	1.00	4,100.00	Open	21	TOMYUM	Thai Food	Active	DEFAULT	0
SO	000028	1/24/2019	16	135.00	327.01	Invoiced	16	HMBAKERY	HM's Bakery &	Active	DEFAULT	0
SO	000027	1/21/2019	17	92.00	210.66	Completed	17	GOODFOOD	GoodFood One	Active	DEFAULT	0
SO	000026	1/17/2019	16	57.00	151.76	Completed	16	HMBAKERY	HM's Bakery &	Active	DEFAULT	0
SO	000025	1/14/2019	17	157.00	382.23	Open	17	GOODFOOD	GoodFood One	Active	DEFAULT	0
SO	000024	1/10/2019	16	129.00	316.25	Invoiced	16	HMBAKERY	HM's Bakery &	Active	DEFAULT	0

Figure: Data combined from two tables

Getting Data from Multiple DACs: To Create an Inquiry with Two Tables

In this activity, you will learn how to create a generic inquiry that collects and displays data from two data access classes (DACs), which are referred to as *tables* on the user interface of the *Generic Inquiry* (SM208000) form. The activity walks you through the steps of designing a sample generic inquiry for testing purposes, so that you can develop a better understanding of the process.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms. A salesperson of your company has requested an inquiry form that displays sales orders for the customer selected by the user. The salesperson would like the inquiry form to list the orders of customers defined in the system.

The inquiry form should have a Selection area with the following elements:

- **Date From**
- **Date To**
- **Customer**
- **Order Status**

By default, these boxes should be empty, so that the inquiry results initially include sales orders with any status for all customers and for all the dates that are in the database. If users select values in the boxes, the results are narrowed.

The results grid of the inquiry form will consist of columns that display the following information about each sales order: sales order number, type, status, date, and customer name.

Process Overview

You will start by inspecting the elements on the *Sales Orders* (SO301000) and *Customers* (AR303000) forms that correspond to the data to be shown in the columns of the results grid, to explore which data access classes (DACs) you can use to access the needed data.

With the knowledge you have obtained, you will create a generic inquiry on the *Generic Inquiry* (SM208000) form and configure the results grid, the requested parameters (that is, the elements in the Selection area), and the conditions that correspond to the parameters.

When an inquiry has been created and all the necessary settings have been specified, you will preview and then publish the inquiry.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
    - Username: *gibbs*

- Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Discovering the DACs and Data Fields

To inspect the needed user interface elements to find the needed DACs and data fields, do the following:

1. Open the *Sales Orders* (SO301000) form.
2. Point to the **Order Type** box, press Ctrl+Alt, and then click. The **Element Properties** dialog box opens.
3. Make a note of the values of the **Data Class** and **Data Field** elements (*SOOrder* and *OrderType*, respectively), which are the data access class and data field you need. Close the dialog box.

> Although in this activity, the tasks of element inspection and generic inquiry development are kept separate for simplicity, in production development, you will generally be inspecting elements on the UI and creating the generic inquiry at the same time. In this case, you may find it convenient to have the form or forms containing the UI elements open in a separate tab, so that you can quickly switch between the *Generic Inquiry* (SM208000) form and the form you are using to inspect the elements.

4. Repeat Instructions 2–3 for the following UI elements on the *Sales Orders* form:
   - **Order Nbr.**
   - **Status**
   - **Date**
   - **Customer**

   The *Customer* element on the *Sales Orders* form contains an identifier of a customer but not a customer name that should be displayed in the resulting inquiry form. To obtain information about specific customer specified in each sales order, you should use the *Customers* (AR303000) form.

   In exploring these elements, you have discovered that the data access class you need is *SOOrder* and the data fields are *OrderType*, *OrderNbr*, *Status*, *OrderDate*, and *CustomerID*.
5. Open the *Customers* form.
6. Point to the **Customer ID** box, press Ctrl+Alt, and then click. The **Element Properties** dialog box opens.
7. Make a note of the values of the **Data Class** and **Data Field** elements (*Customer* and *AcctCD*, respectively), which are the data access class and data field you need.

Step 2: Creating the New Inquiry

To begin the process of creating the generic inquiry, you do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the Summary area, in the **Inquiry Title** box, type the name you will use for the inquiry: `DB-SOOpenByCustomer`.
3. Leave the **Select Top** box blank, so that you can display all the results.
4. In the **Arrange Parameters in x Columns** box, leave the default value; you can adjust it after adding the requested parameters to the Selection area.
5. On the table toolbar of the **Tables** tab, click **Add Related Table** to add the tables for your generic inquiry.
6. In the **Related Tables** dialog box, which opens, select *PX.Objects.SO.SOOrder* in the list of tables.

   > You can use the search box below the list of tables to find the necessary table by its name.

7. On the table toolbar, click **Select Parent Table**.

   The system inserts the name of the selected table in the **Parent Table** box. Notice that next to the **Parent Table** box, in the **Alias** box, the *SOOrder* value has been inserted.
8. In the list of tables, select *PX.Objects.AR.Customer*, and on the table toolbar, click **Select Related Table**.

   The system inserts the name of the selected table in the **Child Table** box. Notice that next to the **Child Table** box, in the **Alias** box, the *Customer* value is displayed.

   In the **Relation** box, the relation between the pair of tables has been inserted.
9. In the bottom of the dialog box, click the **Add** button.

   The system closes the **Related Tables** dialog box, adds the tables to the list on the **Tables** tab, and adds the relation between the tables on the **Relations** tab. Notice that the *Inner* join type is used for the relation.
10. On the form toolbar, click **Save**.

Step 3: Configuring the Output Columns

To configure the columns in the generic inquiry form, on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form with the *DB-SOOpenByCustomer* inquiry selected, do the following:

1. Click **Add Row** on the table toolbar, and do the following:

   > The lists of values available for selection can be quite long. To speed up the process of selecting the needed values, start typing the needed value in the column; the system will filter the list based on the text you have typed.

   a. In the **Object** column, select *SOOrder*.

   b. In the **Data Field** column, select *OrderNbr*.
2. By using the actions you performed in the previous instruction, add rows with the following settings:

Object	Data Field
SOOrder	*OrderType*
SOOrder	*Status*
SOOrder	*OrderDate*
Customer	*AcctName*

Notice that the **Visible** and **Default Navigation** check boxes are selected by default for all rows. With these settings, the system will display the added columns in the inquiry results, and for data fields that have a default data entry form specified in the source code, the system will display the values in the corresponding columns of the generic inquiry form as links. When a user clicks a link in this column on the generic inquiry form, the system opens the specified form in a pop-up window with the record selected.

3. On the form toolbar, click **Save**.

4. On the side panel of the *Generic Inquiry* form, click the eye icon to preview the generic inquiry form you have created.

Step 4: Configuring the Selection Area (Self-Test)

You have learned how to add parameters to the Selection area while completing the following activities:

- *Using Conditions and Parameters: To Add Period-Range Parameters to the Selection Area*
- *Using Conditions and Parameters: To Add a Field Parameter to the Selection Area*

A salesperson has requested that you add parameters to the *DB-SOOpenByCustomer* generic inquiry, which you have developed in this activity, so that the results can be narrowed to meet each salesperson's current needs for information. Use the knowledge you have gained to add the requested parameters to the generic inquiry. After you have added the needed parameters, the Selection area of the inquiry form should have the elements shown in the following screenshot.

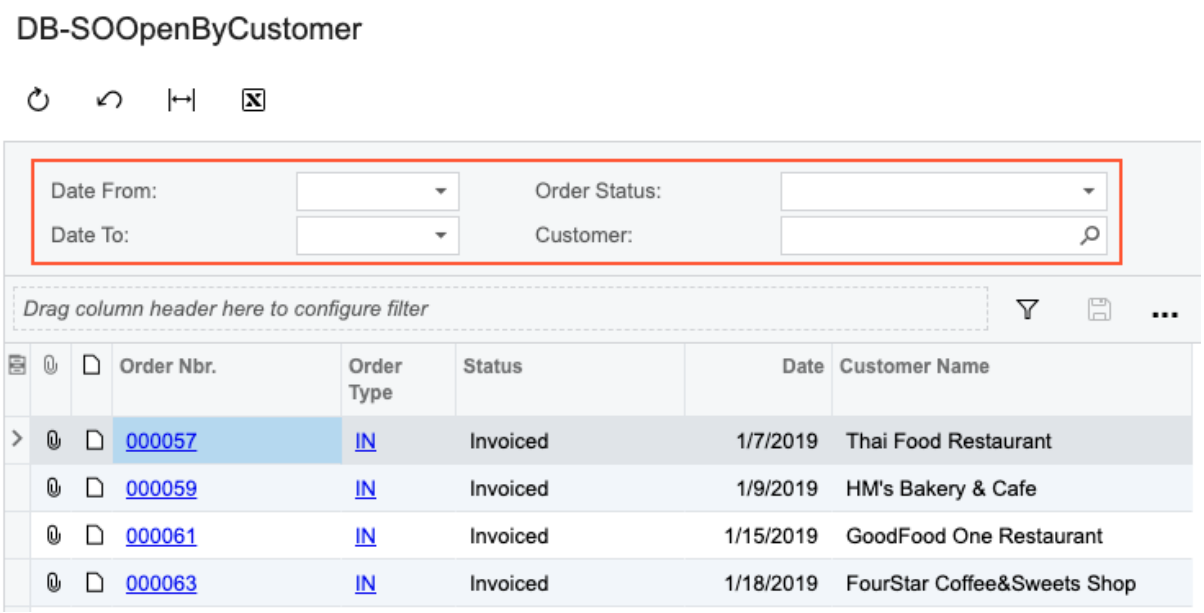


Figure: Selection area with the parameters requested by the salesperson

For details on parameters and conditions, see *Using Conditions and Parameters: General Information*.

Step 5: Making the Generic Inquiry Form Visible to Other Users

To add the generic inquiry form you have created to the site map, on the *Generic Inquiry* (SM208000) form, do the following:

1. Open the *DB-SOOpenByCustomer* generic inquiry.
2. In the Summary area of the form, select the **Make Visible on the UI** check box.

   The system automatically assigns the default workspace (*Data Views*) and category (*Inquiries*) to the inquiry; you can override these settings at any time.
3. In the **Site Map Title** box, type `Sales Orders of the Selected Customer`.
4. On the form toolbar, click **Save**.

   Notice that the **Screen ID** box is populated with the identifier the system has assigned to the generic inquiry. The system assigns the inquiry form this automatically generated identifier in a format similar to that of the screen identifiers of other forms, with *GI* as the two-letter module code: *GI0000mn*. When the identifier is assigned, the system adds the inquiry to the site map and it can be accessed from the workspace.
5. In the main menu, select the **Data Views** workspace and under the **Inquiries** category, make sure the inquiry you have created is listed.

Lesson 1.12: Exposing an Inquiry by Using OData

Exposing an Inquiry by Using OData: General Information

You can use your Acumatica ERP instance (and specifically the generic inquiry results) as the data source, and then use third-party applications that support OData to track and analyze the data.

Acumatica ERP supports OData Version 3.0 with particular exceptions.

> We strongly recommend that you deploy your Acumatica ERP instance (or instances) by using HTTPS, to pass the user credentials safely.

Learning Objectives

In this chapter, you will learn how to expose a generic inquiry form by using OData.

Applicable Scenarios

You are a technical specialist with your company, and you are responsible for the management of different reports and inquiries. Your company has decided to use a third-party reporting tool in addition to Acumatica ERP reporting. The selected tool supports OData protocol. You need to expose the requested generic inquiries and verify access to the exposed data by using Microsoft Excel.

Benefits from Exposing Data Through OData

Some Acumatica ERP technology partners have built reporting solutions by using the ability of Acumatica ERP to expose data through OData.

Multiple applications can use data exposed through the OData protocol. The most popular are Microsoft Power BI and Microsoft Excel.

Microsoft Power BI offers advanced capabilities for creating charts. You can expose a generic inquiry through OData and access its data from Power BI. By using Power BI, you can create advanced charts based on data imported from Acumatica ERP. Furthermore, an advanced Power BI chart can be then imported back to Acumatica ERP and added to a dashboard as a widget. For example, you can create a visual display of your sales across the United States (as shown in the following screenshot). Due to the exposure of the inquiry with OData, the Power BI chart displays real-time data when you view it either in Power BI or on your dashboard in Acumatica ERP.

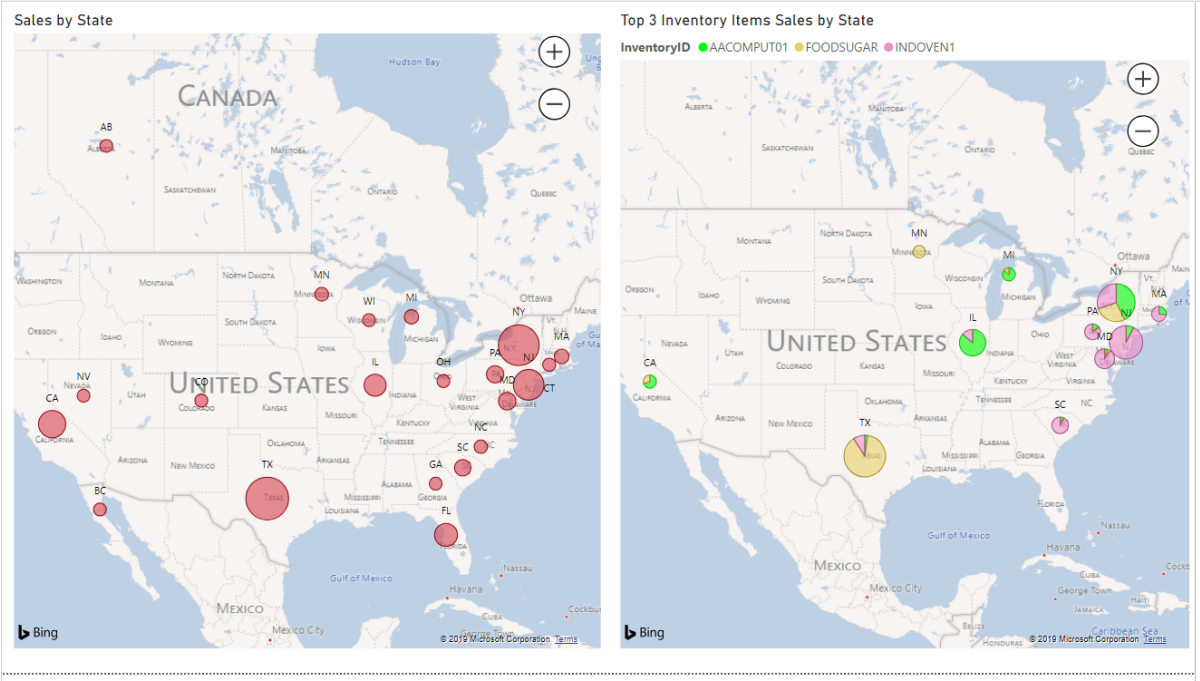


Figure: Example of an advanced chart built with PowerBI

Microsoft Excel offers the following capabilities to process data:

- To make calculations from basic math, such as summing, multiplying, and finding the average, as well as advanced calculations, such as regression analysis and conversions
- To create professional reports and dashboards with charts and visualizations

Exposing an Inquiry by Using OData: Preparation of an Inquiry for Exposure

To expose a generic inquiry, you should perform the necessary steps to prepare the inquiry and ensure that it complies with requirements to inquiry fields.

Preparing a Generic Inquiry for Exposure

Before exposing a generic inquiry through OData, you need to make sure that the inquiry complies with the requirements for this exposure. You can expose only published inquiries (that is, those that have been made visible on the UI and assigned a screen ID), because the appropriate access rights must be granted to an inquiry form to be exposed, but you can grant access rights to an inquiry only if the resulting inquiry form has been published. Thus, for any inquiry that you are going to expose, in the Summary area of the *Generic Inquiry* (SM208000) form, you should select the **Make Visible on the UI** check box and specify the site map title; when you save your changes, verify that the system has assigned a screen ID to the inquiry.

Then you can specify the appropriate access rights to the exposed inquiries. User accounts that will access the exposed inquiries through an OData client need to have access rights to the inquiry forms set to the *Delete* level of access. For more information on access rights to inquiries, see *Managing Access Rights To Generic Inquiries*.

If the inquiry you want to expose has parameters, you cannot use them. Instead of using parameters, you need to specify conditions in the inquiry.

