

Qvu Data Service

Help

Last Updated: 09/06/2023

Table of Contents

Overview.....	4
Administration.....	4
Add/Edit a Datasource.....	5
Datasource Entry Fields.....	6
Datasource Table Settings.....	8
Table Column Settings.....	10
Custom Foreign Keys.....	11
Testing the Database Connection.....	13
Add/Edit a Role.....	14
Add/Edit a User.....	15
Add/Edit a Document Group.....	17
Query Design.....	18
Column Select Pane.....	18
Table Tree Icon Descriptions.....	21
Root Table.....	21
Imported Foreign Key Table (parent).....	21
Exported Foreign Key Table (child).....	21
Root Table with Column Selections.....	22
Imported Table with Column Selections.....	22
Exported Table with Column Selections.....	22
Imported Table with Inner Join (joins default to outer).....	22
Imported Table with Inner Join and Column Selections.....	22
Exported Table with Inner Join (join defaults to outer).....	22
Exported Table with Inner Join and Column Selections.....	22
Column.....	22
Primary Key Column.....	23
Setting Join Type.....	23
Related Table Display.....	23
Query Design Data Tab.....	24
Data Column Configuration Description.....	25
Data Column Configuration Panel Icons.....	25
Column Details Icon.....	26
Duplicate Column Icon.....	26
Copy Table Alias and Name to Clipboard.....	26
Move Column Position.....	27
Data Column Entry Fields.....	27
Query Design Filter Tab.....	27
Query Design SQL Tab.....	30
SQL Tab SQL Pane.....	30
Filter Values Prompts.....	31
REST API.....	33
System Settings.....	33
Custom Security.....	33
Qvu Repository.....	33
Language Support.....	33

Overview

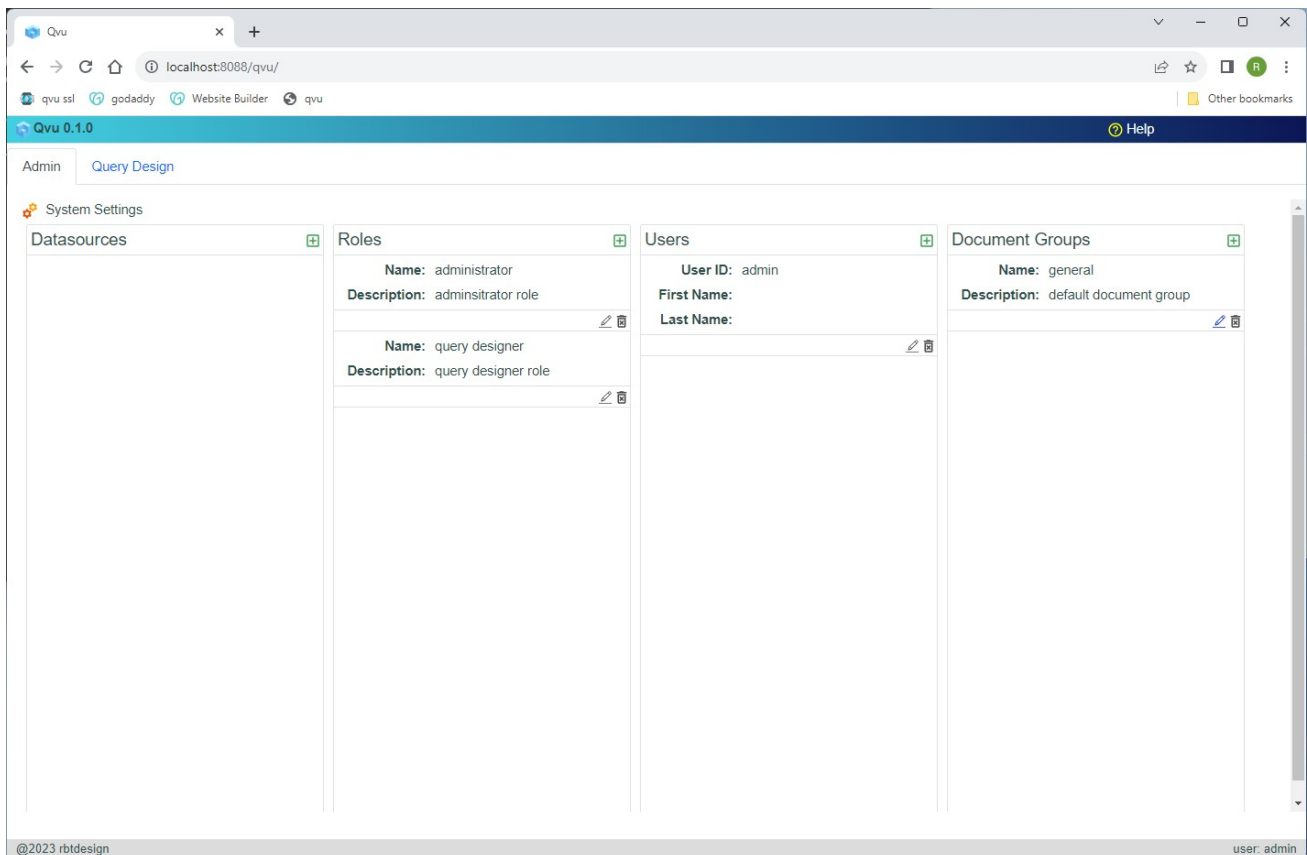
Qvu data service is ad-hoc query and api data service design tool that allows users to create and save query designs in a user-friendly, web-based UI.

Qvu data service also provides a simple rest api for end users and applications to execute saved query documents and return results in tabular or json formatted result sets.

Qvu data service provides role-based database objects access control and supports both basic and OIDC authentication.

Administration

The Qvu Admin tab allows users with the administration role to add and configure datasources, users, roles and report groups as well as configure the desired authentication scheme. After initializing the Qvu repository (see [qvu-gettingstarted.pdf](#)), start Qvu and login as the admin user – you should see the screen below:



The initial admin tab will have no datasources, 2 default roles – administrator and query designer and one user – admin.

Add/Edit a Datasource

To add a datasource, click the add icon on the **Datasources** control :

System Settings

Datasources

Roles

Name

Description

Name

Description

Create new datasource

*Database Type:

MySQL

*Name:

MySQL

Description:

Oracle

*JDBC Url:

*JDBC Driver:

*Schema

*User Name:

*Password:

② *Max Imported Key Depth:

2

② *Max Exported Key Depth:

4

Connection Timeout:

Idle Timeout:

Max Life Time:

Max Pool Size:

② Role Access:

Select roles...

*indicates required field

Table Settings

Custom Foreign Keys

Test Connection

Cancel

Create

The **Create**

Select the desired database type and fill in the required entries. The table below describes each entry field:

Datasource Entry Fields

Database Type	MySQL, Microsoft SQL Server, Oracle or PostgreSQL
Name	This is the datasource name which will show up in the Datasource selection drop down and be associated with the query document. The name must be unique
Description	A description of this datasource

JDBC Url	The database-specific JDBC URL to connect to the database
JDBC Driver	The JDBC Driver java class name
Schema	The database schema for this datasource
User Name	Database user name to use to connect to the database
Password	User password ti use to connect to the database
Max Imported Key Depth	The max depth to recurse through the imported (parent table) foreign key definitions when building table relationships.
Max Exported Key Depth	The depth max depth to recurse through the exported (child table) foreign key definitions when build table relationships
Connection Timeout	the maximum number of milliseconds to wait for a database connection checkout. Defaults to 30000 (30 seconds)
Idle Timeout	Maximum amount of time (in milliseconds) that a connection is allowed to sit idle in the pool. Defaults to 600000 (10 minutes)
Max Life Time	Maximum lifetime (in milliseconds) of a connection in the pool. An in-use connection will never be retired, only when it is closed will it then be removed. Defaults to 1800000 (30 minutes)
Max Pool Size	Maximum size that the connection pool is allowed to reach, including both idle and in-use connections. Basically this value will determine the maximum number of actual connections to the database backend. Defaults to 10.
Role Access	Roles required to access this datasource – no selections indicates datasource is available to all users