Supporting the OData Specifications

Acumatica ERP generates the names of the fields for OData entities based on the display names of the Acumatica ERP fields in an English locale. To adhere to the OData specifications, Acumatica ERP uses the following rules in generating these names:

- If the display name does not contain any invalid symbols, the name is left unchanged.
- If the display name starts with a digit, an underscore is added before the name. For example, *2Update* is converted to *_2Update*.
- If the display name contains invalid symbols, such as spaces, these symbols are removed from the name. For example, *Account Name* is converted to *AccountName*.

The OData interface provided by Acumatica ERP does not support the following items in the OData specification:

- The *$expand*, *$links*, and *$count* query options
- All query functions, such as *startswith* and *substringof*

Exposing a Generic Inquiry

You can expose a generic inquiry at any time, either when creating a new inquiry or by modifying an existing one. To expose the inquiry, you select the **Expose via OData** check box for the inquiry in the Summary area of the *Generic Inquiry* (SM208000) form.

You can view the list of generic inquiries exposed through OData by opening the lookup table for the **Inquiry Title** box on the *Generic Inquiry* form. In the table, you can filter the inquiries by the selection of the check box in the **Expose via OData** column, as the following screenshot shows.

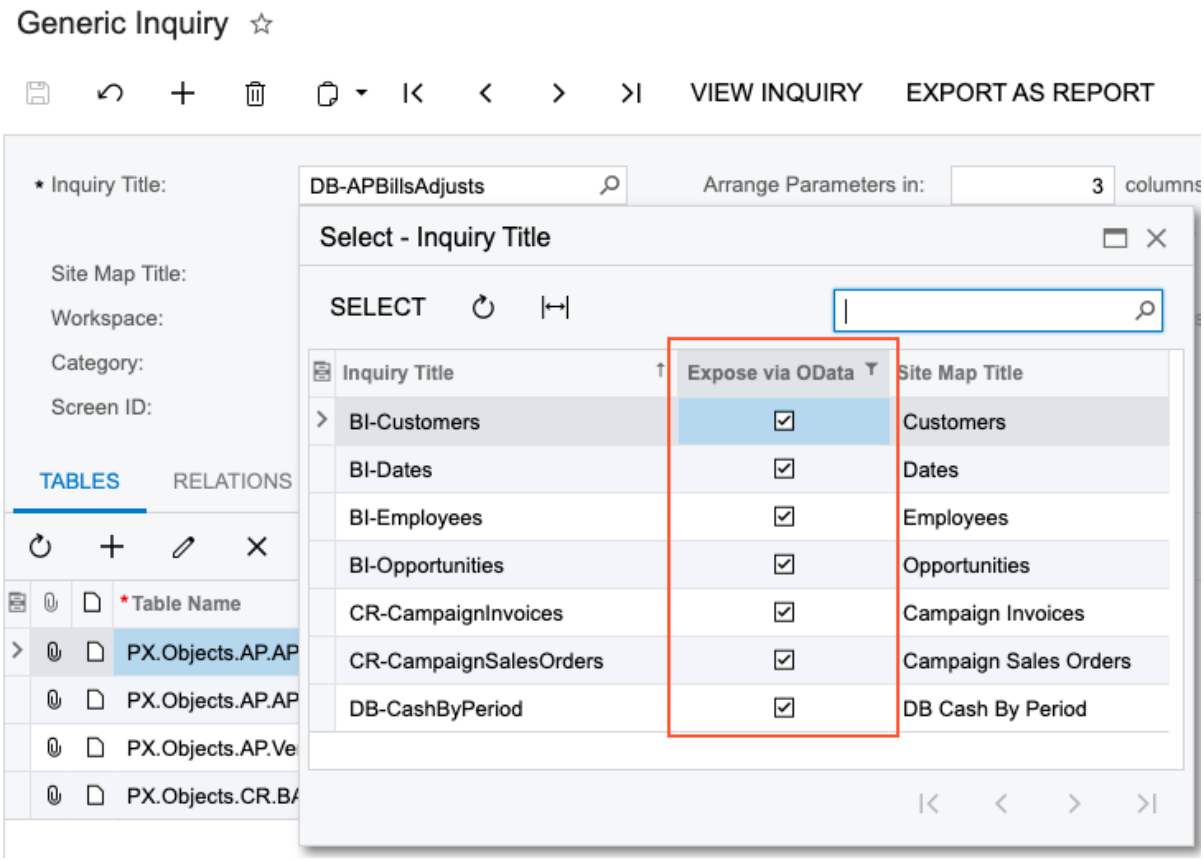


Figure: Inquiries that are exposed via OData

Acumatica ERP includes multiple predefined generic inquiries that can be exposed through OData; the titles of these inquiries start with *BI*. Additionally, the *BI* role has been added to Acumatica ERP; a user with the role assigned can access the data of the predefined inquiries.

> To give the users with the *BI* role access to other generic inquiries, you should grant access to these inquiries.

Exposing an Inquiry by Using OData: To Expose Inquiry Results Through OData

In this activity, you will learn how to modify an existing generic inquiry to expose its results through OData.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms. An accountant of your company has asked you to provide access to the predefined Invoices and Memos (AR3010PL) inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form, through Microsoft Excel. The accountant uses Excel for building reports based on the data of this inquiry and would like for the data to always be up to date. Suppose that the access role of the accountant is *Accountant*.

Process Overview

On the *Generic Inquiry* (SM208000) form, you will verify that the *AR-Invoices and Memos* inquiry complies with the requirements for a generic inquiry to be exposed through OData—that is, it is published, and it has no parameters. You will select the **Expose via OData** check box for the generic inquiry and save your changes.

After the inquiry is exposed, you will make sure that the accountant (whose user account is assigned the *Accountant* role) has sufficient access rights for the inquiry form by using the *Access Rights by Screen* (SM201020) form.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   > The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Exposing the Inquiry

To expose the needed generic inquiry by using OData, do the following:

1. Open the *Generic Inquiry* (SM208000) form.
2. In the **Inquiry Title** box of the Summary area, select *AR-Invoices and Memos*.
3. Verify that the **Make Visible on the UI** check box is selected, a title is present in the **Site Map Title** box, and a screen identifier is assigned in the **Screen ID** box. Notice that the **Workspace** and **Category** boxes for the inquiry are cleared. When this is the case, the system puts the inquiry in the **Hidden** node of the site map tree.

   > An inquiry form is still considered published, even if it is located in the **Hidden** node of the site map tree, as long as the **Make Visible on the UI** check box is selected and the **Screen ID** is filled in on the *Generic Inquiry* form.

4. On the **Parameters** tab, verify that there are no parameters added for the inquiry.

   > For an inquiry to be exposed, either no parameters should be defined, as is the case here, or the inquiry parameters should be deactivated (that is, the check box in the **Active** column is cleared for each of them on this tab) and the related conditions are also deactivated.

5. In the Summary area of the form, select the **Expose via OData** check box.

6. On the form toolbar, click **Save**.

Step 2: Specifying the Access Rights to the Exposed Inquiry

To specify the access rights of the *Accountant* role to the exposed inquiry, do the following:

1. Open the *Access Rights by Screen* (SM201020) form.
2. In the left pane, locate and click *Invoices and Memos (AR3010PL)* in the **Hidden** node.

> The system displays a tooltip with the screen identifier when you point to a node.

3. In the right pane, locate the *Accountant* role, and in the **Access Rights** column, select the *Delete* level (as shown in the following screenshot below).
4. On the form toolbar, click **Save**.

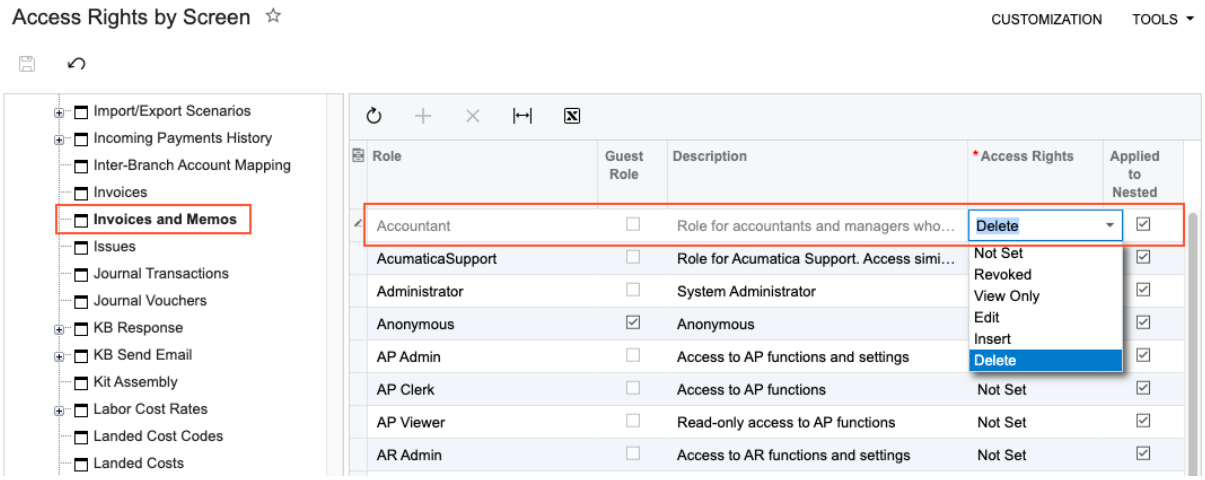


Figure: The level of access rights of the Accountant role for the exposed inquiry

Lesson 1.13: Accessing the Exposed Inquiry Through OData

Accessing the Exposed Inquiry Through OData: General Information

You can view the generic inquiries exposed through OData in your browser. To view the data, you enter the URL of the OData endpoint of your Acumatica ERP instance in the address bar of your browser.

When the system asks you to authenticate yourself, provide your sign-in credentials to Acumatica ERP: your username and your password. When your identity has been confirmed, the system displays the list of available inquiries.

Learning Objectives

In this chapter, you will learn how to access an exposed generic inquiry through Microsoft Excel and how to configure cross-origin resource sharing (CORS) to access an exposed inquiry through client-side web applications.

Applicable Scenarios

You are a technical specialist with your company, and your responsibilities include the management of different reports and inquiries. An accountant has requested access to an Acumatica ERP generic inquiry through a third-party OData client, such as Microsoft Excel, Microsoft Power BI, or a Java-based application.

Access to an Exposed Generic Inquiry Through an OData Client

By exposing data from Acumatica ERP—in this case, data from a generic inquiry created on the *Generic Inquiry* (SM208000) form—through the OData interface, you can give users the ability to view your company's data and perform detailed financial analysis by using third-party OData clients, such as Microsoft Excel and Microsoft Power BI.

Microsoft Excel 2007 does not support connection to OData endpoints.

To connect to your data, you specify the URL of the OData endpoint of your Acumatica ERP instance to the OData client and authenticate yourself by entering your Acumatica ERP credentials. The OData client can use the OAuth 2.0 authorization instead of direct authentication with a username and password.

The OData client then connects to your Acumatica ERP instance and obtains the data for you.

Even though you can view all exposed inquiries, you can obtain only the data to which you have sufficient access rights.

The URL of OData Endpoint

Generally, the URL of the Acumatica ERP OData endpoint is the URL of your instance concatenated with */OData*. For example, suppose that the URL of your instance is *https://sweetlife.com/erp*; to view the list of exposed inquiries, you use the following URL: *https://sweetlife.com/erp/OData*.

The following screenshot demonstrates a list of exposed inquiries accessed through the browser.

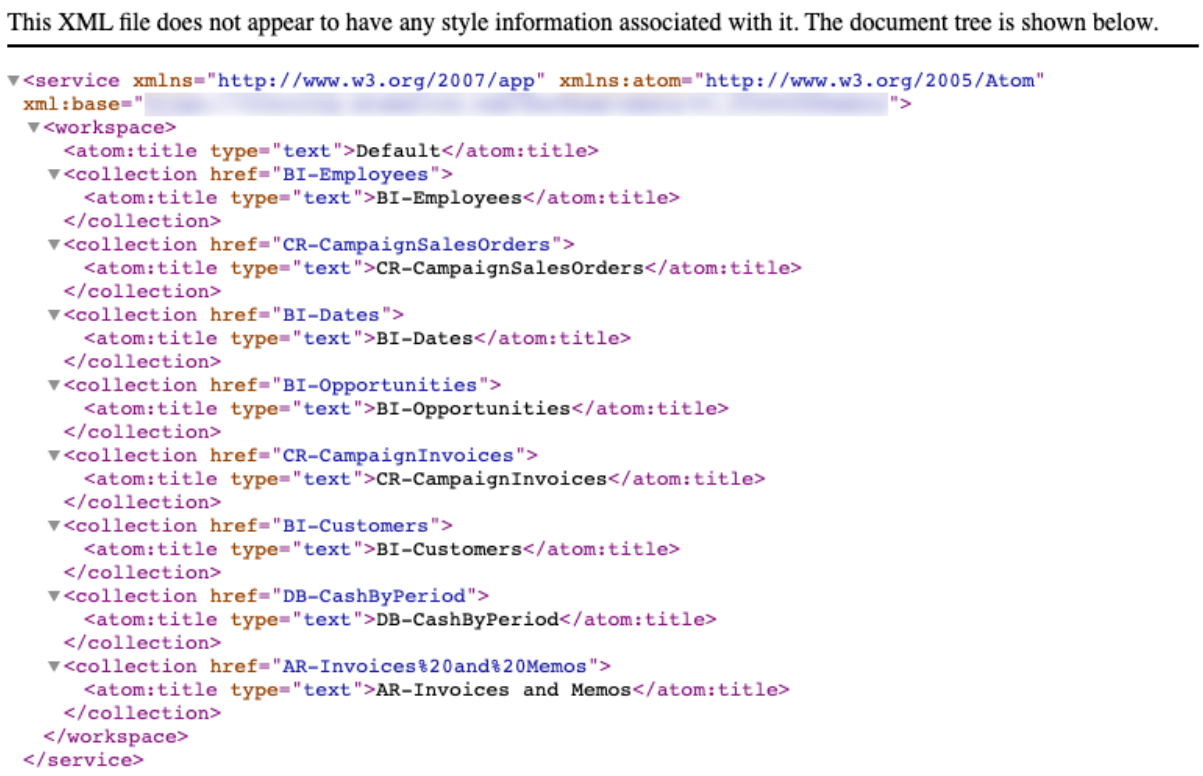


Figure: The list of exposed inquiries accessed through the browser

If your instance has a multitenant configuration, you add */OData/<TenantName>* to the end of the URL of your instance, where *<TenantName>* is the login name of the tenant in the Acumatica ERP instance. You can find the login names of tenants on the *Tenant List* (SM203530) form (as shown in the following screenshot). For more information on single-tenant and multitenant configuration, see *Managing Tenants*.

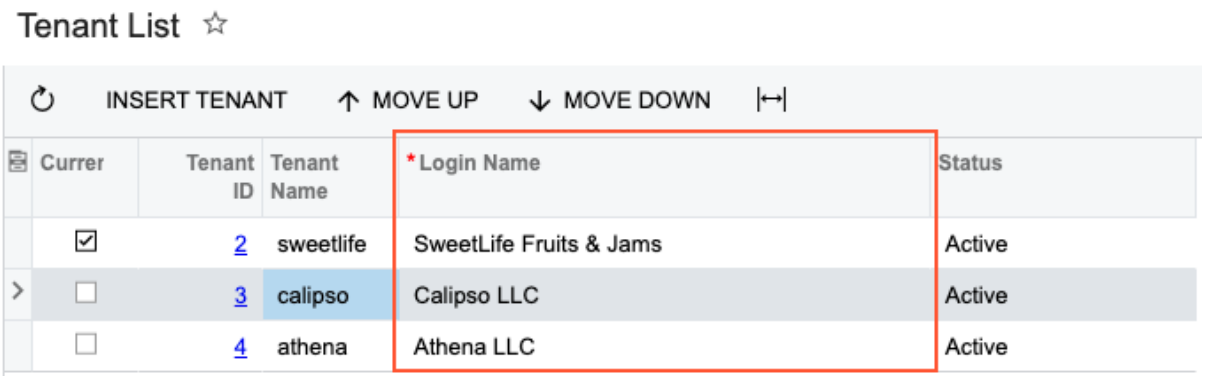


Figure: The login names of tenants

For example, if the URL of your Acumatica ERP instance is *https://sweetlife.com/erp* and you want to view generic inquiries exposed in the *Calipso LLC* tenant, you use the *https://sweetlife.com/erp/OData/Calipso LLC* URL in your browser or in an OData client. (If you type this into a browser, you will notice that the browser automatically replaces each space with *%20* in the URL.)

Also, you can view the login name of the tenant to which you are currently signed in by viewing the User menu (as shown in the following screenshot), which you access by clicking the User menu button on the top pane of the Acumatica ERP screen.

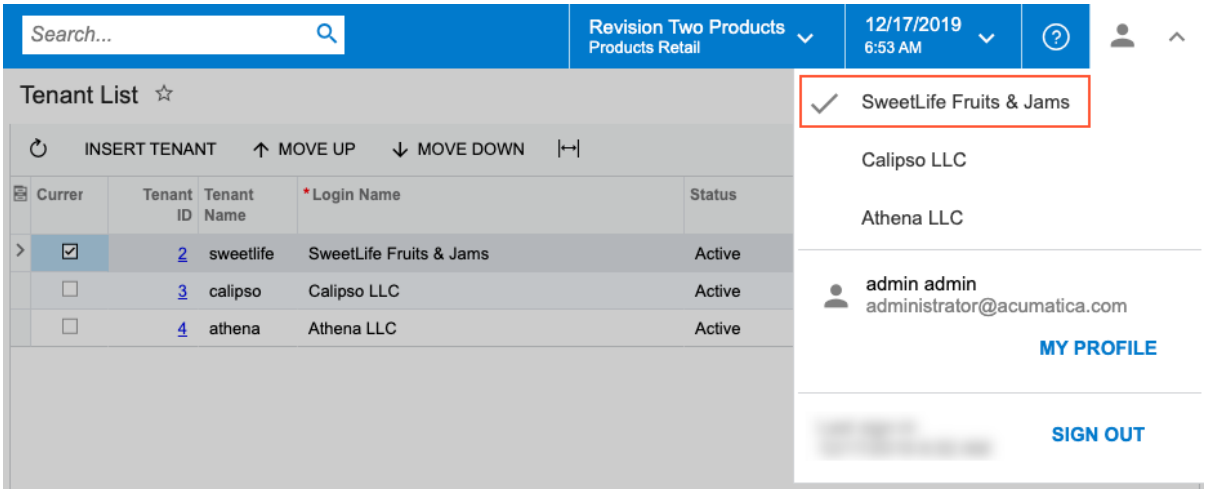


Figure: User menu with the tenant login name

Obtaining of the List of Fields of Generic Inquiries Through OData

Through OData, you can view the list of fields in exposed generic inquiries. The field names in the list are changed according to the OData specifications; for more information, see *Exposing an Inquiry by Using OData: Preparation of an Inquiry for Exposure*. The list of fields includes the key fields of the tables used in the generic inquiry, even if these key fields have not been added to the **Results Grid** tab of the *Generic Inquiry* (SM208000) form for the generic inquiry.

You compose the URL to obtain the list of fields by doing one of the following:

- If your Acumatica ERP instance contains a single tenant, append */OData/$metadata* to the URL of your instance.
- If your Acumatica ERP instance contains multiple tenants or a single tenant, append */OData/<TenantName>/$metadata* to the URL of your instance.

> We recommend that you use the approach with the login name of the tenant specified in the URL for an instance with a single tenant if you are going to add more tenants to the instance in the future.

Obtaining of the Contents of a Generic Inquiry Through OData

Through OData, you can view the contents of any exposed inquiry. You compose the data by doing one of the following:

- If your Acumatica ERP instance contains a single tenant, append */OData/<GI_Name>* to the URL of your instance.
- If your Acumatica ERP instance contains multiple tenants or a single tenant, append */OData/<TenantName>/<GI_Name>* to the URL of your instance.

> We recommend that you use the approach with the login name of the tenant specified in the URL for an instance with a single tenant if you are going to add more tenants to the instance in the future.

In the examples above, *<TenantName>* is the login name of the tenant in the Acumatica ERP instance for which you configured inquiries. *<GI_Name>* is the case-sensitive title of the exposed generic inquiry.

Acumatica ERP supports JSON and ATOM notations; by default, the data is displayed on the screen in ATOM notation. You can directly select a notation by appending the *$format* parameter to the URL of an inquiry. The parameter can have one of the following values:

- *json*: The data is displayed in JSON notation.
- *atom*: The data is displayed in ATOM notation.
- *jsonverbose*: The data is displayed in JSON Verbose notation.

For example, if the URL of your Acumatica ERP instance is *http://sweetlife.com/erp*, the instance contains one tenant, and you want to obtain the contents of the *BI-Customer* generic inquiry in JSON format, you use the *http://sweetlife.com/erp/OData/BI-Customer?$format=json* URL (either in your browser or in an OData client).

Configuration of CORS

Acumatica ERP supports cross-origin resource sharing (CORS), meaning that requests for resources can come from a different domain than that of the resource making the request. With CORS enabled, you can allow access to the OData endpoints of your Acumatica ERP instance for the client-side web applications, including Java-based applications. For more information about CORS, see *Cross-Origin Resource Sharing* on the World Wide Web Consortium portal.

The CORS settings of the web server of your instance are defined by the `cors` section of the `web.config` file; an example of this section is shown below.

```
<cors enabled="true" origins="*" methods="*" headers="*"
exposedHeaders="DataServiceVersion,MaxDataServiceVersion,OData-Version,
OData-MaxVersion" />
```

The web server of the application supports the following headers, in addition to simple headers: `DataServiceVersion`, `MaxDataServiceVersion`, `OData-Version`, and `OData-MaxVersion`. You need to use these headers to access OData endpoints. You can add your own headers as well.

By default, CORS is enabled, all origins are allowed access to the server, and all supported headers are exposed and can be used. You can enforce limitations on cross-origin requests by changing the settings. For details, see *Accessing the Exposed Inquiry Through OData: To Configure CORS*.

Accessing the Exposed Inquiry Through OData: Connecting to Acumatica ERP from Power BI

Microsoft Power BI is a collection of online services and features that you use to find and visualize data, share analysis, and collaborate intuitively. This collection includes the Power BI Acumatica template app, which you can use to quickly connect to your live business data and immediately glean insights from it. The template app, which has been provided by Acumatica, consists of a set of Acumatica ERP

generic inquiries that are exposed through the OData protocol and the data model that enables Power BI requests to the data retrieved through the inquiries. You can also create custom views for Power BI.

Custom Power BI Views

You can create custom Power BI views for your instance of Acumatica ERP. The process of creating your own view of Acumatica ERP data in Microsoft Power BI includes the following general steps:

1. You create a generic inquiry exposed via OData. For more information, see *Exposing an Inquiry by Using OData: To Expose Inquiry Results Through OData*.
2. In Microsoft Excel, you prepare the data model for Power BI. By using the Power Pivot add-in to Microsoft Excel, you create, arrange, and normalize the data model of the raw data obtained from the generic inquiry. For more information, see *Accessing the Exposed Inquiry Through OData: To Access an Exposed Inquiry in Microsoft Excel*.
3. You upload the Excel file with the data model to Microsoft Power BI. For more information, see *Getting data from Excel to Power BI* in the Microsoft documentation.

Requirements for the User Account Role

The access to Power BI views from the Acumatica template app is configured for user roles in Acumatica ERP as the access to the corresponding generic inquiries in the application's site. An out-of-the-box Acumatica ERP instance includes the predefined *BI* access role, which has access to the generic inquiry forms included in the Acumatica template app for Power BI. Account is assigned the *BI* role. A user with the *Administrator* role, which provides full access rights in the system, can assign the *BI* role to the needed users by using the *Users* (SM201010) form.

To restrict user access to certain views in Power BI, you can use existing user roles or create additional user roles in Acumatica ERP. You should specify the needed access rights to the appropriate generic inquiry forms by using the *Access Rights by Screen* (SM201020) form. For more information on granting user access to Acumatica ERP forms, see *Managing Access Rights to Generic Inquiries: General Information*.

Accessing the Exposed Inquiry Through OData: To Access an Exposed Inquiry in Microsoft Excel

In this activity, you will learn how to access a generic inquiry that was exposed through OData in Microsoft Excel.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including those involving the creation, modification, and use of generic inquiries. An accountant of your company has asked to have access in Excel to the predefined Invoices and Memos (AR3010PL) generic inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. The accountant uses Excel for building reports based on the data of this generic inquiry and would like for the data to always be up to date.

You have exposed the requested generic inquiry, and now you need to verify that it can be accessed through Excel.

Process Overview

On *Access Rights by User* (SM201050) form, you will verify that your user account has sufficient access rights (the *Delete* level) to the predefined Invoices and Memos (AR3010PL) generic inquiry.

You will then open Microsoft Excel and import data from the exposed inquiry to a spreadsheet.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Verifying the Access Rights

To verify that your user account has the appropriate level of access rights to the exposed inquiry, do the following:

1. Open the *Access Rights by User* (SM201055) form.
2. In the **Login** box, select your login (username), which is *gibbs*.
3. In the left pane, scroll down to the bottom, locate and click Invoices and Memos (AR3010PL) in the **Hidden** node.
4. In the right pane, verify that the **Access Rights** column has the *Delete* level of access rights.

> If a user account has multiple roles assigned to it, the user account's level of access rights to a particular form is the most permissive level among the active roles.

Step 2: Viewing a Generic Inquiry in Excel

To access the exposed inquiry through Microsoft Excel, do the following:

> The instructions below apply to Excel 2019. The details may differ for other versions of Microsoft Excel. The version you use must be higher than 2007; Microsoft Excel 2007 does not support connecting to OData endpoints.

1. Open an Excel workbook.
2. In the **Data** ribbon tab, click **Get Data > From Other Sources > From OData Feed**.
3. In the **OData Feed** wizard, do the following:
   a. Select the **Basic** option button.
   b. Enter the URL to the OData endpoint.
   c. Click **OK**.

d. On the next step of the wizard, select the **Basic** tab, and enter your sign-in credentials, which are your Acumatica ERP username and password.

> Do not add the tenant name after your username.

e. Click **Connect**.

Excel connects to the Acumatica ERP instance and obtains the list of exposed generic inquiries that are available for your Acumatica ERP user account.

4. In the left pane of the **Navigator** dialog box, which opens, select the *Invoices and Memos* generic inquiry. You can preview the data in the right pane of the dialog box.

5. Click **Load**.

The system connects to the server, downloads the data from your Acumatica ERP instance, and presents the data in the way you selected.

> The sorting order in the resulting Excel file may differ from the sorting order in Acumatica ERP, because Excel applies sorting after the data is downloaded.

6. To update the data, click **Refresh All** in the **Data** ribbon tab.

Lesson 1.14: Managing Access Rights to Generic Inquires

Managing Access Rights to Generic Inquiries: General Information

In Acumatica ERP, you create user accounts to manage user access to system resources. Based on users' job responsibilities, you can control their access to forms, entities created through these forms, and operations on these entities. Rather than assigning each individual user access rights to each object that the user must access, you define roles, which are sets of access rights that fit the job responsibilities in your company; you then assign these roles to individual users. Roles help you easily manage access rights for groups of users in the system. Changing one role alters the access rights for all users to whom this role is assigned.

Users are assigned one role or multiple roles, and based on these assignments, the users are then granted the appropriate levels of access to system objects. To be able to create, delete, or modify generic inquiries, you need a role that provides sufficient access rights (the *Delete* level) to the *Generic Inquiry* (SM208000) form. By default, the built-in *Administrator* role provides the needed access rights for working with generic inquiries by using this form.

Learning Objectives

In this chapter, you will learn how to set up access rights to generic inquiries.

Applicable Scenarios

You are responsible for administering user access to Acumatica ERP in your company. You need to manage access rights to different generic inquiries that your colleagues may need to do their jobs as efficiently as possible.

Access Rights to Inquiry Forms

After an inquiry form has been created and published—that is, the **Make Visible on the UI** check box is selected on the *Generic Inquiry* (SM208000) form—the system assigns the *Not Set* access level to the inquiry form for all user roles. The *Not Set* access level indicates that all roles have access to the forms until at least one role is assigned the *Revoked* or *Granted* access rights. All roles with the *Not Set* level are then denied access to the form. For each user role, you can specify one of the defined levels of access rights. For more information, see *Levels of Access Rights*.

You specify the levels of access to any form in the *Access Rights by Screen* (SM201020) form.

Access Rights to Inquiries as Substitute Forms

If a particular generic inquiry form replaces an entry form (that is, if it functions as a *substitute form*), access rights to the generic inquiry are inherited from this entry form. Thus, to change the level of access users have to the substitute form, you change the level of access to the entry form. You can manage access rights to substitute forms the same manner as you manage access rights to other generic inquiry forms.

Before you set up the access rights to a generic inquiry form, you should check whether the inquiry form is replacing an entry form. That is, on the **Entry Point** tab of the *Generic Inquiry* (SM208000) form, if the **Entry Screen** box is filled in and the **Replace Entry Screen with this Inquiry in Menu** check box is selected, you need to control the level of access to the entry form, rather than to the inquiry form functioning as a substitute form.

If a generic inquiry defined as a substitute form is no longer defined as one—that is, if on the **Entry Point** tab of the *Generic Inquiry* form, the **Replace Entry Screen with this Inquiry in Menu** check box is cleared—the access rights to the inquiry form revert to the initial state (that is, the access rights the inquiry had before you used it to replace a data entry form).

Managing Access Rights to Generic Inquiries: To Define Access Rights to a Generic Inquiry

In this activity, you will learn how to specify access rights to a generic inquiry that has been created on the *Access Rights by Screen* (SM201020) form.

Story

Suppose that you are a system administrator who manages user access to Acumatica ERP in your company. A financial supervisor of your company has requested that you allow users who are working with the *SweetLife Store* branch to view information on the Expected Receipts (GI000081) inquiry form, which is the predefined generic inquiry form with the *DB-ARexpectedReceipts* inquiry title and the *Expected Receipts* site map title specified on the *Generic Inquiry* (SM208000) form.

For the *DB-ARexpectedReceipts* generic inquiry, you have reviewed the inquiry settings on the **Entry Point** tab of the *Generic Inquiry* form and made sure that the inquiry is not configured as a substitute form for an entry form. This means that you need to specify the level of access rights directly for the form because the inquiry form does not inherit access rights from an entry form.

You have reviewed the roles that are assigned to the employees of the branch and determined that to give these employees the ability to view information on the form, you need to assign the *View Only* level of access rights to the *Branch Retail* role.

Process Overview

You will use the *Access Rights by Screen* (SM201020) form to select the *DB-ARexpectedReceipts* inquiry form and then assign the *View Only* level of access rights to for the *Branch Retail* role. Then you will sign in to Acumatica ERP with credentials of a user with the *Branch Retail* role (username: *rains*), open the Expected Receipts (GI000081) inquiry form, and make sure that you can view information on the form, to verify the level of access rights.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Defining Access Rights

To set up the *View Only* level of access rights to the *Expected Receipts* inquiry form, do the following:

1. Open the *Access Rights by Screen* (SM201020) form.
2. In the left pane, open the **Data Views** node, and click *Expected Receipts* to specify access rights to this form.

   The node in which you find the inquiry is the setting in the **Workspace** box in the Summary area of the *Generic Inquiry* (SM208000) form for the generic inquiry. The system will display a tooltip with the screen identifier (in this case, *GI000081*) when you point to a node.

3. In the right pane, in the row with the *Branch Retail* role, select *View Only* in the **Access Rights** column.
4. Save your changes.

Step 2: Verifying Access to the Form for a User Assigned to the Role

To verify that a user with the *Branch Retail* role has the *View Only* level of access rights to the Expected Receipts (GI000081) inquiry form, do the following:

1. In the right corner of the top pane on the Acumatica ERP screen, click the User menu button, and in the menu that opens, select **Sign Out**.

2. Sign in to Acumatica ERP with the following credentials:
   - Username: *rains*
   - Password: *123*
3. On the main menu, click the **Data Views** menu item. In the corresponding workspace, which opens, click *Expected Receipts* in the **Inquiries** category. Make sure the form is displayed.
4. Make sure that in the top right of the form title bar, the **Customization** menu is not displayed.