To edit/delete a datasource click the Edit/Delete icon

Datasources

Name: Sakila

Description:

Datasource Table Settings

A user can customize how datasource tables and columns are displayed in the UI and control user access to tables and columns by role assignment. To modify these setting click the **Table Settings** button to display the **Table Settings** dialog::

Max Pool Size:

Role Access:

*indicates require

Table Settings

Cus

Table Settings - Sakila

Table: actor
 Display Name:
 Roles:
☐ Hide
 Column Settings

Table: actor_info
 Display Name:
 Roles:
☐ Hide
 Column Settings

Table: address
 Display Name:

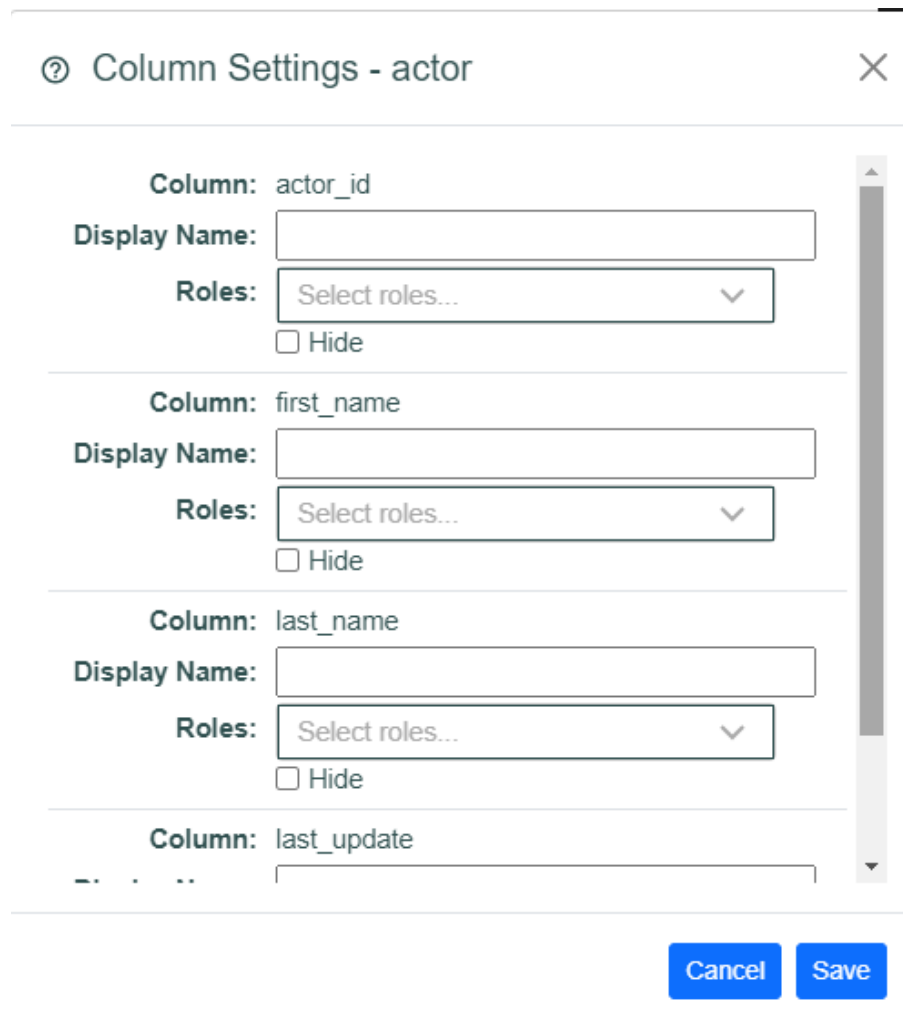
Cancel Save

The **Table Settings** dialog will display a list of tables associated with the datasource. For each table the following fields can be set to handle the way the table is presented to the user in the UI:

Display Name	A user friendly name can be entered that will be used in the UI whenever the table is presented to the end user
Roles	Roles can be associated with the table and only users that are members of the selected roles will be able to see the table in the UI. No selection means the table is available to all users.
Hide	When checked the table will not be displayed in the UI for any user.

Table Column Settings

Click the **Column Settings** button on any table in the Table Settings dialog to configure how the associated columns are displayed in the UI for the table. When clicked the **Column Settings** dialog will display:



Column Settings - actor

Column: actor_id
Display Name:
Roles:
☐ Hide

Column: first_name
Display Name:
Roles:
☐ Hide

Column: last_name
Display Name:
Roles:
☐ Hide

Column: last_update
Display Name:
Roles:
☐ Hide

Cancel Save

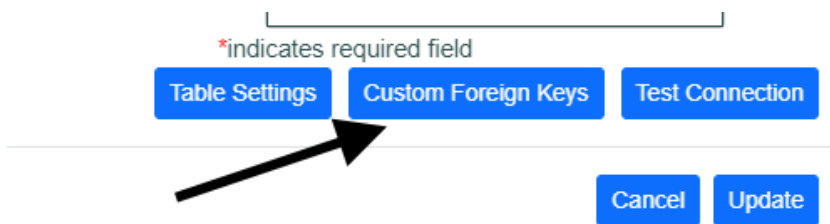
The Column Settings dialog will display a list of columns associated with the table. For each column the following fields can be set to handle the way the column is presented to the user in the UI:

Display Name	A user friendly name can be entered that will be used in the UI whenever the column is presented to the end user
Roles	Roles can be associated with the column and only users that are

	members of the selected roles will be able to see the column in the UI. No selection means the column is available to all users.
Hide	When checked the column will not be displayed in the UI for any user.

Custom Foreign Keys

Configured database foreign keys are used by Qvu to define the table relationships for query design. In cases where a desired foreign key does not exist in the database Qvu supports defining psuedo foreign key definitions. To create a psuedo foreign key click the Custom Foreign Key button to display the Custom Foreign Key dialog



Custom Foreign Keys - Sakila

*Name:

*Source Table:

*Target Table:

*Source Columns:

*Target Columns:

☐ Imported Keys

*indicates required field

Add

Cancel

Save

?

Column select for film_category

×

☒ film_id

☒ category_id

☐ last_update

Cancel

Save

Check the **Imported Key** checkbox if this relationship is to a parent table - leave blank if it is to a child table.