Managing Access Rights to Generic Inquiries: To Configure Access Rights to the Export to Excel Action of a Generic Inquiry

You can configure access rights to the **Export to Excel** action of only those generic inquiries that replace entry form or for which a workspace and category have been specified on the *Generic Inquiry* (SM208000) form. Do the following:

1. If the generic inquiry has been added to a workspace as a separate form, do the following:
   a. Open the *Access Rights by Screen* (SM201020) form.
   b. In the left pane, expand the nodes to the necessary level to find the generic inquiry to which you want to set up access rights.
   c. Expand the generic inquiry.
   d. Expand the *Generic Inquiry Result* container.
   e. Click the *Export* action.
   f. In the right pane, select the required access rights level for all necessary user roles. For details, see *Levels of Access Rights*.
   g. On the form toolbar, click **Save**.
2. If the generic inquiry is configured to replace an entry form, do the following:
   a. Open the *Access Rights by Screen* form.
   b. In the left pane, expand the nodes to the necessary level to find the entry form that has been replaced with the generic inquiry to which you want to set up access rights.
   c. Expand the entry form.
   d. Expand the container of the entry form.
   e. Click the *Export* action.
   f. In the right pane, select the required access rights level for all necessary user roles. For details, see *Levels of Access Rights*.
   g. On the form toolbar, click **Save**.

Part 2: Managing Advanced Filters, Pivot Tables, and Dashboards

In this part of the course, you will learn how to do the following:

- Create and manage advanced filters for particular types of forms that are shown as tabs and let you filter the data in these forms
- Create and configure pivot tables that are based on generic inquiries and can automatically sort, count total, or present the average of the data obtained in a generic inquiry, displaying the results in a separate table
- Create a dashboard with particular types of widgets available in Acumatica ERP and configure access rights to dashboards

For completing lessons of this part of the course, you will use a company with the *U100* dataset preloaded, which provides a fully configured company with sample data specially designed for this course.

Activities in this part are to be completed under users with specific access rights. Each activity provides the credentials to use for sign-in to the prepared *U100* tenant in the *System Preparation* section.

Lesson 2.1: Managing Advanced Filters

Managing Advanced Filters: General Information

In Acumatica ERP, you can use simple and quick filters to quickly filter the data in the table columns of forms. In addition, you can create advanced filters for any mass processing, inquiry, and generic inquiry forms to filter the data in the table shown on the form. (For more information about types of forms, see *Working with Data Entry Forms: General Information*.) Advanced filters are shown as tabs on the form. Once you create an advanced filter for a particular form and save the filter, you can reuse it at any time you open that form in the future. You can create advanced filters for your personal use or share them with other users.

Learning Objectives

In this chapter, you will learn how to do the following:

- Create advanced filters
- Share advanced filters
- Modify advanced filters
- Delete advanced filters
- Create personal filters based on shared filters

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including defining advanced filters. You need to create different advanced filters to filter specific types of data in forms

and make them available to all users of the system. With these filters, every user of the form will have a consistent basis for analysis without needing to spend time on configuring personal filters.

Personal and Shared Filters

When you work with a form, you can create advanced filters, which save time spent on filtering data. When you save an advanced filter, the system adds a tab with the filtered data to the form. You can create as many filters as you need for a particular form. All the filters that you create are your personal filters; they are not available to other users in the system. You can modify the conditions of these filters or delete the filters if you do not need them anymore.

If you would like to share your advanced filters with other users, you need to have sufficient access rights to the *Filters* (CS209010) form. If you do, you can modify filter clauses or delete shared advanced filters, either by selecting the filter on this form or directly on the related form. If you need to change the name for an advanced filter, you can do this only on the *Filters* form.

By default, users with the built-in *Administrator* role have access to this form. These users, generally system administrators or technical specialists that perform customizations, can create advanced filters and share them with other users. If an advanced filter is shared, it cannot be modified or deleted by users that do not have sufficient access rights to the *Filters* form.

> By default, every filter created on the *Filters* form is shared.

If you do not have access rights to modify advanced shared filters but would like to use an advanced shared filter as a basis for your filtering conditions, you can copy this filter and modify its copy as your advanced personal filter.

Creation of Advanced Filters

If you have sufficient access rights to the *Filters* (CS209010) form, you can use this form to create advanced shared filters for processing, inquiry and generic inquiry forms.

We recommend, however, that you instead create an advanced filter directly on the form by using the **Filter Settings** dialog box (for details, see *Filter Settings Dialog Box*), in which you can view the results immediately after applying the filter and modify the filter conditions, if needed. If you have access rights to the *Filters* form, you can also share the filter by using the **Filter Settings** dialog box.

To access the dialog box, you click **Filter Settings** on the table toolbar, as shown in the following screenshot.

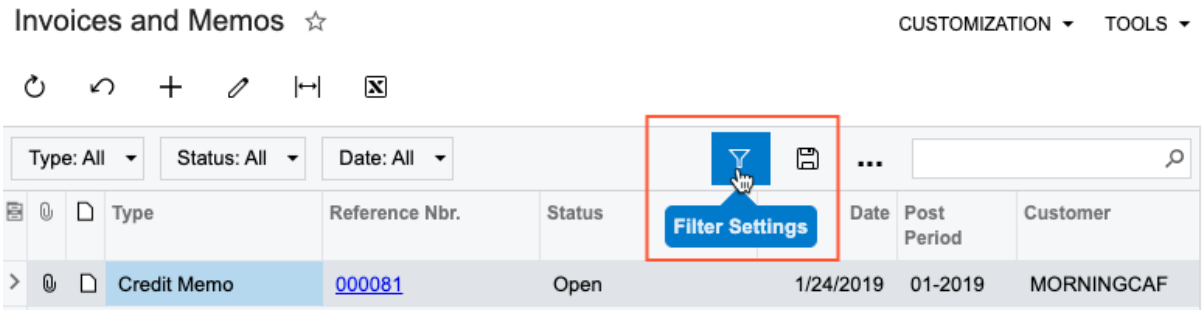


Figure: Button to access the Filter Settings dialog box

By using the dialog box, you can manage your advanced personal filters created for this form, and if you have sufficient access rights, you can also manage advanced shared filters that have been created for this form by other users.

Filter Clauses

A filter clause is a part of a filter represented by a table row in the table in the **Filter Settings** dialog box. Any advanced filter consists of either one filter clause or multiple filter clauses. For each clause, you specify the following settings in the table row:

- **Property**: The data field of the form that the filter will be applied to. You select a property from the list of available data fields.
- **Condition**: The logical operation that applies to the value of the selected property. You select a condition from the list of available conditions.
- **Value**: A value for the logical condition used to filter the data. Depending on the selected property and condition, you enter a value (and sometimes a second value as well, depending on the condition). Each value must conform with the data type of the selected property. Generally, there are a series of fixed values for the property—for example, the *Completed* value for the *Status* property. For date-relative clauses, you can specify parameters, such as *@WeekStart* and *@Today*, as values. The filtering process is not case-sensitive; that is, the system does not differentiate between uppercase and lowercase letters in values.

  A value is not used for the *Is Empty* and *Is Not Empty* conditions.

To define a clause, you specify the property, the condition, and the applicable values in the table row. You can use *And* and *Or* operators and parentheses to group clauses into logical expressions. You use the *And* operator to find the records that meet the criteria in both the selected clause and the next clause, and the *Or* operator to find the records that meet the criteria in either the selected clause or the next clause. Parentheses can be used in logical statements to define the order of operations. The *And* and *Or* operators work on a unit in parentheses as if the unit was a single clause.

For example, on the Invoices and Memos (AR3010PL) generic inquiry form, you can search for invoices with the open status by specifying a filter that has two conditions combined with the *And* operator. The first condition has *Type* specified as the property, *Equals* specified as the condition, and *Invoice* specified as the value. The second condition has *Status* specified as the property, *Equals* specified as the condition, and *Open* specified as the value (as shown in the following screenshot).

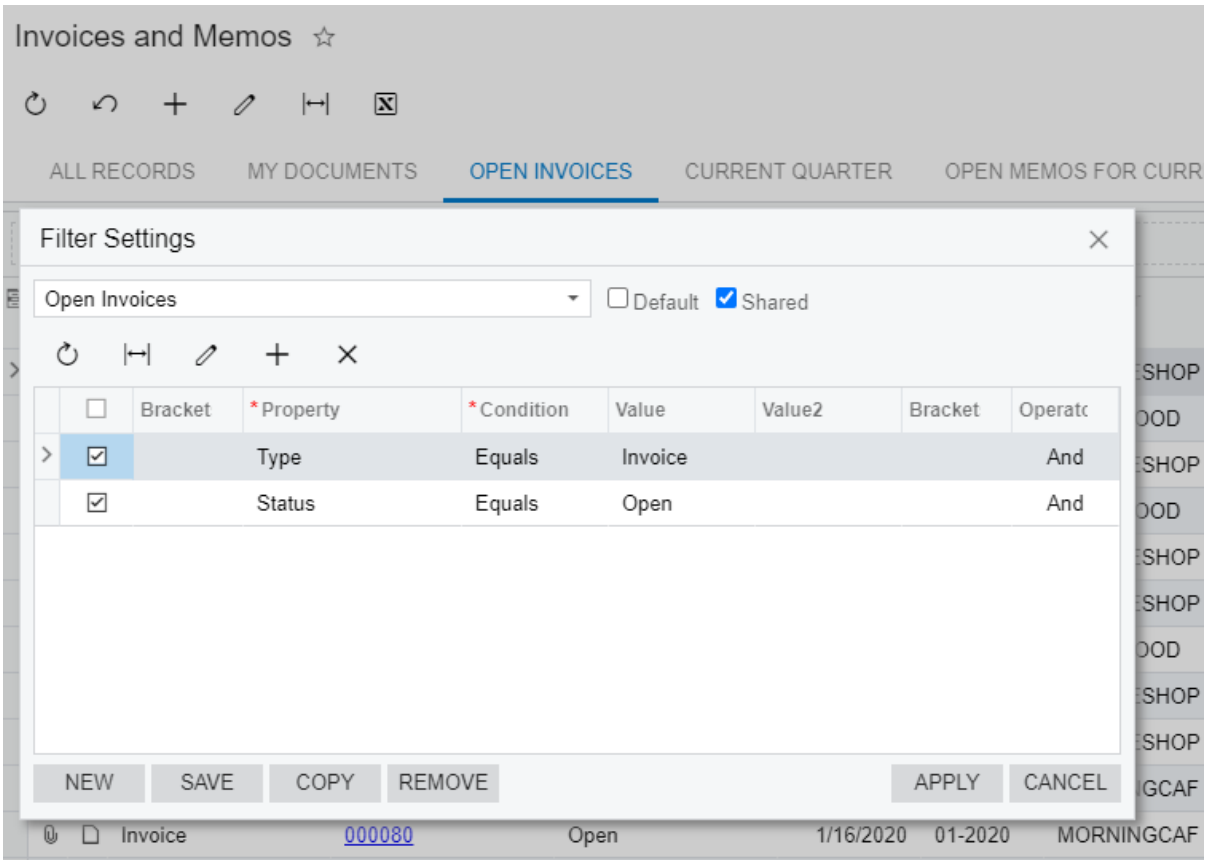


Figure: The clauses of the Open Invoices filter

Wildcards in Filter Clauses

When you filter data by using the **Filter Settings** dialog box or on the *Filters* (CS209010) form, you can use a pattern for the string value in the *Value* column. In the pattern, you can substitute one or more symbols with wildcard characters. You can use the following wildcard characters:

- Underscore (_): You can use this character if you want to filter the data according to a pattern in which only one symbol is substituted. For example, if you try to filter the data by a customer name that contains the *Customer_Name* string, the system will return all the customers whose name contains any of the following strings: *Customer_Name*, *Customer-Name*, and *Customer Name*.
- Percentage (%): You can use this character if you want to filter the data according a pattern in which multiple symbols are substituted. For example, if you try to filter the data by a customer name that contains the *Da%n* string, the system will return all the customers whose name starts with *Da* and ends with *n*, such as *Dalton*, *Damian*.

Date-Relative Filter Clauses

To make date clauses in advanced filters more flexible, you can use date-relative parameters—parameters that are relative to the current date in the **Filter Settings** dialog box or on the *Filters* (CS209010) form.

> For the date-relative parameters, as the current date, the system uses the date (in coordinated universal time, or *UTC*) of the server used to run the Acumatica ERP instance. Changing the business date (in the upper-right corner of the screen) does not affect the filter results.

You can use the following date-relative parameters:

- `@Today`: The current date. You can modify this parameter by adding or subtracting days.
- `@WeekStart`: The start of the current week. You can modify this parameter by adding or subtracting weeks.

  > The start and end of the week are determined according to the default system locale or the locale you selected when you signed in to Acumatica ERP. The system locales are specified and configured on the *System Locales* (SM200550) form.

- `@WeekEnd`: The end of the current week. You can modify this parameter by adding or subtracting weeks.

  > The start and end of the week are determined according to the default system locale or the locale you selected when you signed in to Acumatica ERP. The system locales are specified and configured on the *System Locales* (SM200550) form.

- `@MonthStart`: The start of the current month.
- `@MonthEnd`: The end of the current month.
- `@QuarterStart`: The start of the current quarter.
- `@QuarterEnd`: The end of the current quarter.
- `@PeriodStart`: The start of the current financial period.
- `@PeriodEnd`: The end of the current financial period; the financial periods in your system are defined on the *Financial Year* (GL101000) form.
- `@YearStart`: The start of the current calendar year.
- `@YearEnd`: The end of the current calendar year.

To add a filter clause with a date-relative parameter, you select the parameter from the list.

You can modify the parameters by adding or subtracting integers. The date is calculated according to the unit of measure of the parameter. For example, to view all tasks that are due next week, on the *Tasks* (EP404000) form, you add a filter clause as follows: You specify *Due Date* as the property, *Is Between* as the condition, *@WeekStart + 1* as the first value, and *WeekEnd + 1* as the second value. The integer (*1*) in these values represents a week because it is the unit of measure of the parameter.

> If the modified date is out of range, the system won't be able to find any records and will return an error.

Managing Advanced Filters: To Create Advanced Shared Filters

In this activity, you will learn how to create advanced filters and make these filters available to other users.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. An accountant of your company has asked you to add multiple filters (that is, filter tabs) for the Invoices and Memos (AR3010PL) generic inquiry form, which is the predefined generic inquiry with the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. These filters should be available to all users that have access to the inquiry. The following filter tabs need to be added with the noted content:

- **Open Invoices**: Only invoices that have the *Open* status.
- **Current Quarter**: Documents for the current quarter.
- **Previous Quarter**: Documents for the previous quarter.

> The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the Invoices and Memos (AR3010PL) generic inquiry form, you will create the requested filters by using the **Filter Settings** dialog box.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   > The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Creating an Advanced Filter with Multiple Filter Clauses

To create an advanced filter with multiple filter clauses, do the following:

1. Open the Invoices and Memos (AR3010PL) inquiry form.

2. On the table toolbar, click **Filter Settings**.
3. In the bottom left of the **Filter Settings** dialog box, which opens, click **New**.
4. Add a row to the table with the following settings:
   - **Property**: *Type*
   - **Condition**: *Equals*
   - **Value**: *Invoice*
   - **Operator**: *And*
5. Add another row to the table with the following settings:
   - **Property**: *Status*
   - **Condition**: *Equals*
   - **Value**: *Open*
6. In the bottom left of the dialog box, click **Save**. In the dialog box that opens, type `Open Invoices`, and click **OK**.
7. In the upper part of the dialog box, select the **Shared** check box.

   The following screenshot shows the settings of the *Open Invoices* filter.

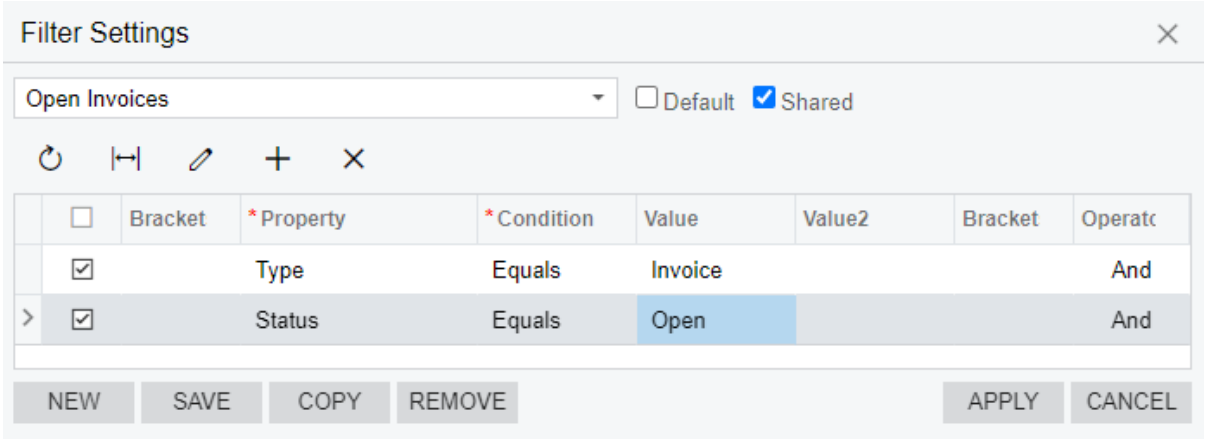


Figure: The settings of the Open Invoices filter

8. At the bottom of the dialog box, click **Save**.
9. Close the **Filter Settings** dialog box.
10. On the inquiry form, notice that the **Open Invoices** tab has been added.

Step 2: Creating Advanced Shared Filters with a Date-Relative Clause

To create advanced filters with a date-relative clause, do the following:

1. On the table toolbar of the Invoices and Memos (AR3010PL) inquiry form, click **Filter Settings**.

2. In the bottom left of the **Filter Settings** dialog box, which opens, click **New**.
3. Add a row to the table with the following settings:
   - **Property**: *Date*
   - **Condition**: *Is Between*
   - **Value**: *@QuarterStart*
   - **Value2**: *@QuarterEnd*
4. In the bottom left of the dialog box, click **Save**. In the dialog box that opens, type `Current Quarter`, and click **OK**.
5. In the upper part of the dialog box, select the **Shared** check box.
6. In the bottom left of the dialog box, click **Save**.

   The following screenshot shows the settings of the *Current Quarter* filter.

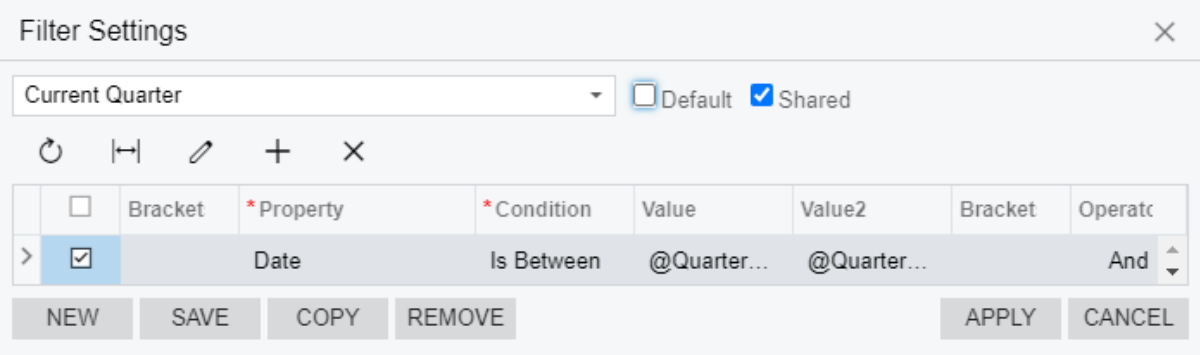


Figure: The settings of the Current Quarter filter

7. Click **Copy** in the bottom left of the dialog box.
8. In the dialog box that opens, type `Previous Quarter`, and click **OK**.
9. In the only row, change the values in the columns to the following:
   - **Value**: *@QuarterStart-1*
   - **Value2**: *@QuarterEnd-1*
10. Click **Save**.
11. In the upper part of the dialog box, select the **Shared** check box.
12. In the bottom left of the dialog box, click **Save**.
13. Close the **Filter Settings** dialog box.

    On the form, notice that the **Current Quarter** and **Previous Quarter** tabs have been added along with the other filter tabs that you have added in the activity, as shown in the following screenshot.

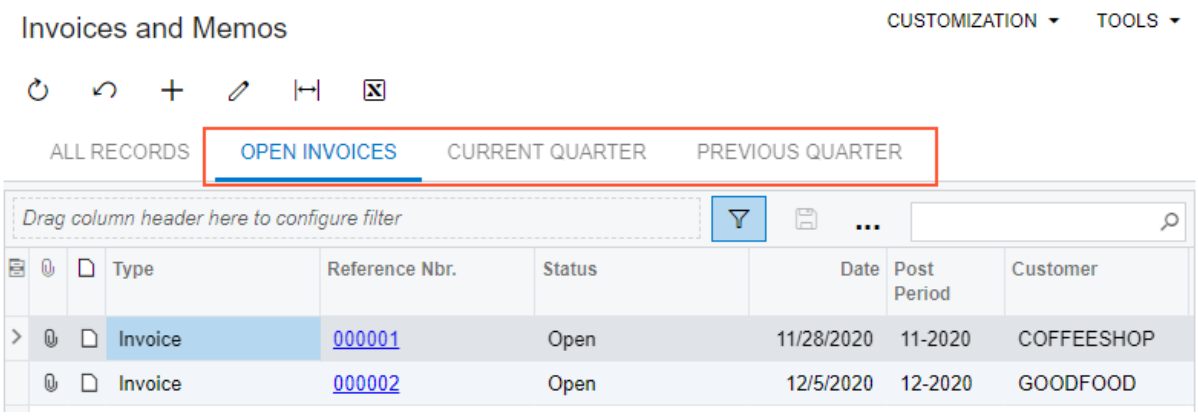


Figure: The added filter tabs

Managing Advanced Filters: To Remove an Advanced Filter

In this activity, you will learn how to remove an advanced filter.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. One year ago, you configured a set of shared filters for the Invoices and Memos (AR3010PL) generic inquiry form, which is the predefined generic inquiry with the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. Further suppose that the accounting department has worked with the set of shared filters for some time and realized that the **Previous Quarter** tab is not needed, so you have been asked to remove the filter tab.

> The Invoices and Memos (AR3010PL) inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

For the Invoices and Memos (AR3010PL) inquiry form, you will remove the **Previous Quarter** filter tab by using the **Filter Settings** dialog box.

Alternatively, you could stop sharing the filter by clearing the **Shared** check box for the filter in the **Filter Settings** dialog box. In this case, the filter would still exist, so that if the accounting department again requested the filter, you would not need to configure it once again. You have decided against this alternate approach; the filter conditions are simple and you can configure the filter quickly, so you do not want to clutter the list of available filters.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.

2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Removing an Advanced Filter

To remove an advanced filter, do the following:

1. Open the Invoices and Memos (AR3010PL) inquiry form.
2. On the table toolbar, click **Filter Settings** to open the **Filter Settings** dialog box.
3. In the drop-down box in the upper-left corner of the dialog box, select *Previous Quarter*.
4. At the bottom of the dialog box, click **Remove**.
5. In the dialog box that opens, confirm your action by clicking **OK**.

   The system deletes the filter.
6. Close the **Filter Settings** dialog box.
7. On the form, notice that the **Previous Quarter** tab is no longer available.

Managing Advanced Filters: To Modify an Advanced Shared Filter

In this activity, you will learn how to modify an advanced shared filter.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. A year ago, you configured a set of shared filters for the Invoices and Memos (AR3010PL) generic inquiry form, which is the predefined generic inquiry with the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form. The accounting department has worked with the set of filters for some time and decided that the **Open Invoices** tab needs to list all open documents, regardless of their type; accordingly, its name should be **Open Documents**.

> The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

In this activity, on the *Filters* (CS209010) form, you will modify the **Open Invoices** filter as requested.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Modifying the Advanced Shared Filter

To modify the advanced shared filter, do the following:

1. Open the *Filters* (CS209010) form.
2. In the **Filter ID** box, select *Open Invoices*.

   To locate the filter, click the selector button; in the search box of the lookup table, type its name or the screen identifier of the form the filter is applied to, which is *AR3010PL* (as shown in the following screenshot).

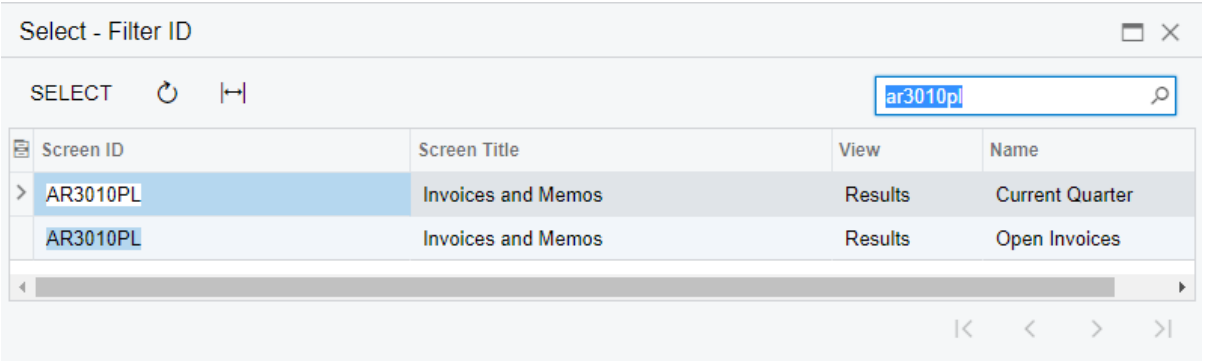


Figure: Searching for an existing shared filter

3. In the **Name** box, change the name of the filter to *Open Documents*.
4. In the table, delete the row with the condition that filters documents by the type.

> Instead of deleting the row, you can deactivate the condition by clearing the check box in the **Active** column for the row.

5. On the form toolbar, click **Save**.

   Notice that the value in the **Filter ID** box has been changed and now is the same as the filter name.

Managing Advanced Filters: To Create an Advanced Personal Filter Based on an Advanced Shared Filter

In this activity, you will learn how to create a personal filter based on a shared filter.

Story

Suppose that you are an accountant in your company. Some time ago, a set of shared filters was configured for the Invoices and Memos (AR3010PL) generic inquiry form, which is the predefined generic inquiry with the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form.

Further suppose that you are responsible for tracking the open credit memos for the current year. The generic inquiry has no filter you can use to quickly view these documents, so you have decided to create a personal filter and define it as your default tab, to streamline your work.

The Invoices and Memos (AR3010PL) generic inquiry form, which is the list of the invoices and memos that have been created on the *Invoices and Memos* (AR301000) form, is the substitute form that is opened when you click the *Invoices and Memos* link in a workspace or a list of search results.

Process Overview

On the Invoices and Memos (AR3010PL) generic inquiry form, you will copy the **Current Quarter** filter and modify it to suit your needs by using the **Filter Settings** dialog box.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Creating an Advanced Personal Filter by Copying an Advanced Shared Filter

To create an advanced personal filter, do the following:

1. Open the Invoices and Memos (AR3010PL) form.
2. On the table toolbar, click **Filter Settings** to open the **Filter Settings** dialog box.
3. In the drop-down box in the upper-left corner of the dialog box, select *Current Quarter*.

4. In the bottom left of the dialog box, click **Copy**.
5. In the dialog box that opens, type `Open Memos for Current Year`, and click **OK**.
6. In the only row, change the values in the columns to the following:
   - **Value**: *@YearStart*
   - **Value 2**: *@YearEnd*
7. Add one more row with the following settings:
   - **Property**: *Type*
   - **Condition**: *Equals*
   - **Value**: *Credit Memo*
8. Add one more row with the following settings:
   - **Property**: *Status*
   - **Condition**: *Equals*
   - **Value**: *Open*
9. In the bottom left of the dialog box, click **Save**.

   Notice that the **Open Memos for Current Year** filter tab has been added to the form.

Lesson 2.2: Managing Pivot Tables

Managing Pivot Tables: General Information

In Acumatica ERP, you can use pivot tables to reorganize and summarize data from generic inquiries with the ability to show row and column totals.

Learning Objectives

In this chapter, you will learn how to do the following:

- Configure a pivot table as a separate form and make it available to other users
- Modify the generic inquiry that is used as the basis for a pivot table while you are configuring the table
- Configure a pivot table as a filter tab on an inquiry form and share it with other users

Applicable Scenarios

You are responsible for the customization of Acumatica ERP in your company, including developing and modifying generic inquiries and pivot tables to give users information they need to do their jobs, and you need to deliver different inquiries and reports that your colleagues may need to perform their jobs effectively.

Pivot Table Basis

You use the data from a particular generic inquiry to compose a pivot table—that is, a generic inquiry is used as a basis of a pivot table. You can use only one generic inquiry to build each pivot table. If you need to compose a pivot table with information obtained from multiple generic inquiries, you must first create a single generic inquiry that includes all the necessary data and then use this inquiry as a basis for the pivot table.

Managing Pivot Tables: Creation of a Pivot Table as a Separate Form

As with generic inquiries, which are customizable Acumatica ERP forms that can be shared and accessed as other forms can, you can create pivot tables and share them with other users as forms. You can place any pivot table in a workspace by adding it to the site map and then specifying the needed levels of access rights to the pivot table for the user roles available in the system.

Access Rights to Modifying Pivot Tables

Acumatica ERP uses roles to restrict access to the system. Users are assigned one role or multiple roles, and based on these roles, the users are then granted the appropriate levels of access to system objects.

To be able to create, delete, or modify standalone pivot tables, you need a role that provides sufficient access rights (the *Delete* level) to the *Pivot Tables* (SM208010) form. By default, the built-in *Administrator* role provides the access rights for working with pivot tables created as forms.

Creation of a Pivot Table

You perform the following general steps to compose a pivot table:

1. Preparation: You determine which generic inquiry will be used as a data source for the pivot table.
2. Creation: You create a pivot table on the *Pivot Tables* (SM208010) form, specify the generic inquiry to be used as the data source, and configure the table layout. While configuring the table, you can preview the table any time.
3. Publication: After you have previewed the finished pivot table and made any needed changes, you publish the table, which makes it available for other users.

Configuration of Layout

The configuration of the layout of a pivot table in Acumatica ERP is similar to this process in Microsoft Excel. You use multiple panes to configure a pivot table.

The **Fields** pane lists all the fields added to the inquiry on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, regardless of their visibility settings. You move fields between the panes by dragging them. When you click a field in the **Filters**, **Rows**, **Columns**, or **Values** pane (see Item 1 in the following screenshot), the system displays its properties in the **Properties** pane (Item 2). By using the settings in the **Properties** pane, you define how the data of the field is to be presented in the table.

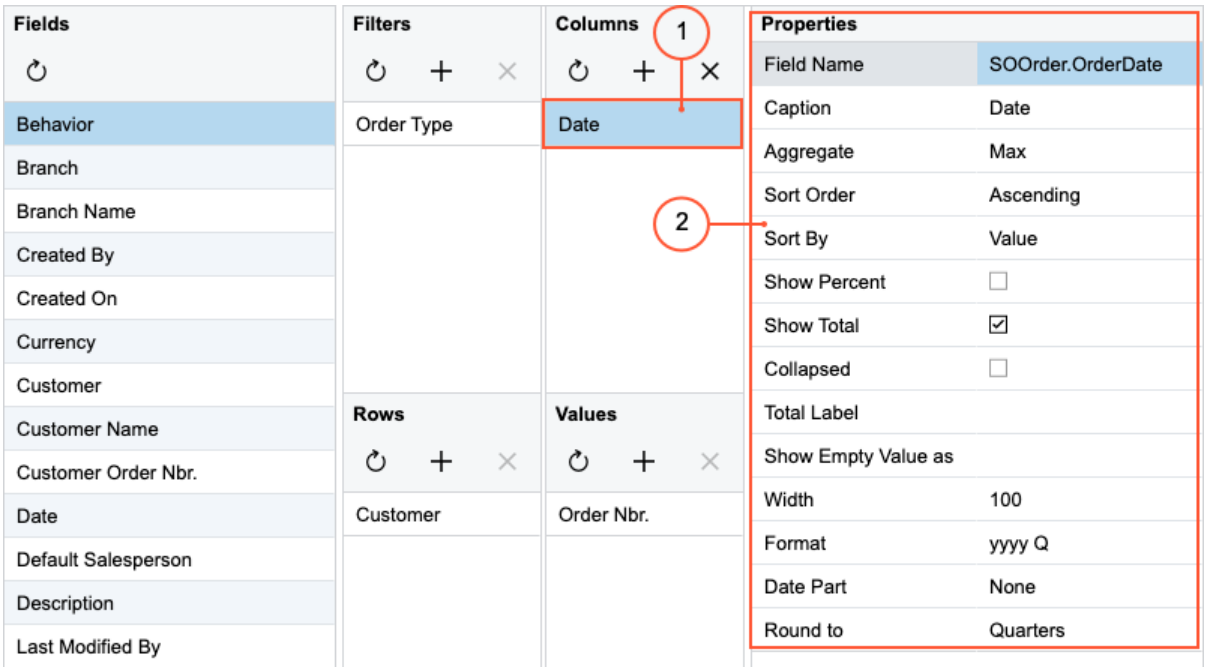


Figure: Configuration of the layout of a pivot table

Application of Shared Filters

A generic inquiry that you select as a data source for your pivot table may have advanced shared filters, which are displayed as tabs on the inquiry form containing filtered data that meets particular specifications. To reduce the amount of data in the pivot table for easier analysis, you can apply any of the advanced shared filters created for the generic inquiry. To do this, while configuring the pivot table, you select the filter in the **Shared Filter to Apply** box on the *Pivot Tables* (SM208010) form.