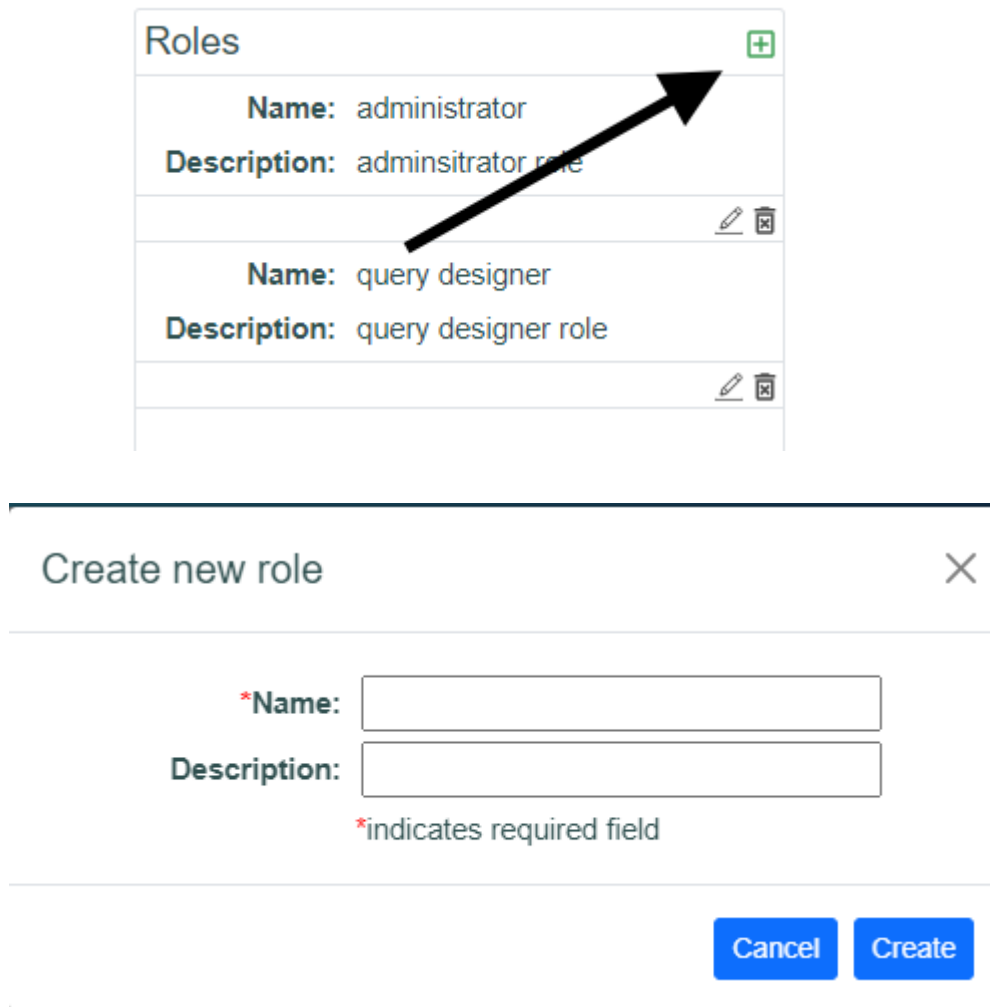
Testing the Database Connection

Once the datasource entries are complete you can test the database connection by clicking the **Test Connection** button. If the connection succeeds you will receive a success message:







Add/Edit a Role

To add a new role click the Add icon to display the **Create new Role** dialog::



The image shows a 'Roles' table with two entries: 'administrator' and 'query designer'. A green plus icon in the top right corner of the table is highlighted by a black arrow. Below the table is a 'Create new role' dialog box. The dialog has a title bar with a close button (X). It contains two input fields: '*Name:' and 'Description:'. The '*Name:' field is required, as indicated by the asterisk. Below the fields is a note: '*indicates required field'. At the bottom right of the dialog are two buttons: 'Cancel' and 'Create'.

Roles	
Name: administrator	
Description: adminsitator role	
	 
Name: query designer	
Description: query designer role	
	 

Create new role

X

*Name:

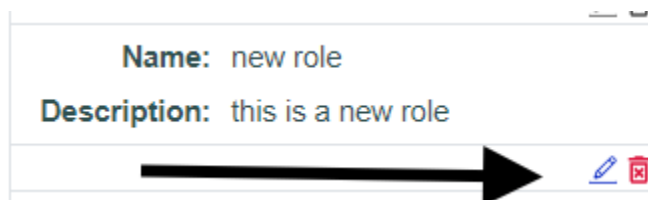
Description:

*indicates required field



Cancel

Create






To edit/delete a role click the Edit/Delete icon:



The image shows a single row in the 'Roles' table. The row contains 'Name: new role' and 'Description: this is a new role'. At the bottom right of the row are two icons: a blue pencil icon (edit) and a red trash can icon (delete). A black arrow points from the left towards these icons.

Name: new role	
Description: this is a new role	
	 

There are 2 canned system roles that cannot be edited or deleted – **administrator** and **query designer**. On these roles the edit/delete icons are disabled.

Roles			
Name: administrator			
Description: adminsitator role			
			
Name: query designer			
Description: query designer role			
			

Add/Edit a User

Qvu Users are handled a bit differently than other security-related entities. If Qvu is configured to use the local Qvu repository for authentication then a user can be added, edited and deleted.

If authentication is configured to use OIDC, when an authenticated user does not exist in the local Qvu repository that user will be added for user information purposes – authentication will be handled by the OIDC identity provider. A role mapping can be setup to map incoming role claims to the administration role if desired – see the **System Settings** section for more information on this topic.

If the custom authentication plugin is enabled then the custom authentication service is responsible for providing user information and expected roles (administrator and query designer). The user will be read only in the Qvu application.

There is a canned system user – Admin – which cannot be edited or deleted.



To add a new user when Qvu is configured to use local repository authentication click the Add icon to display the Create new User dialog:

Users +

User ID: admin

First Name:

Last Name:

Create new user




*User ID:

*Password:

First Name:

Last Name:

Email:

Roles: 

*indicates required field

Cancel

Create

Create new user





Complete the
required and



User ID: testuser

First Name: John

Last Name: Doe

Email:

Roles:  

Search

☒ administrator

☒ query designer

Create

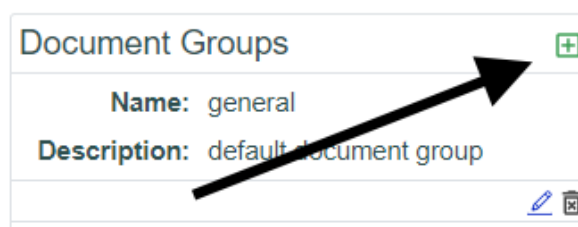
User passwords are stored locally as an md5 hash of the entered passwords. See the **Qvu Repository** section for more information.

To edit/delete a user when enabled click the Edit/Delete icon:

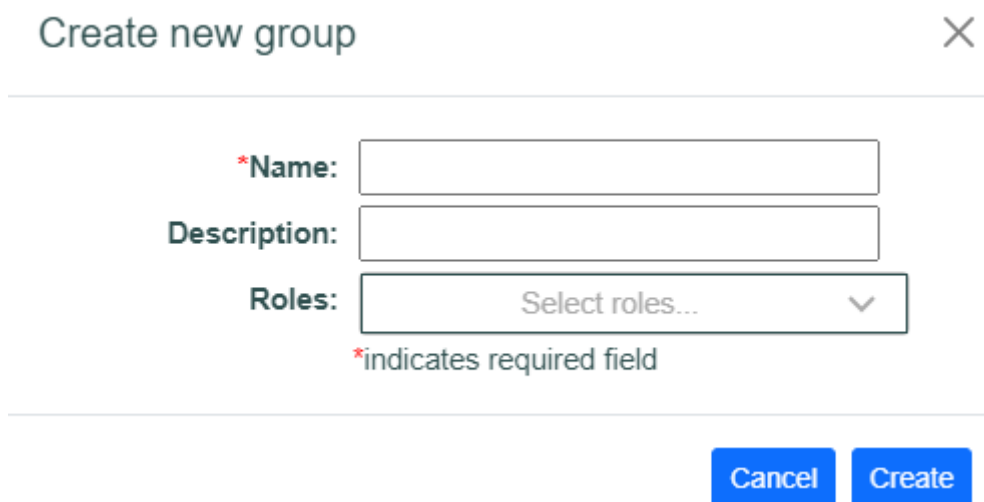
Add/Edit a Document Group

When query documents are saved they must be assigned a document group. A canned, default document group **general** is always available and cannot be edited or deleted. Additional document groups can be created as desired.