When the pivot table is displayed, the filter is applied to the generic inquiry, and then the pivot table uses the filtered data.

Data Filtering in Pivot Tables

In Acumatica ERP, as described in the previous section, an advanced shared filter can be applied to the generic inquiry to filter the data, and then a user builds a pivot table based on the filtered data. In addition, you can filter the data in a pivot table in any of the following ways:

- By the values of the fields added to the **Filters** pane: When you want to filter the data in a pivot table by fields that are not used in the table, you add these fields to the **Filters** pane during the design of the pivot table. The system displays these fields in the pivot table as quick filters, and the users can filter the data in the table to meet their current needs.

  > ⚠ When a field is added to the **Rows** pane and the resulting pivot table column has more than 100 unique records to display, for reasons related to system performance, the quick filter pop-up window does not display items for multiple selection.

- By the values of fields added to the **Columns** or **Rows** pane: For fields that you add to the **Columns** or **Rows** pane, the system automatically adds simple filters to the pivot table.

Managing Pivot Tables: Creation of a Pivot Table on a Filter Tab

Once an inquiry form has been created, if you have sufficient access rights, you can create multiple pivot tables saved as filter tabs for the inquiry form. Once you have created a pivot table, you can modify its configuration. You can also delete a pivot table as a filter tab if you do not need the tab anymore.

Creation of the Pivot Table

If you save a pivot table on a filter tab of a generic inquiry form, this pivot table is not in the list on the *Pivot Tables* (SM208010) form. That is, you cannot view, modify, or delete this pivot table by navigating to this form and selecting it. You can work with this pivot table only by navigating to the inquiry form and opening the filter tab.

When you click **... > Save as Pivot** in the filtering area of an inquiry form (shown in the following screenshot), the system opens the **Filter Settings** dialog box, where you specify the name to be used for the filter tab, select or clear the **Shared Configuration** check box (see the Pivot Table Tabs on Filter Tabs section of the current topic), and click **OK**. Then the system opens the newly created tab in edit mode for the pivot table, which is similar in appearance and functionality to the *Pivot Tables* form, with various panes that you can use to construct the table based on the generic inquiry.

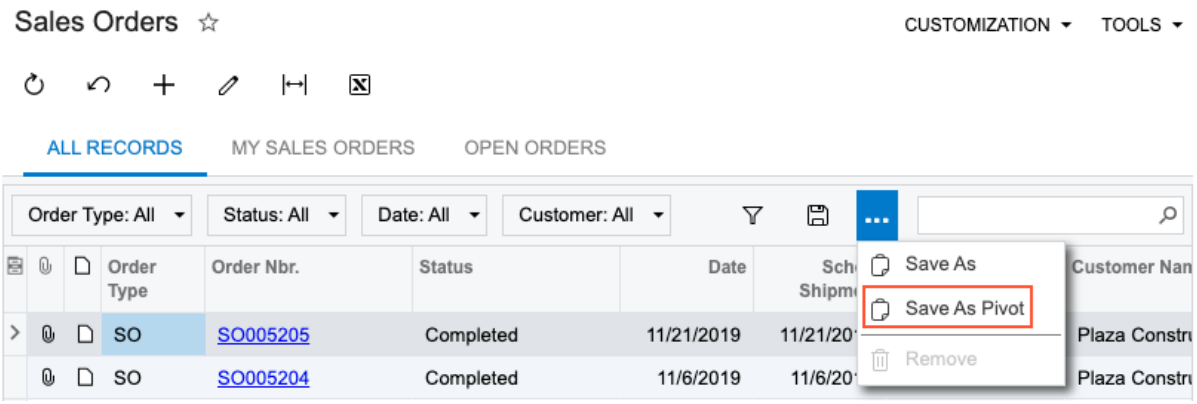


Figure: The Save as Pivot action on an inquiry form

Access Rights to Pivot Tables on Filter Tabs

By default, the ability to save pivot tables on filter tabs is available to all users. For all user roles, the *Not Set* access level is specified for the *Pivot Tables* (SM208020) form.

> In Acumatica ERP, there are two forms for pivot tables—SM208010 and SM208020.

You can use the *Access Rights by Screen* (SM201020) form to verify the levels of access the user roles in the system have to the form. On this form, you look for the *Pivot Tables* link, which is located in the *Hidden* node of the tree in the left pane. Then in the right pane, you make sure that for all roles in the system, the *Not Set* access level is set (as shown in the following screenshot). Notice the form identifier: *SM.20.80.20*.

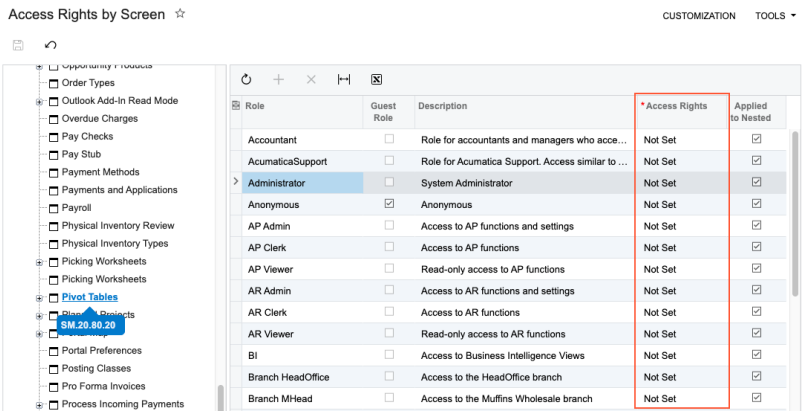


Figure: The levels of access rights for pivot tables as filter tabs

> ⚠ If you change the access level to at least one role, users with the other roles will not be able to save pivot tables as filter tabs.

Personal and Shared Filter Tabs with Pivot Tables

By default, when you save a filter as a pivot table, the **Shared Configuration** check box in the **Filter Settings** dialog box is cleared (see the following screenshot), and the system treats the filter tab as an advanced filter that is not available to other system users. If you select the **Shared Configuration** check box while saving a pivot table as a tab, the tab with the pivot table will instead be available to all users who have access to the inquiry form.

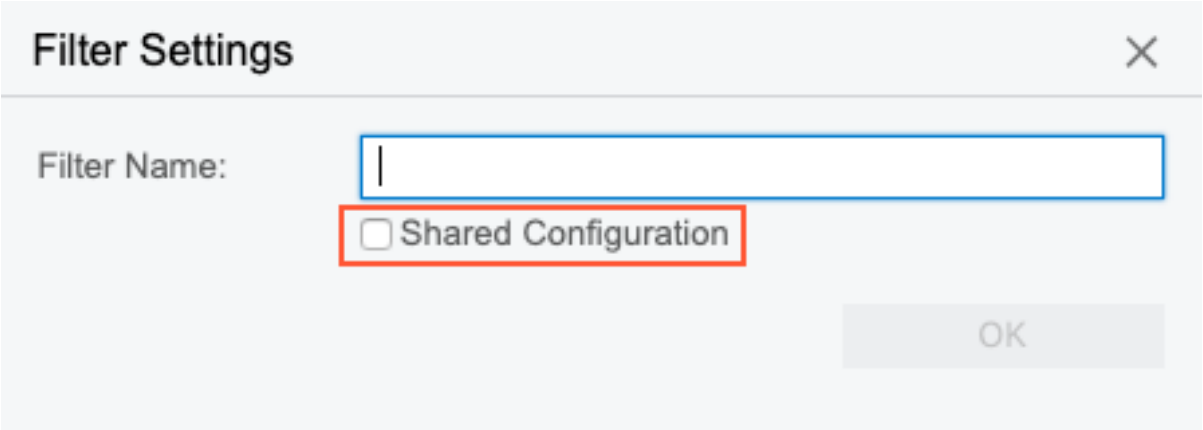


Figure: The Shared Configuration check box in the Filter Settings dialog box

As is the case with advanced filters, if you would like to share your pivot tables with other users, you need to have sufficient access rights to the *Filters* (CS209010) form; without the access, the **Shared Configuration** check box will be cleared and unavailable for you. By default, users with the built-in *Administrator* role (such as system administrators or technical specialists that perform simple customizations) have access to the form and can share pivot tables as filter tabs.

Edit Mode of the Pivot Table Tab

When you initially add a pivot table as a filter tab, the tab is opened in edit mode, so that you can configure the pivot table. Once you have configured the pivot table, you can switch between edit mode and view mode by clicking the **Edit pivot table** button (see Item 1 in the screenshot below).

The editing layout is similar to the one you may be accustomed to seeing when you are configuring a pivot table in Microsoft Excel. There are multiple panes that you use to configure a pivot table.

The **Fields** pane lists all the fields that have been added to the generic inquiry on the **Results Grid** tab of the *Generic Inquiry* (SM208000) form, regardless of their visibility settings. You move fields between the panes by dragging and dropping them. When you set focus on a field in the **Rows**, **Columns**, or **Values** (Item 2) pane, the system displays its properties in the **Properties** pane (Item 3). By using the settings in the **Properties** pane, you define how the data of the field is to be presented in the table.

If you need to add quick filters to the table, you drag the needed fields to the filtering area (Item 4). If some quick filters were added to an inquiry tab that you saved as a pivot table, the system copies all these filters to the filtering area by default. You can remove them if they are not needed. You remove quick filters by selecting **Remove Quick Filter** from the drop-down list that opens when you click this quick filter.

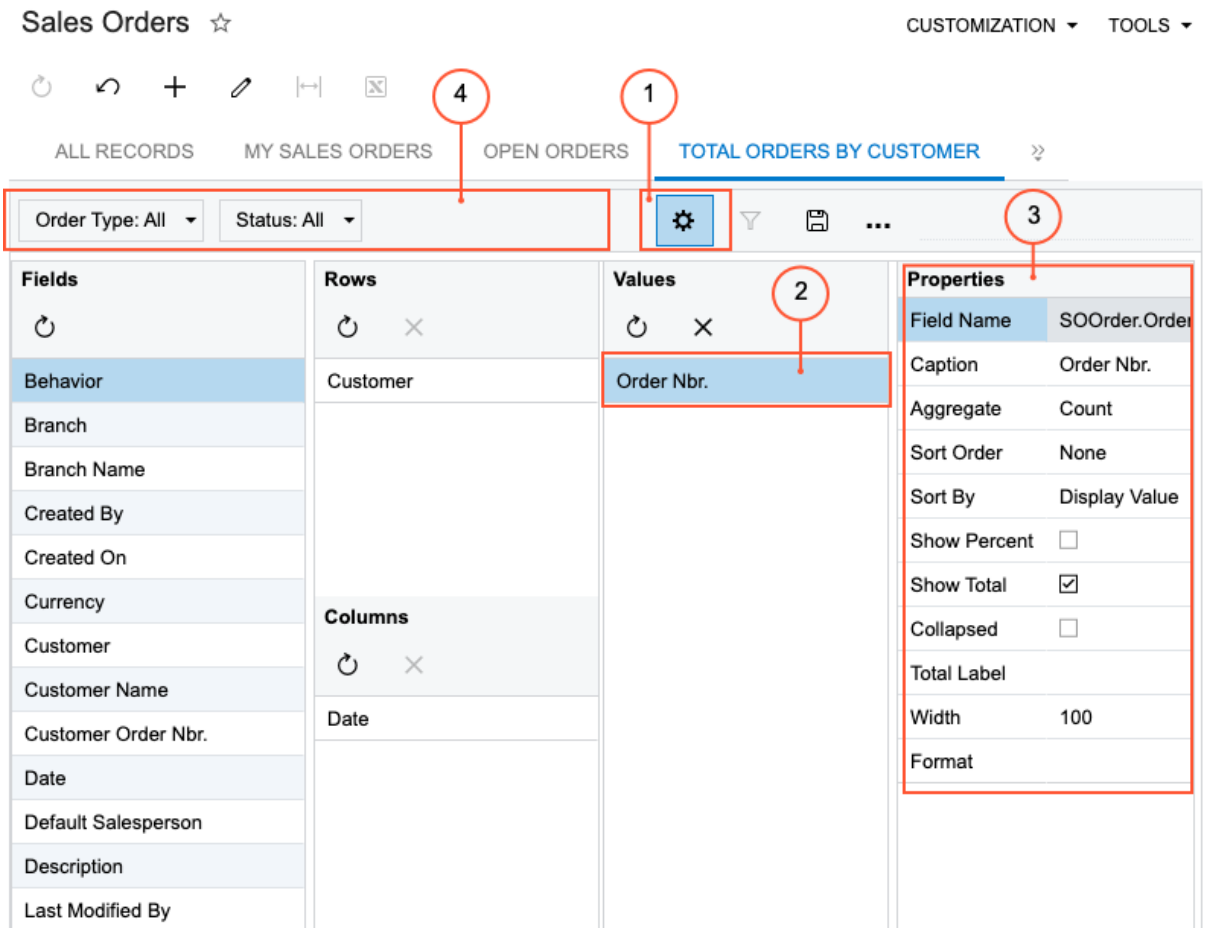


Figure: Edit mode of a pivot table as a filter tab

Managing Pivot Tables: Data Presentation

Pivot tables can contain a lot of data, and for users who analyze the data in these tables, it is crucial that the data be presented in a convenient way. On the *Pivot Tables* (SM208010) form of Acumatica ERP, you can flexibly configure the format of the fields to be displayed in a pivot table.

Format of Field Values in Pivot Tables

If you want to change the format of the fields to be displayed in a pivot table, you can specify the required format in the **Format** box of the **Properties** pane on the *Pivot Tables* (SM208010) form. (This pane contains the display properties for a field that is selected in the **Filters**, **Columns**, **Rows**, or **Values** pane.) In this box, you can type one of the standard formats defined for the format function in .Net. In the following table, you can find examples of format definitions for numbers and the corresponding output.

Table: User-Defined Format for Numbers

Format Definition	Output Example
`0`	8972
`0.0`	8972.2
`0.00`	8972.23
`#,##0.00`	8,972.23
`$#,##0.00`	$8,972.23

Number or Percentage of the Total

On the *Pivot Tables* (SM208010) form, you can specify how the system should display numeric values by using the options in the **Show Value As** drop-down box of the **Properties** pane. The following options are available:

- *Number*
- *% of Grand Total*
- *% of Column Total*
- *% of Row Total*

The **Values** pane of this form contains a list of fields from the selected generic inquiry whose values are displayed in cells of the pivot table. You can add the same field to this pane multiple times and specify different display options for each entry.

For example, suppose that you want to analyze activities that your employees have with customers—that is, review the number of phone calls, sent emails, and completed work items for each customer. Also, you would like to know this activity type's percentage of the grand total of all activities that employees have with customers. For each activity type shown in a column, you add two values: a value that is the count of the activities of the type, displayed as a number; and the same value, but displayed as a percentage of the grand total of all activities for all customers.

Format Options for Date Fields

For date fields, on the **Properties** pane of the *Pivot Tables* (SM208010) form, you can configure the following extended format settings:

- Rounding data with the specified accuracy: You can select the accuracy of calculating data gathered by date. For example, suppose that for each sales manager, you want to analyze sales amounts aggregated by quarter years. Suppose that sales amounts are collected daily, which means that the date field in the generic inquiry with the required data contains the day, the month, and the year (such as *04/11/2020*). To aggregate the sales amounts by quarter in the pivot table, in the **Round To** box of the *Pivot Tables* form, you select *Quarters*, and the date will contain only the year and the quarter (such as *2020 Q4*) in the pivot table.

- Aggregating data by a particular date part: You can select the part of a date field by which you want to aggregate data in a pivot table. For example, suppose that you want to analyze the seasonal demand of T-shirts for the past five years. To do this, you can build a pivot table that displays sales amounts aggregated by month. Suppose that the date field in the generic inquiry with sales amounts for T-shirts contains the month and the year (such as *July 2020*). To make the system aggregate data by month and display only months in the pivot table, in the **Date Part** box, you select *Month*.

- Displaying hierarchical column or row headers: If you want to configure the dates in columns or rows for a pivot table to meet your needs, you can set up a hierarchical structure of the parts of the dates. For example, suppose that you want to analyze the number of shipped laptops by month for the past three years. Suppose that the date in the generic inquiry contains the day, the month, and the year (such as *04/11/2020*). In the pivot table, you can display a one-level column that will contain the following date values: *Jan 2020*, *Feb 2020*, and so on through *Jun 2020*. Alternatively, you can configure the system so that it displays two levels of column headers: In the first level, the system displays the years, and under each year, the system displays the months. To configure the system in this way, you add two copies of the date field to the **Columns** pane of the *Pivot Tables* form. For the first copy, in the **Round To** box, you select *Years*; for the second copy, in the **Date Part** box, you select *Month*.

> The value in the **Format** field on the **Properties** pane is case sensitive. Use lowercase letters for the day and year, and uppercase letters for the month, as follows: dd/MM/yyyy.

Format Options for Fields with Segmented Keys

For fields for which segmented keys are configured to have multiple segments, on the **Properties** pane of the *Pivot Tables* (SM208010) form, you can configure the following format settings:

- Aggregating data by the particular segment: You can select the segment by which the system will aggregate data in a pivot table. For example, suppose that your company sells fruit and vegetables to restaurants. Suppose that the item class values consist of the following segments: the item category (*FR* or *VEG*), the item type (*APL*, *ORG*, *CBR*, or *PTO*), and the country of origin (such as *ES*, *CN*, or *MA*). If you want to use a pivot table to analyze the numbers of items of each type shipped to each customer, in the **Segment** box, for the *Class ID* field, you select the segment that corresponds to the item type. With these settings, the system will aggregate sales data by the item type (such as apples, designated by *APL*).

- Displaying hierarchical column or row headers: If you want to analyze data by using a combination of two segments of a field value, you can set up a hierarchical structure of the segments. Suppose that in the example described in the previous list item, you also want to add to the pivot table the country of origin for each item type. To address this task, you add to the **Columns** pane two

copies of the *Class ID* field. For the first copy, in the **Segment** box, you select the segment used for the item category; for the second copy, in the **Segment** box, you select the segment used for the country of origin.

Managing Pivot Tables: To Create a Pivot Table as a Form

In this activity, you will learn how to create a pivot table and make it available as a standalone form in Acumatica ERP.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms and pivot tables. An accountant of your company has asked you to create a pivot table that aggregates invoice totals by quarter for each customer and displays this customer's percentage of the grand total of all sales to customers in the quarter.

Process Overview

In this activity, on the *Pivot Tables* (SM208010) form, you will create the requested pivot table, which is based on the data retrieved by the predefined Invoices and Memos (AR3010PL) inquiry form, which has the *AR-Invoices and Memos* inquiry title and the *Invoices and Memos* site map title specified on the *Generic Inquiry* (SM208000) form.

While creating the pivot table, you will notice that the inquiry does not include the field that holds the line total of the document. You will add the missing field to the inquiry, refresh the data in the **Fields** pane, and proceed with the table configuration.

When the table has been created and all the necessary settings have been specified, you will preview the pivot table and then add it to the site map.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Creating a Pivot Table

To create the pivot table, do the following:

1. Open the *Pivot Tables* (SM208010) form.
2. In the **Screen ID** box, select *Invoices and Memos*.

You can look for the generic inquiry by typing its name (`Invoices and Memos`) or screen identifier (`AR3010PL`) in the search box in the lookup table. The lookup table for the box shows a **Title** column (with the site map title for each row) and a **Screen ID** column (with the screen ID of the row). When you double-click a row to select it, the system inserts the title rather than the screen ID into the **Screen ID** box.

3. In the **Name** box, type `Invoice Totals by Customer`, which describes the type of data that is shown with this pivot table. The value will be used as a default value for the pivot table title in the site map.

4. On the form toolbar, click **Save**. In the **Pivot Table ID** box, notice that the name you have entered is used as the identifier of the pivot table.

Step 2: Adding a Missing Field to the Inquiry

Suppose that you have realized that you need the *Line Total* field to calculate the percentage. To add the missing field to an inquiry for a pivot table, do the following:

1. On the form toolbar of the *Pivot Tables* (SM208010) form with the *Invoices and Memos* pivot table selected in the **Screen ID** box (and with the *Invoice Totals by Customer* in the **Name** box), click **Edit Inquiry**.

   The system opens the *Generic Inquiry* (SM208000) form in a separate tab. (Do not close the other browser tab, with the *Pivot Tables* form opened with the *Invoices and Memos* pivot table selected; you will return to it in the next step.)

2. In the **Results Grid** tab, add a row with the following settings:

   - **Object**: *ARInvoice*
   - **Data Field**: *LineTotal*
   - **Visible**: Cleared
   - **Default Navigation**: Cleared
   - **Caption**: `Line Total`

   > If some columns mentioned in this instruction (or any instruction) of the activity are hidden in the table, make them visible by using the **Column Configuration** dialog box of the table.

3. On the form toolbar, click **Save**.

Step 3: Configuring the Pivot Table

To configure the pivot table, do the following:

1. Switch to the browser tab with the *Pivot Tables* (SM208010) form with the *Invoices and Memos* pivot table selected.

2. On the toolbar of the **Fields** pane, click **Refresh** to update the list of available fields. Verify that the *Line Total* is available in the list.

3. To configure the rows of the pivot table, add fields to the pivot table as follows:

   a. Drag *Customer* from the **Fields** pane to the **Rows** pane. The names of customers will be displayed as row headers in the pivot table.

   b. In the **Rows** pane, click *Customer* to display the properties of this field in the **Properties** pane.

   c. In the **Properties** pane, make sure that the **Show Total** check box is selected. With this setting, the system will add the **Total** row, which will display a total for all customers in each column.

4. To configure the columns of the pivot table, add fields to the pivot table as follows:

   a. Drag *Date* from the **Fields** pane to the **Columns** pane.

   b. In the **Columns** pane, click *Date* to display the properties of this field in the **Properties** pane.

   c. In the **Properties** pane, make sure that the **Show Total** check box is selected. With this setting, the system will add the **Total** column, where a total for all dates in each row will be displayed.

   d. In the **Round To** box, select *Quarters* to aggregate invoice totals by quarter. Notice that in the **Format** box, the format of the date is displayed automatically.

5. To configure the values of the pivot table, add fields to the pivot table as follows:

   a. Drag *Line Total* from the **Fields** pane to the **Values** pane. The pivot table will display invoice amounts, aggregated by quarter, for each customer.

   b. In the **Properties** pane, type `$#,##0.00` in the **Format** box.

   c. Drag *Line Total* from the **Fields** pane to the **Values** pane one more time.

   d. In the **Properties** pane, type `% of Grand Total` in the **Caption** box.

   e. In the **Properties** pane, select *% of Grand Total* in the **Show Value As** box.

6. On the form toolbar, click **Save**.

Step 4: Previewing the Pivot Table

To preview the pivot table you have created, with the *Invoices and Memos* pivot table selected on the *Pivot Tables* (SM208010) form, click **View Pivot** on the form toolbar. The system opens the table in a separate browser tab. The pivot table that you have created is shown in the following screenshot.

INVOICE TOTALS BY CUSTOMER

Inactive Fields

	Date							
	2020 Q4		2021 Q1		2021 Q2		Total	
Customer	Line Total	Line Total	Line Total	Line Total	Line Total	Line Total	Line Total	Line Total
CANDYY			$155.00	0.00%			$155.00	0.00%
COFFEESHOP	$30.00	0.00%	$10,653.07	0.03%			$10,683.07	0.03%
EQUGRP					$39,743,309.06	99.86%	$39,743,309.06	99.86%
GOODFOOD	$1,866.10	0.00%	$8,449.95	0.02%			$10,316.05	0.03%
HMBAKERY	$1,887.30	0.00%	$12,653.75	0.03%			$14,541.05	0.04%
MORNINGCAF			$4,900.00	0.01%			$4,900.00	0.01%
RETSALE	$1,350.80	0.00%	$1,300.40	0.00%			$2,651.20	0.01%
TOMYUM			$11,300.00	0.03%			$11,300.00	0.03%
Total	$5,134.20	0.01%	$49,412.17	0.12%	$39,743,309.06	99.86%	$39,797,855.43	100.00%

Figure: The Invoice Totals by Customer pivot table

Step 5: Making the New Table Visible to Other Users

To add the pivot table you have created to the site map, do the following while viewing the *Invoices and Memos* pivot table on the *Pivot Tables* (SM208010) form:

1. In the Summary area of the form, select the **Make Visible on the UI** check box.

   The system automatically assigns the default workspace (*Data Views*) and category (*Pivot Tables*) to the table, which you can override any time.

2. In the **Site Map Title** box, modify the table title, if needed.
3. On the form toolbar, click **Save**.
4. On the main menu, select **Data Views**, and in the workspace, under the **Pivot Tables** category, make sure the pivot table you created is listed.

Self-Test Exercise

Now that you have learned how to create a pivot table as a separate form and specify different properties, try to apply this knowledge and modify the pivot table on the *Pivot Tables* (SM208010) form as follows:

- Make the system aggregate invoice totals by quarters, using the **Date Part** setting in the **Properties** pane.
- Make the system display the percentage of the column total instead of the grand total.
- Move the pivot table to the **Receivables** workspace.

Managing Pivot Tables: To Create a Pivot Table on a Filter Tab

In this activity, you will learn how to create a pivot table as a filter tab and share it with other users.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms and pivot tables. A warehouse manager of your company has asked you to create a pivot table that groups stock items by item class and shows the total number of all items and the number of items in each class. Also, the pivot table should be viewed as a tab of the predefined Stock Items (IN2025PL) inquiry form, which has the *IN-StockItem* inquiry title and the *Stock Items* site map title specified on the *Generic Inquiry* (SM208000) form.

The Stock Items (IN2025PL) inquiry form, which displays the list of the stock items that have been created on the *Stock Items* (IN202500) form, is the substitute form that is opened when you click the *Stock Items* link in a workspace or a list of search results.

Process Overview

In the activity, on the Stock Items (IN2025PL) generic inquiry form, you will create the requested pivot table and save it as a shared filter tab of this inquiry form.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Creating the Pivot Table on a Filter Tab

To create the pivot table as a filter tab, do the following:

1. Open the Stock Items (IN2025PL) generic inquiry form.
2. In the filtering area of the form, click **... > Save as Pivot**.
3. In the **Filter Settings** dialog box, do the following:
   a. In the **Filter Name** box, type `Items by Item Class`.
   b. Select the **Shared Configuration** check box.
   c. Click **OK** to add the shared filter tab.

   The system opens the newly created tab in edit mode for the pivot table.

Step 2: Configuring the Pivot Table

To configure the pivot table, do the following:

1. While you are still viewing the **Items by Item Class** filter tab of the Stock Items (IN2025PL) inquiry form in edit mode, to configure the rows of the pivot table, add fields to the pivot table as follows:

   a. Drag *Item Class* from the **Fields** pane to the **Rows** pane. The identifiers of the item classes will be displayed as row headers in the pivot table.

   b. Drag *Inventory ID* from the **Fields** pane to the **Rows** pane as a second row after *Item Class*. This will group stock items that belong to the same item class.

2. In the **Rows** pane, click *Item Class* to display its properties in the **Properties** pane, and do the following in this pane:

   a. Make sure that the **Show Total** check box is selected. With this setting, the system will add the **Total** row at the bottom of the table, which will display the total number of items in stock for all item classes.

   b. Type `Total Positions` in the **Total Label** box. With this setting, the system will change the caption for the **Total** row at the bottom of the table

   c. Select the **Collapsed** check box. With this setting, the system will collapse item class groups by default.

3. In the **Rows** pane, click *Inventory ID* to display its properties in the **Properties** pane. In this pane, clear the **Show Total** check box. The total number of stock items in a class will be displayed with the collapsed groups of item classes.

4. To configure the values of the pivot table, add fields to the pivot table as follows:

   a. Drag *Inventory ID* from the **Fields** pane to the **Values** pane. The pivot table will display the number of stock positions, aggregated by item class.

   b. While *Inventory ID* is selected in the **Values** pane, in the **Properties** pane, clear the **Show Total** check box.

5. In the filtering area, click **Edit pivot table** to switch to view mode.

   The system will display the pivot table, which aggregates stock items by item class. Item class groups are collapsed by default, and the total number of positions in the group is displayed in the **Total** column. The **Total Positions** row is added at the bottom of the table and shows the total number of stock positions available. A user can expand a particular group by clicking the plus sign next to a group name (shown in the following screenshot) or click the **Expand All** button at the bottom of the form (also shown in the screenshot) to expand all groups at once. The button next to **Expand All** is the **Collapse All** button.

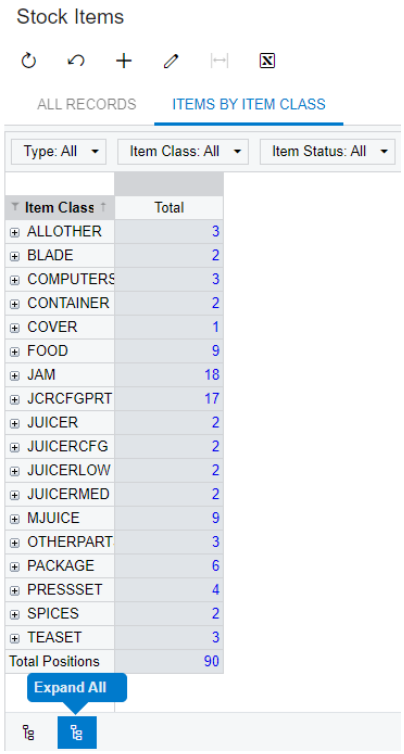


Figure: A pivot table with the groups collapsed

Managing Pivot Tables: To Delete a Pivot Table as a Form

In this activity, you will learn how to delete a pivot table that is created as a form.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations, including the creation and modification of generic inquiry forms and pivot tables. An accountant of your company has asked you to delete the *Invoice Totals by Customer* pivot table, which you created as a result of performing the *Managing Pivot Tables: To Create a Pivot Table as a Form* activity.

Process Overview

In this activity, on the *Pivot Tables* (SM208010) form, you will delete the *Invoice Totals by Customer* pivot table.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

> The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step: Deleting a Pivot Table

To delete a pivot table, do the following:

1. Open the *Pivot Tables* form (SM208010).
2. In the **Screen ID** box of the Summary area, select *Invoices and Memos*, which is the generic inquiry that is used as a data source for the pivot table.
3. In the **Pivot Table ID** box, select *Invoice Totals by Customer*, which is the pivot table that should be deleted.
4. On the form toolbar, click **Delete**.
5. In the dialog box that opens, confirm your action by clicking **OK**.

   The system deletes the pivot table.

Lesson 2.3: Managing Dashboards

Managing Dashboards: General Information

With Acumatica ERP dashboards, you can monitor your company's current financial, operational, and organizational information, and analyze real-time trends that relate to your job. On dashboards, different types of information can be displayed in various presentation forms—such as text, charts, graphs, and tables—depending on your preferences and the specific types of data you want to see.

Learning Objectives

In this chapter, you will learn how to do the following:

- Design a dashboard
- Manage access rights for the viewing, configuration, and personalization of dashboards

Applicable Scenarios

You design and manage dashboards in the following cases:

- You are responsible for the customization of Acumatica ERP in your company.
- You need to present your company's information on dashboards as text, charts, graphs, and tables that help your colleagues to monitor their job data and perform the needed processes more easily.

Dashboards

A dashboard is a collection of widgets that are displayed on a single screen. Acumatica ERP dashboards support various types of widgets, as you can see in the screenshot below, which shows a predefined dashboard designed for AP clerks. A particular widget might present such data as key customers' details for the past 12 months, or the number of projects that will be closed within 30 days.

The widgets have drill-down capabilities, which give users the ability to navigate directly from a dashboard widget to the source of the data they are viewing. With these capabilities, users can learn more about the data on the widgets of the dashboard and take appropriate action, as needed.