To add and new Document Group click the Add icon to display the **Create new Group** dialog:



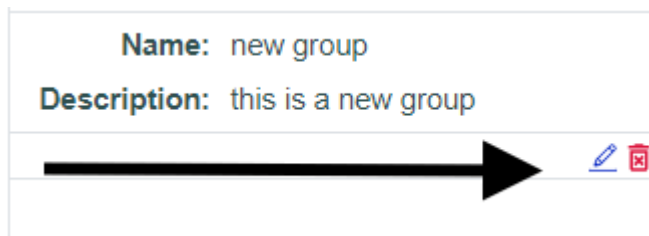
A screenshot of a web interface showing a list of document groups. The list has a title 'Document Groups' and a green '+ ' icon in the top right corner. Below the title, there is a row for a group named 'general' with the description 'default document group'. At the bottom right of the list, there are icons for editing (a pencil) and deleting (a trash can). A large black arrow points from the 'general' group row towards the green '+ ' icon.



A screenshot of a 'Create new group' dialog box. The dialog has a title bar with the text 'Create new group' and a close button (an 'X' icon) on the right. Below the title bar, there are three input fields: 'Name:' with an asterisk, 'Description:', and 'Roles:'. The 'Name:' field is required. The 'Roles:' field is a dropdown menu with the text 'Select roles...' and a downward arrow. Below the input fields, there is a note: '*indicates required field'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Create'.

Enter the required fields – the name must be unique. Roles can be assigned to a document group. Only users that are members of the selected roles will be able to see the documents in the group. If no role is selected, all users can access the documents in the group.

To edit/delete a document group click the Edit/Delete icon:



The screenshot shows a form for creating or editing a document group. It has two text input fields: 'Name: new group' and 'Description: this is a new group'. Below the description field, there is a large black arrow pointing to the right. To the right of the arrow, there are two small icons: a blue pencil icon for editing and a red trash can icon for deleting.

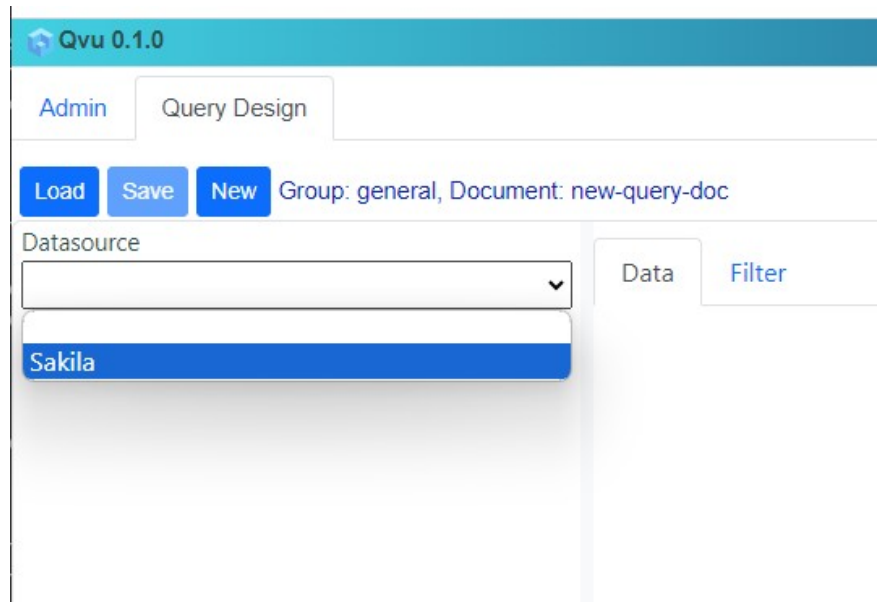
If a document group is deleted all the documents in that group will also be deleted. A query document can be assigned a new document group. See **Saving a Query Document** for more information on this topic.

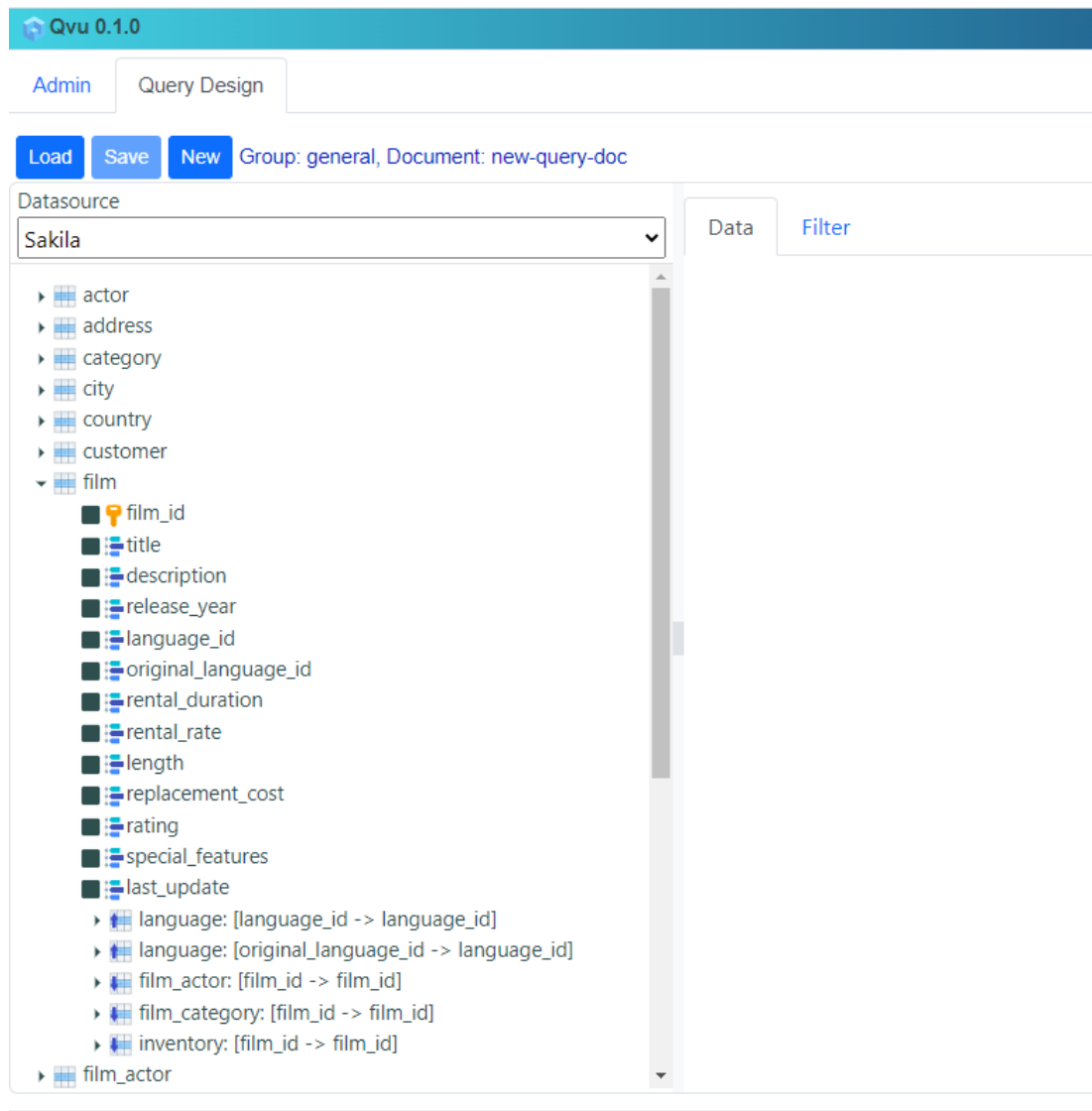
Query Design

The Qvu UI is built on React and provides a rich, user-friendly interface for query design. Query design is based on a root table selection from a selected datasource. Defined table relationships associated with the selected root table are displayed in a tree view that allows users to select data columns as desired.

Column Select Pane

From the Qvu **Query Design** tab select the desired datasource to display the table hierarchy tree:





Tables and columns displayed in the tree are based on the role settings discussed in the **Administration** section above. The user can now select the desired columns. Column selection order determines the initial order of the result set columns. This can be changed in the **Data** tab on the right split pane. As columns are selected the **Data** tab will populate with column configuration panes.

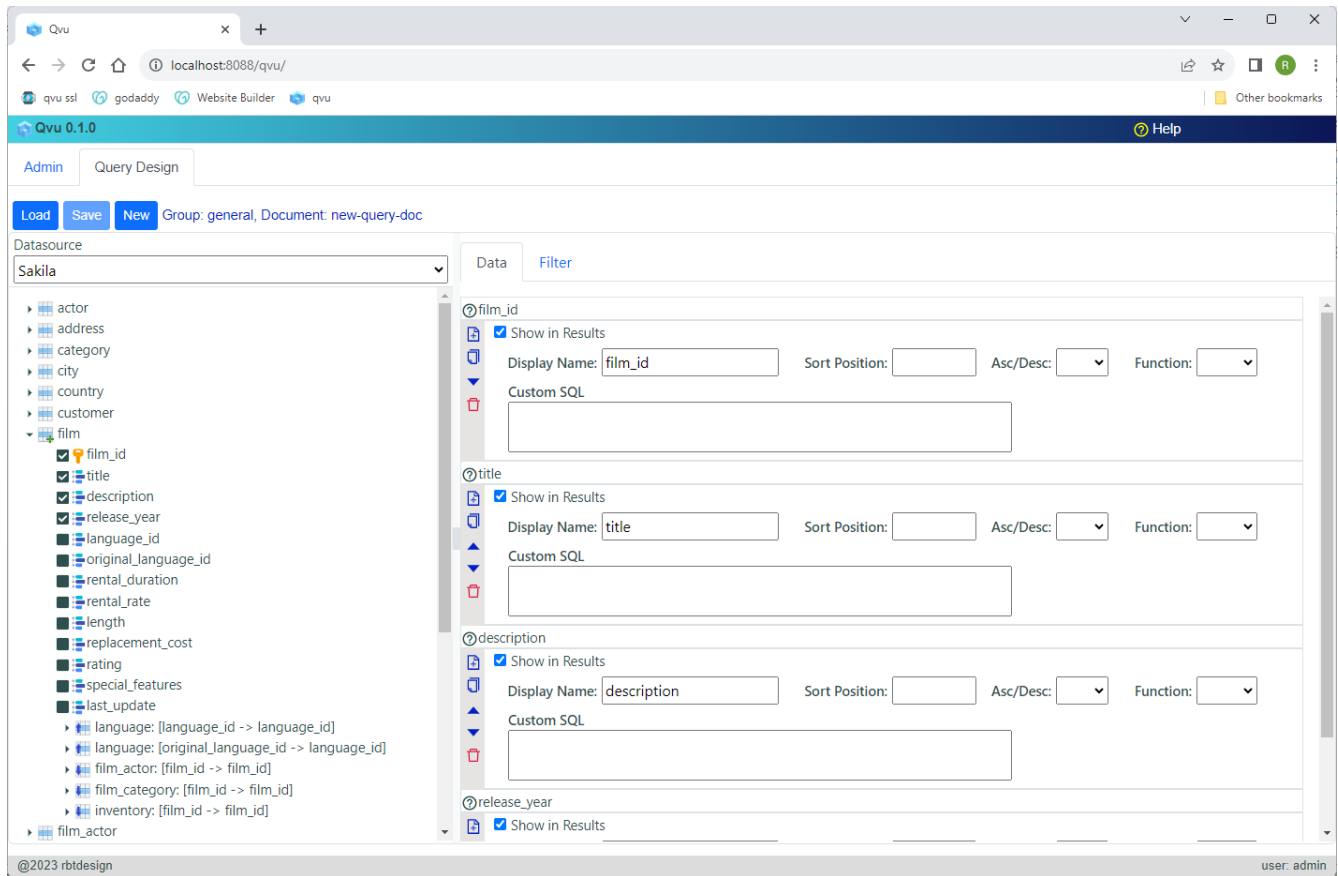


Table Tree Icon Descriptions

Below is described the various icons you see in the table tree:

Root Table



Imported Foreign Key Table (parent)



Exported Foreign Key Table (child)



Root Table with Column Selections



Imported Table with Column Selections



Exported Table with Column Selections



Imported Table with Inner Join (joins default to outer)



Imported Table with Inner Join and Column Selections



Exported Table with Inner Join (join defaults to outer)



Exported Table with Inner Join and Column Selections



Column

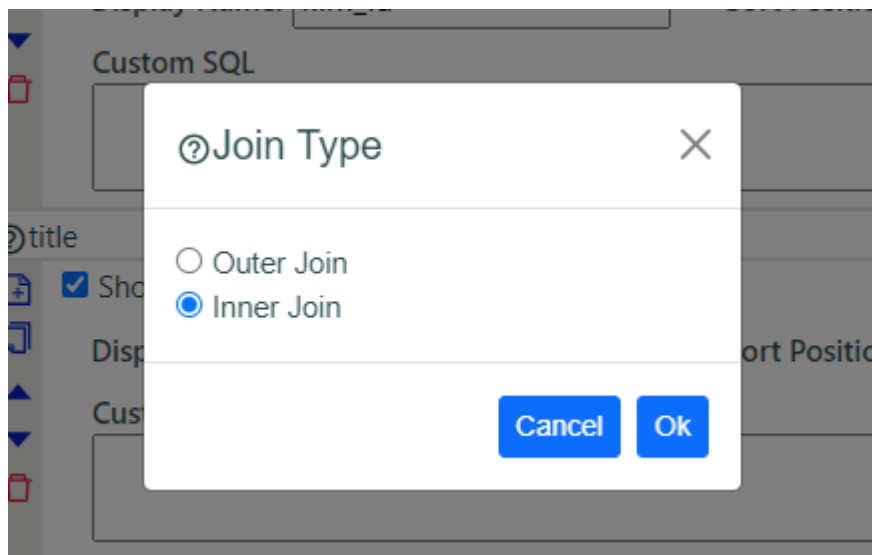
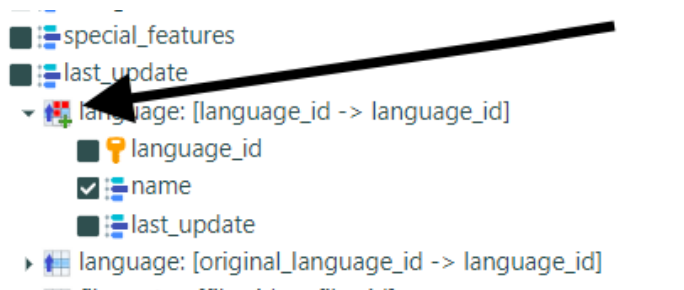


Primary Key Column



Setting Join Type

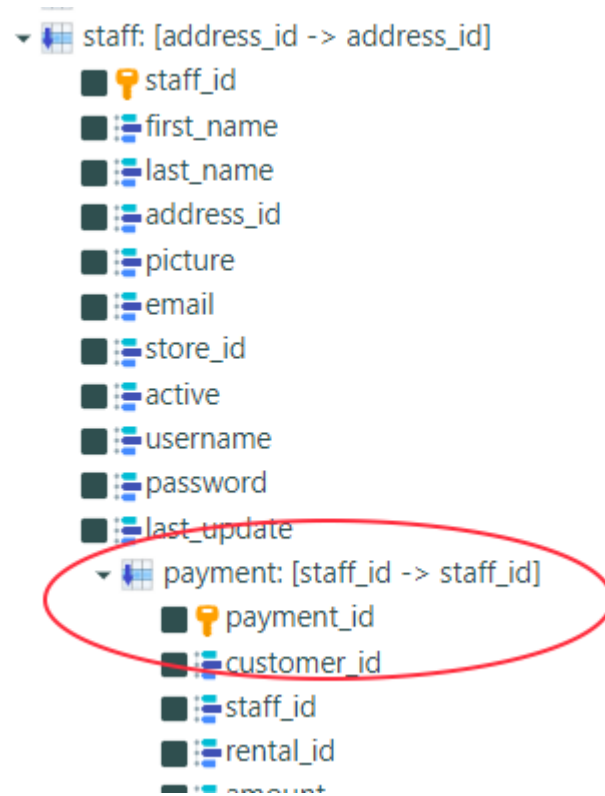
Right click on a related table to display the **Join Type** dialog and select the desired join type:



Related Table Display

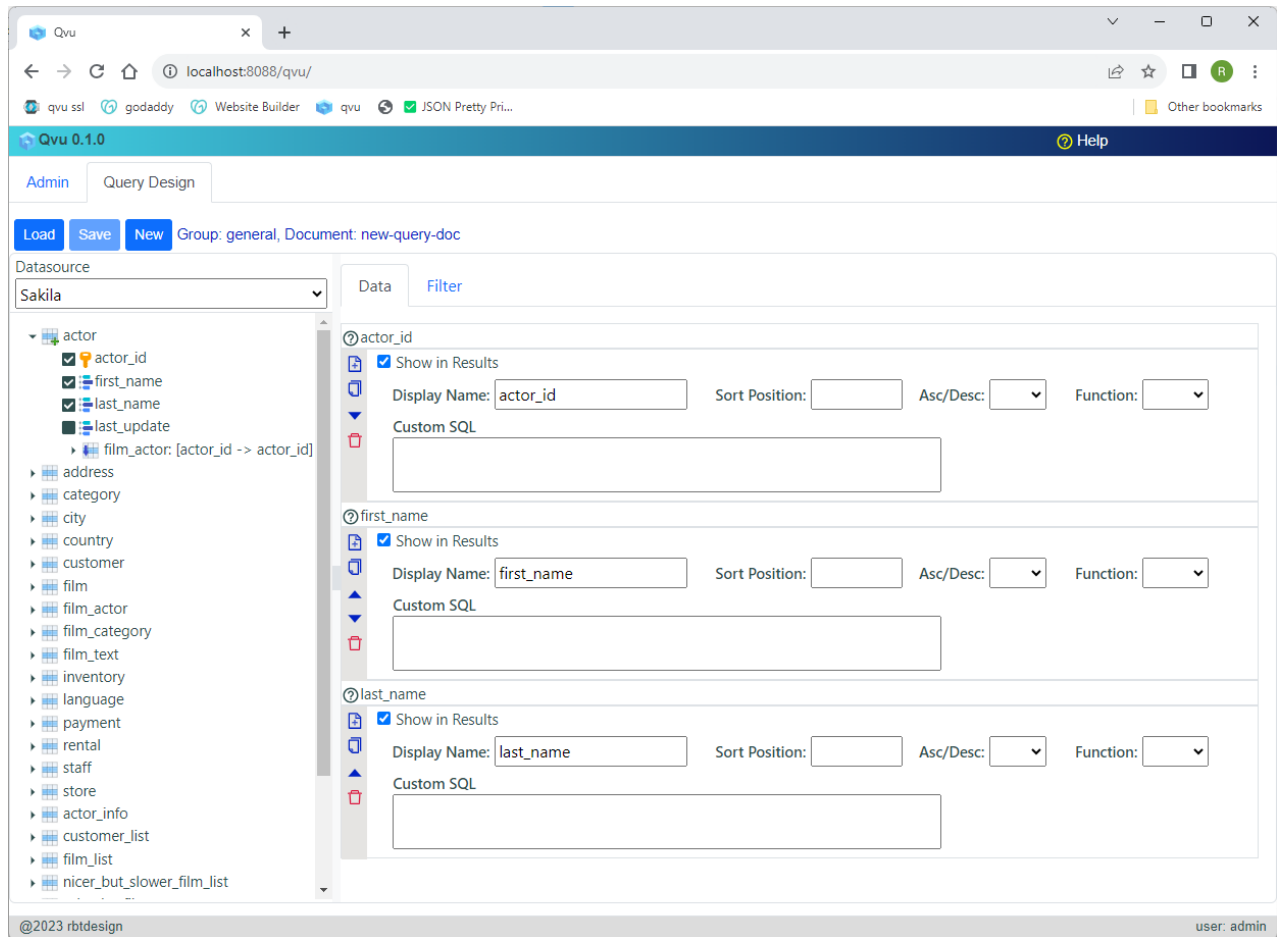
Related tables are displayed in the following format in the table tree:

to_table_name[to_column1→from_column1, to_column2→from_column2...]



Query Design Data Tab

For each column selected in the data select tree pane an associated column configuration panel will display in the **Data** tab.

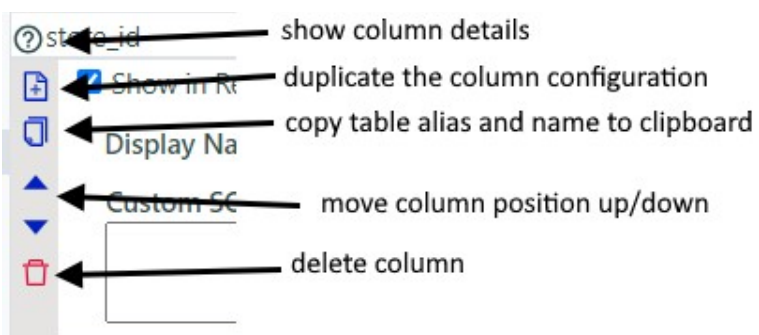


Data Column Configuration Description

The user can apply various options to each selected data column. In addition, the column configuration panel support deleting, moving and duplication the associated column.

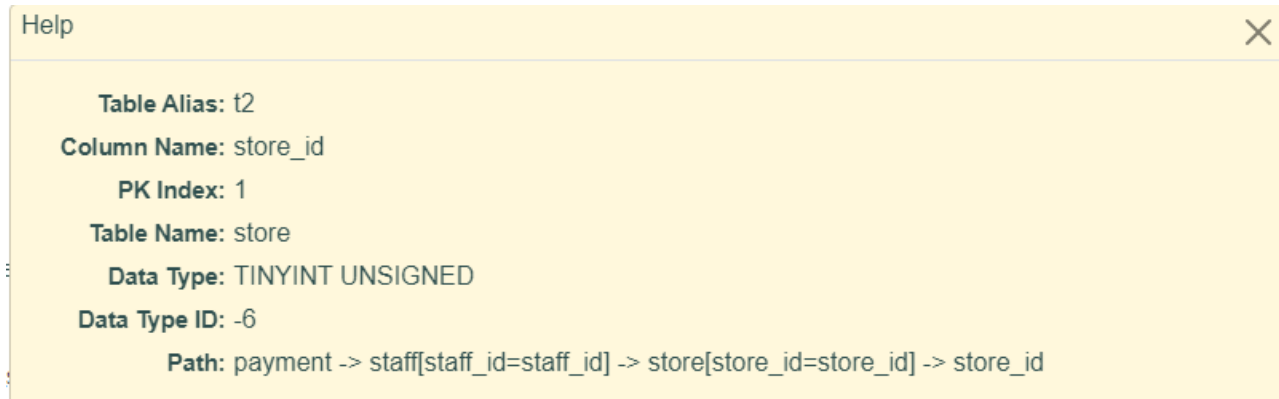
Data Column Configuration Panel Icons

Below you will find a description of the icon functionality on panel:



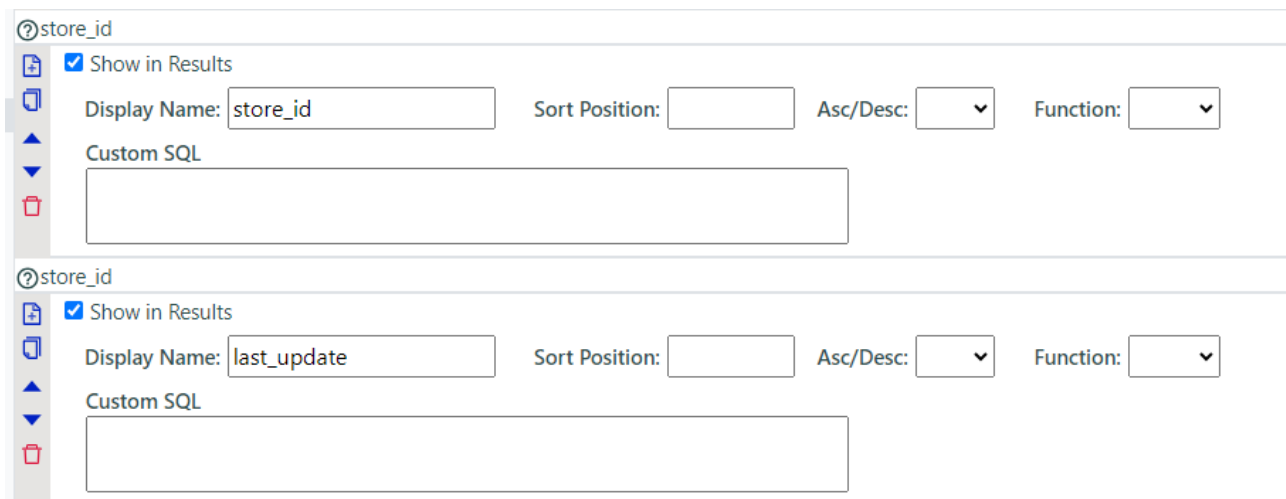
Column Details Icon

Clicking the column details icon display more information about the column:



Duplicate Column Icon

Clicking the duplicate column icon will create a duplicate column definition which the user can then configure in a different manner than the original. This allows for the same column to be selected in different ways in final select statement.



Copy Table Alias and Name to Clipboard

This is a useful tool when making a custom SQL entry. A custom SQL entry must contain database-specific valid SQL with the associated raw base table aliases and column names. Name. Clicking this icon will copy this name to the clipboard – for example: [t2.store_id](#)

Move Column Position

The generated SQL select column order will be in the order of the columns listed in the **Data** tab. To change this order the user can click the associated arrow icons to move a column up and down. The column can also be dragged by clicking on the name bar and dragging the column configuration to the desired position.

Data Column Entry Fields

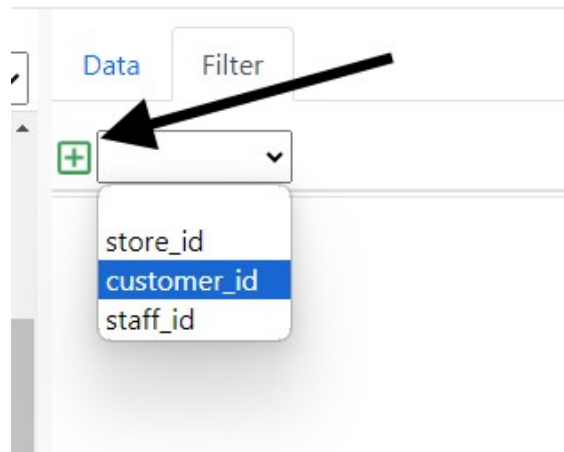
The entry fields are described in the table below:

Display in Results	This is checked by default. If unchecked, column is still available for filtering but will not appear in the result set data
Display Name	This will be the column name return from the SQL query – will become the “as” clause in the select.
Sort Position	Enter an integer sort position greater than 0 here if you want to sort by this column
Asc/Desc	Select sort direction – defaults to Asc
Function	Aggregate functions can be applied to the column based on type. Select the function as desired. Qvu will handle building the appropriate Group By and Having clauses
Custom SQL	The user can enter database-specific SQL here to perform any query operation desired. The entered SQL must be valid for the database type. This is where the Copy Table Alias and Name clipboard functionality discussed above comes into play. The user can sum multiple columns, apply database-specific functions etc. When this field is populated the actual column associated with the panel is ignored and the select SQL is replaced by the custom SQL entered.

Query Design Filter Tab

The filter tab allows the user to build the SQL where clause. In order to execute a query it must have a filter configuration – no open-ended queries are allowed.

To add a filter column select the desired column from the drop down and click the Add icon:



Data Filter SQL

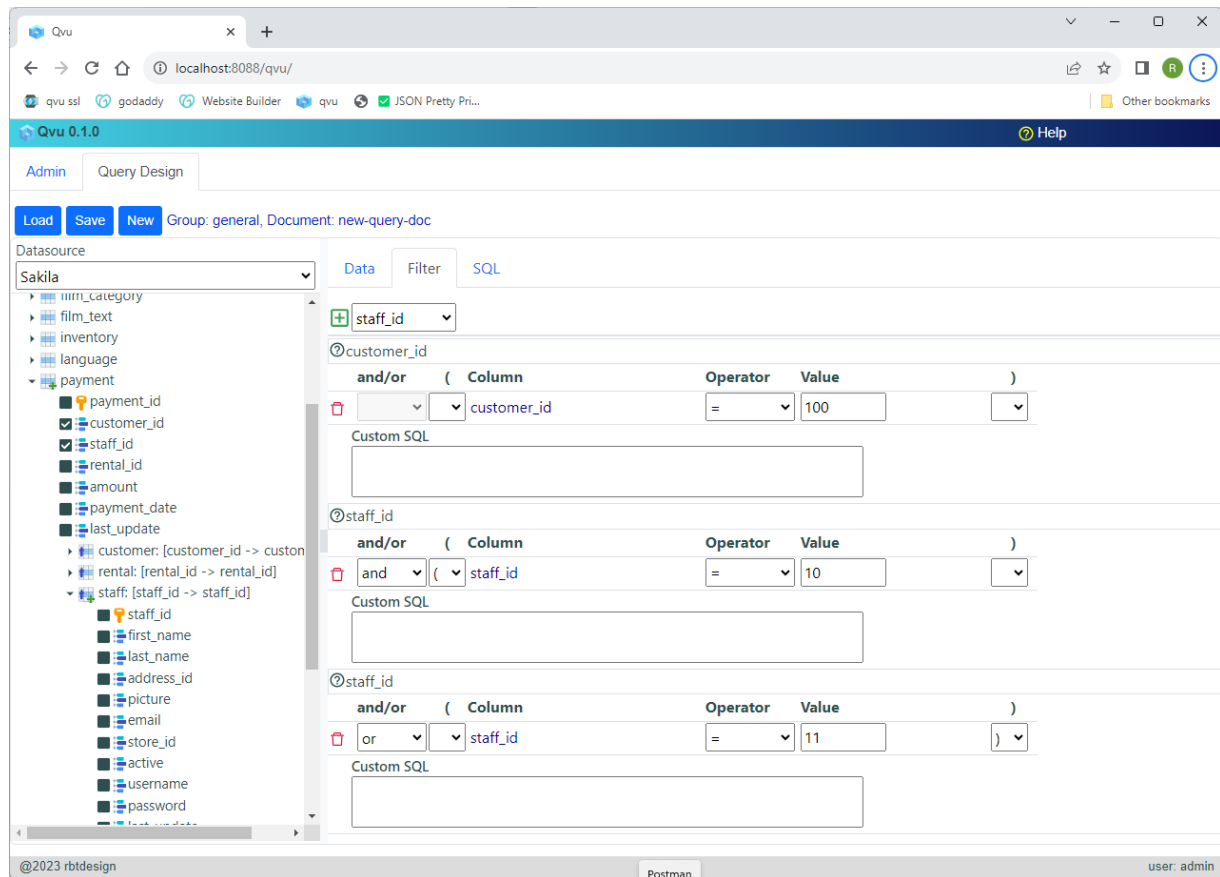
+ customer_id ▼

customer_id

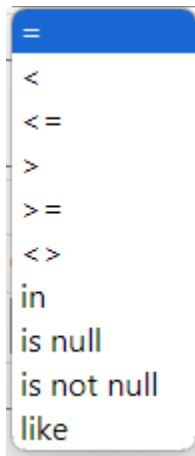
	and/or	(Column	Operator	Value)
🗑️	▼	▼	customer_id	= ▼	100	▼

Custom SQL

The user can select parenthesis and the and/or operator as required.