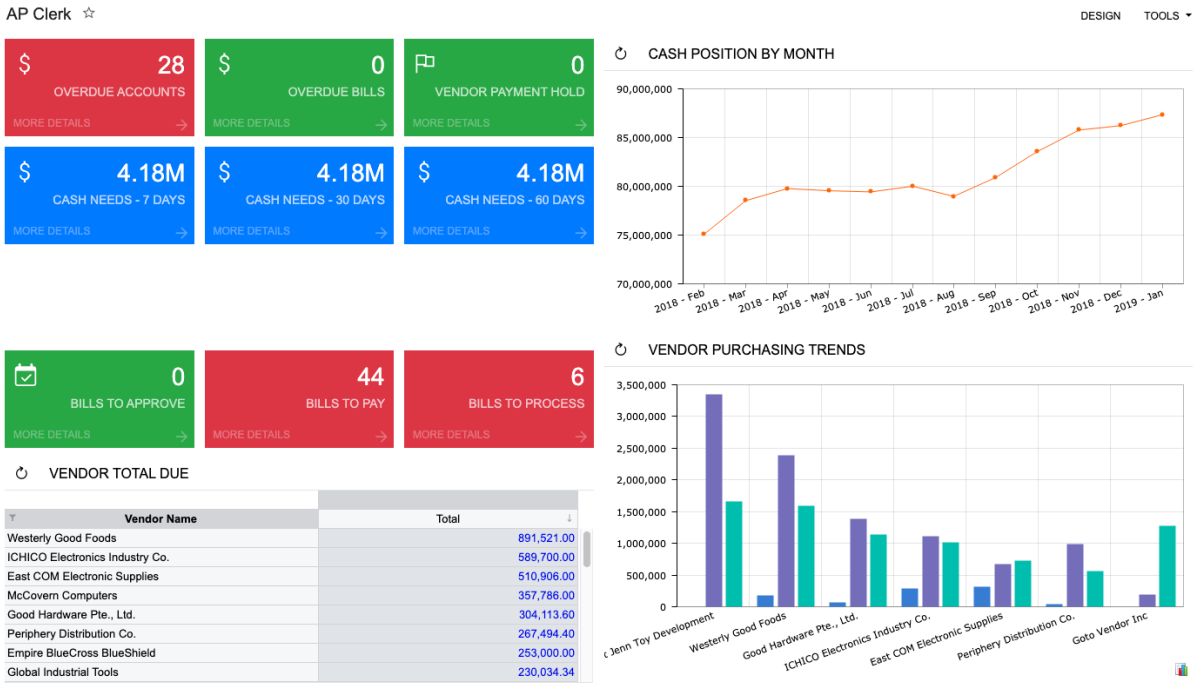


Figure: The AP Clerk predefined dashboard

Types of Widgets

A widget is a dashboard component that provides a particular type of information, such as a real-time data view or a wiki article.

Before you create or modify a dashboard, you need to plan how many widgets and which types the dashboard will have. We recommend that you add no more than seven widgets to a particular dashboard. If a dashboard is cluttered with too many widgets, the users viewing the dashboard cannot understand the data quickly and easily.

You can add the following types of widgets to a dashboard:

- *Chart*: A graphical representation of data from an Acumatica ERP form. You can use charts of various types, such as bar charts and line charts.
- *Data Table*: A systematic display of data from an Acumatica ERP form, with data arranged into rows and columns.
- *Embedded Page*: A document or an image that is stored on an external resource, such as cloud storage.
- *Header*: A title that can be added to the widget section.
- *Key Performance Indicator (KPI)*: A statistical record that measures progress or achievement toward a set performance indicator by showing parameters that are important to the business processes of your organization and should be monitored daily. The following visualization types are available for the widget: *Scorecard* (data is presented in the form of a card with a single

parameter) and *Meter* (data is presented in the form of a gauge with normal, warning, and alarm levels).

- *Link*: A link to an Acumatica ERP form, report, or dashboard.
- *Pivot Table*: A data table organized to filter, sort, count, total, or give the average of data from an Acumatica ERP inquiry, displaying the summarized results in a separate table.
- *Power BI Tile*: A chart, scorecard, or other analytical information that is represented on a Power BI dashboard designed by your organization.
- *Trend Card KPI*: A statistical record showing parameters whose dynamic change is important to the business processes of your organization.
- *Wiki Page*: A reference topic, procedure, business plan, or other content that is frequently consulted by Acumatica ERP users.

Widgets Based on Generic Inquiries

Most types of widgets are based on data from generic inquiries. A generic inquiry is a user-definable tool, generally created by a developer, customizer, or system administrator, that collects data from the system database and displays the query results on an Acumatica ERP form. All the generic inquiries related to dashboards have two-letters prefix in inquiry titles. This prefix matches two first letters in the **Screen ID** box of this generic inquiry and can be the following, for example: *AR*, *AP*, *CA*, or *GL*.

To create widgets based on a generic inquiry, you need to have at minimum *View Only* access rights to the generic inquiry form. If you have access rights to view the form a particular widget is based on, you can do the following:

- During dashboard design: For the widget, select the data that is displayed on the widget and drill down as needed for more details
- While you are viewing the dashboard: View the widget, which displays data from the form

Managing Dashboards: Dashboard Creation

As with generic inquiries and pivot tables, which are customizable Acumatica ERP forms, you can create dashboards and share them with other users as forms. That is, you can place any dashboard in a workspace by adding it to the Acumatica ERP site map and specifying different access levels to the dashboard for the user roles available in the system.

Creation of a New Dashboard

To add a new dashboard, on the *Dashboards* (SM208600) form, you perform the following steps:

1. Creation: You add the new dashboard, enter its name, and specify the role for the owner of this dashboard. A user with the specified role assigned will be able to populate the dashboard with widgets, modify the dashboard layout, and edit widget properties.
2. Publication: You select the **Make Visible on the UI** check box and make the needed changes to the default values in the **Site Map Title**, **Workspace**, and **Category** boxes. These settings control whether the dashboard is published on the Acumatica ERP site and where users can find it.
3. Visibility configuration: On the **Visible To** tab of the form, you specify the access levels for the roles defined in the system. If the *Not Set* access level is set for all the roles, the dashboard will be available to all users in the system. To restrict the access, you select the *Granted* access level for

those roles for which the dashboard should be available; users with other roles will not be able to view the dashboard.

4. Configuration of additional settings: During this step, you can do any of the following:

   - Allow users who can view the dashboard to create personal copies of the dashboard and to design these copies by selecting the **Allow Users to Personalize** check box. For a newly created dashboard, the check box is selected by default.

   - Select **Expose to the Mobile Application** if the dashboard should be displayed in the Acumatica mobile app connected to your Acumatica ERP site.

   - Specify the parameters for which elements should be displayed in the Selection area of the dashboard on the **Parameters** tab of the form. For example, you can add a date-relative parameter with the default *@WeekStart* value. In this case, the dashboard widgets will display data relevant to the first day of the current week by default. A user can change the parameter value at any time.

After you have created the dashboard, a user with the owner role can populate it with the planned widgets.

If you will be designing this dashboard, be sure to select a role that you are assigned to as the owner role. Otherwise, you will be working with your personal copy of the dashboard, and other users will not see any widgets that you add to the dashboard.

Managing Dashboards: Access Rights

In Acumatica ERP, you can allow users to manage dashboards, to view a dashboard, and to modify widgets on a dashboard. In this topic, you will read about access rights to dashboard forms.

Access Rights for Managing Dashboard Forms

When you want to allow users to manage dashboards, you need to assign them a user role with full access rights to the *Dashboards* (SM208600) form. Users with such a role can add and remove dashboards. For a particular dashboard defined on this form, these users can specify user roles' levels of access rights to the dashboard, select the user role that will own the dashboard, change the location of the dashboard in the site map, and allow other users to personalize copies of this dashboard.

If you want a user who can manage a dashboard to also be able to configure an original dashboard (that is, make changes that are visible to all users who can view the dashboard), you should assign this user the dashboard owner role.

Access Rights for Configuring Dashboards

An original dashboard can be configured by only a user with the role designated as the owner role of the particular dashboard on the *Dashboards* (SM208600) form. For predefined dashboards and dashboards created in previous versions of Acumatica ERP, the default owner role is the predefined role *DashboardDesigner*.

A user with a dashboard owner role can design the dashboard from scratch: add and delete widgets, arrange widgets, and modify widget properties.

When you are designing a dashboard, be sure that the owner role you specify for the dashboard is one assigned to your user account. Otherwise, you will be working with a personal copy of the dashboard.

Access Rights for Viewing Dashboards

For each dashboard, you can control which roles have the ability to view the dashboard as a whole by using the *Dashboards* (SM208600) form.

The set of widgets that are displayed to the users who can view the dashboard depends on their access rights to the forms from which the widgets' source data is taken. If access to a form underlying a widget is denied for particular users, they instead see a placeholder on the dashboard. For example, suppose that you added the following widgets to the dashboard you have defined as the home page in the system:

- *Bills to Approve*, which uses data from the *Approve Bills for Payment* (AP502000) form
- *Accounts Receivable Balances*, which is based on data from the *Vendor Summary* (AR401000) form

When users who do not have access to the *Approve Bills for Payment* form sign in to the system, they can view only the *Accounts Receivable Balances* widget; they cannot view the *Bills to Approve* widget on the dashboard. If the particular dashboard can be personalized (see the next section), these users can delete the hidden widget or change its properties in their personal copy of the dashboard.

Access Rights for Personalizing Dashboards

For users who can view a dashboard, you can also control whether these users can personalize the dashboard—that is, create a personal copy of the dashboard and configure and modify the copied widgets. To provide users with this capability, you need to select the **Allow Users to Personalize** check box on the *Dashboards* (SM208600) form for the particular dashboard. With this check box selected, the **Create User Copy** button will be displayed on the title bar of the dashboard form. A user clicks the button to create a personal copy.

If a user has created a personal copy of the dashboard and made modifications to it, this user can reset the copy to the original dashboard by clicking the **Reset to Default** button on the title bar of the dashboard form.

A user who manages a particular dashboard can reset all user copies of the dashboard at once by clicking **Reset All User Copies** on the toolbar of the *Dashboards* form.

Managing Dashboards: To Add a Dashboard

In this activity, you will learn how to create a dashboard and share it with other users.

Story

Suppose that you are a technical specialist in your company who is working on simple customizations. A sales manager of your company has requested a dashboard named *Sales Mgr Dashboard*. Every sales manager would like to have the capability to create a personal copy of the dashboard and populate it with widgets on their own. The dashboard should be visible to sales managers only and made available through a link in the **Opportunities** workspace under the **Dashboards** category.

Process Overview

In this activity, you will create a dashboard on the *Dashboards* (SM208600) form and specify the requested settings. You will specify your role (*Administrator*) as the owner role of this dashboard so that you can design the dashboard later if this is requested.

To review how the access rights assigned to the dashboard are working, you will try to view the created dashboard as the technical specialist (with the *Administrator* role) and then as a sales manager (with the *Sales Manager* role). You will then make changes to the access rights to the dashboard so that users with the *Administrator* role can open the dashboard in order to begin adding widgets to it.

System Preparation

Before you perform the steps of this activity, make sure that the following tasks have been performed:

1. You have installed an Acumatica ERP instance with the *U100* dataset, or a system administrator has performed this task for you.
2. You have signed in to Acumatica ERP with the following credentials:
   - Username: *gibbs*
   - Password: *123*

   The *gibbs* user is assigned the *Administrator* role, which has sufficient access rights to manage system configuration and to modify generic inquiries, advanced filters, pivot tables, and dashboards.

Step 1: Creating a Dashboard

To create the dashboard the sales managers need, do the following:

1. Open the *Dashboards* (SM208600) form.
2. In the Summary area, in the **Name** box, type the name for the dashboard: `SalesMgrDashboard`.
3. In the **Owner Role** box, select *Administrator*.
4. Make sure that the **Allow Users to Personalize** check box is selected.
5. Select the **Make Visible on the UI** check box.
6. In the **Site Map Title** box, change the system-specified value, which was copied from the **Name** box, to `Sales Mgr Dashboard`.
7. In the **Workspace** box, select *Opportunities*.
8. In the **Category** box, leave the default value, *Dashboards*.
9. On the **Visible To** tab, do the following:
   a. Locate the row with *Sales Manager* selected in the **Role** column.
   b. In the **Access Rights** column of this row, select *Granted* to assign this level of access rights to the role.
10. On the form toolbar, click **Save**.

You have created the empty dashboard, which will later be designed and populated with widgets.

> The system assigns the dashboard an automatically generated ID in a format similar to that of screen IDs of other dashboards, with *DB* as the two-letter module code: *DB000000*. When the ID is assigned, the system adds the dashboard to the site map. Because a workspace and category have been specified, a user with the *Sales Manager* role can access the dashboard through the workspace.

Step 2: Accessing the Dashboard

To review how the access rights you have specified for the dashboard are working, do the following:

1. While you are still signed in as *gibbs* (to which the *Administrator* role is assigned), navigate to the **Opportunities** workspace. If the **Opportunities** menu item is not on the main menu, click the **More Items** menu item and then click the **Opportunities** tile.

2. On the workspace footer, click the **Show All** button to expand the workspace menu, and in the **Dashboards** category, click the *Sales Mgr Dashboard* link.

   The system does not display the dashboard you have created because you have limited the access to the dashboard to only those who have the *Sales Manager* role. The *Administrator* role does not have access to the dashboard.

   > In Step 1, you specified the *Administrator* role as the **Owner Role** of the dashboard, indicating that a user with this role assigned can design the dashboard and edit its settings. This setting does not control, however, whether the *Administrator* role can access the dashboard. The rights of all roles to the dashboard are specified on the **Visible To** tab of the *Dashboards* (SM208600) form

3. Sign out, and then sign in with the credentials of David Chubb, whose user account has the *Sales Manager* role:

   - **Username**: *chubb*
   - **Password**: *123*

4. Navigate to the **Opportunities** workspace, and click the *Sales Mgr Dashboard* link. If the **Opportunities** menu item is not on the main menu, click the **More Items** menu item and then click the **Opportunities** tile.

   The system opens the dashboard, indicating that users with the *Sales Manager* role can access the dashboard. On the dashboard title toolbar, notice that the **Create User Copy** button is available (as shown in the following screenshot). This illustrates that users with the *Sales Manager* role can create a personal copy of the dashboard.

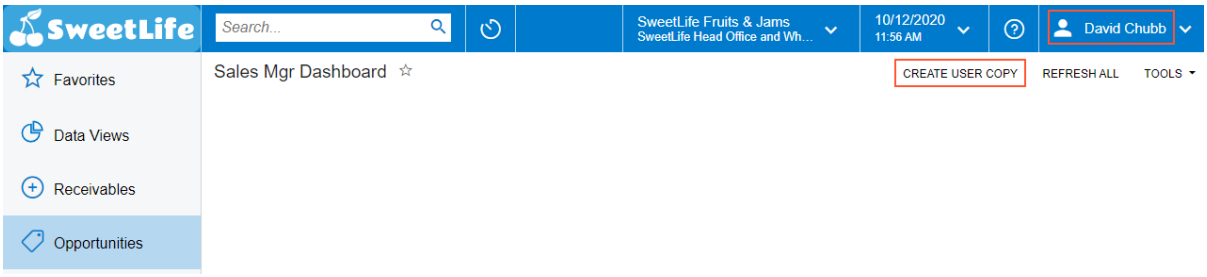


Figure: Sales Mgr Dashboard viewed by a sales manager

Step 3: Changing the Assess Rights to the Dashboard

Now you need to change the access rights of the dashboard so that users with the *Administrator* role can open the dashboard in order to begin adding widgets. To change the access rights to the dashboard, do the following:

1. Sign out, and sign in with the credentials of the technical specialist with the *Administrator* role (which you used earlier):
   - Username: *gibbs*
   - Password: *123*
2. Open the *Dashboards* (SM208600) form.
3. In the Summary area, in the **Name** box, select *SalesMgrDashboard*.
4. On the **Visible To** tab, do the following:
   a. Locate the row with *Administrator* selected in the **Role** column.
   b. In the **Access Rights** column of this row, select *Granted* to assign this level of access rights to the role.
5. On the form toolbar, click **Save**.
6. Open the **Opportunities** workspace, and click the *Sales Mgr Dashboard* link.

   The system opens the dashboard, indicating that you have the needed access rights to view the dashboard. On the dashboard title toolbar, notice that the **Design** button is available (as shown in the following screenshot). This illustrates that as the owner of the dashboard, you can populate it with widgets.

Figure: Sales Mgr Dashboard viewed by the owner of the dashboard