The available comparison operators are shown below:

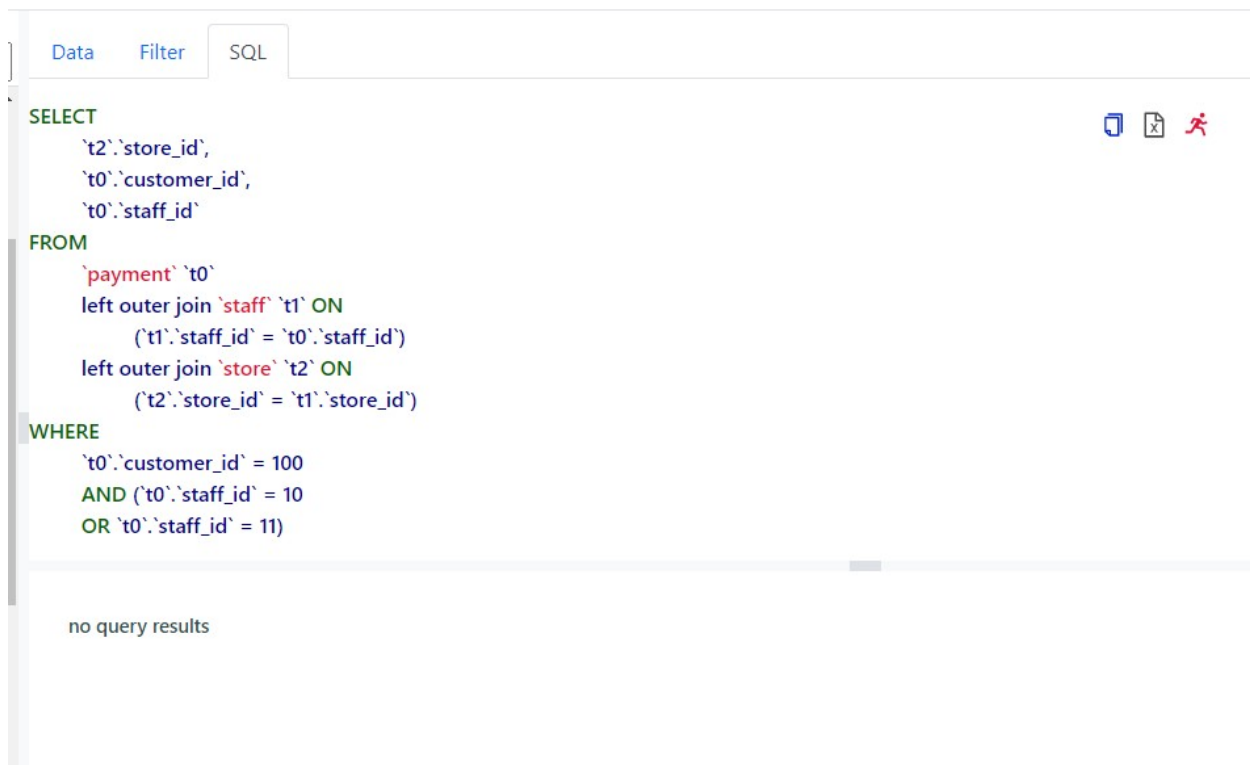


When entering comparison operator enter the value only – no quotes are required. When using the “in” operator, enter a comma-delimited list of values. When using the “like” operator enter the appropriate wildcard characters (% and _).

Similar to the data select entry, custom SQL can be entered in the Custom SQL field – see the discussion in the of the custom SQL entry in the **Data Column Entry Fields** table for more information.

Query Design SQL Tab

Once filter entries have been created the **SQL** Tab becomes visible



The SQL tab is a split pane with 2 sections – the upper section displays the generated SQL and action icons and the lower pane displays the query results after the query is run.

SQL Tab SQL Pane

The **SQL** Pane displays the database-specific generated SQL statement as well as action icons. The icons functions are described below:



Clicking this icon will copy the SQL statement to the clipboard



Clicking this icon will export query results to excel – icon is disabled if no results available.



Clicking this icon will run the query.

When the **Run** icon is clicked the query will execute and results will populate the results table in the bottom **SQL** Tab pane:

Data
Filter
SQL

SELECT
't0'.title,
't0'.description
FROM
'film' 't0'
WHERE
't0'.title is not null

	title	description
1	ACADEMY DINOSAUR	A Epic Drama of a Feminist And a Mad Scientist who must Battle a Teacher in The Canadian Rockies
2	ACE GOLDFINGER	A Astounding Epistle of a Database Administrator And a Explorer who must Find a Car in Ancient China
3	ADAPTATION HOLES	A Astounding Reflection of a Lumberjack And a Car who must Sink a Lumberjack in A Baloon Factory
4	AFFAIR PREJUDICE	A Fanciful Documentary of a Frisbee And a Lumberjack who must Chase a Monkey in A Shark Tank
5	AFRICAN EGG	A Fast-Paced Documentary of a Pastry Chef And a Dentist who must Pursue a Forensic Psychologist in The G
6	AGENT TRUMAN	A Intrepid Panorama of a Robot And a Boy who must Escape a Sumo Wrestler in Ancient China
7	AIRPLANE SIERRA	A Touching Saga of a Hunter And a Butler who must Discover a Butler in A Jet Boat
8	AIRPORT POLLOCK	A Epic Tale of a Moose And a Girl who must Confront a Monkey in Ancient India
9	ALABAMA DEVIL	A Thoughtful Panorama of a Database Administrator And a Mad Scientist who must Outgun a Mad Scientist
10	ALADDIN CALENDAR	A Action-Packed Tale of a Man And a Lumberjack who must Reach a Feminist in Ancient China
11	ALAMO VIDEOTAPE	A Boring Epistle of a Butler And a Cat who must Fight a Pastry Chef in A MySQL Convention

Page Size: 200 Page: 1 of 5 Total Records: 1000

Filter Values Prompts

When a defined filter value is left blank in the Filter Tab the user will be prompted for entry when running the query – for example if the user creates this filter:

Data
Filter
SQL

+ customer_id

? rental_date

and/or	(Column	Operator	Value)
<div> <div></div> <div></div> </div>	<div></div>	rental_date	>	mm/dd/yyyy	<div></div> <div></div>

Custom SQL

? customer_id

and/or	(Column	Operator	Value)
<div> <div></div> <div></div> </div>	<div></div>	customer_id	>		<div></div> <div></div>

Custom SQL

Then when the **Run** icon is clicked the **Run query** value entry dialog will display to prompt for user input:

Run query

rental_date >

mm/dd/yyyy

customer_id >

Cancel
Run

REST API

System Settings

Custom Security

Qvu Repository

Language Support