LANSA Integrator

Data Explorer

Abstract

Query IBM i DB2 databases from a browser

LANSA
An Idera, Inc. Company

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Welcome to Data Explorer

This document describes how to use Data Explorer.

Data Explorer provides tools to query result data from databases on IBM i servers (IBM server) from a browser.

Typical tasks are:

- Search for database tables using Data Explorer table filters
- Create queries with Structured Query Language (SQL)
- Run the queries to retrieve data from database tables
- Save the query definitions in folders ready for use again
- Download the data produced by queries to your computer or mobile device

Once you have downloaded or copied the query result data, you can import the query result data into business applications like Microsoft Excel.

Where to find information

Getting started	Welcome to Data Explorer Installation, registering to use Data Explorer, starting Data Explorer and log on instructions.
Search for data, manage query filters, run queries	Query filters This section describes how to create query filters, run queries and manage query filters.
Work with data produced by running query filters	Work with query result data This section describes how to view data retrieved by running queries and how to download the data for import into office tools like Microsoft Excel.
Search for tables, manage table filters, run table queries	Table filters This section describes how to use searches and manage table filters.
Save and organise query filters and table filters	Folder Management Create folders, maintain folders and save filters in folders.
Understand concepts behind Data Explorer	Concepts Conceptual information in this section describes how Data Explorer works, including the concepts of operation, designing queries, viewing the query result data and use query result data in office applications.
Configure Data Explorer features and services	Configuration Set parameter values to control the way Data Explorer registers users, allows access to users, denies access to users and manages the volume of query data.

LANSA Integration Toolkit

Data Explorer is one of the services provided by the LANSA Integration Toolkit.

The service portfolio Figure 1 (page 8) includes data transformation, secure file transfer, email, messaging and web services. It supports multiple data formats, including JSON, XML, text, video, text messages (SMS), email, Microsoft Excel workbooks, PDF documents, spooled files, and relational databases.

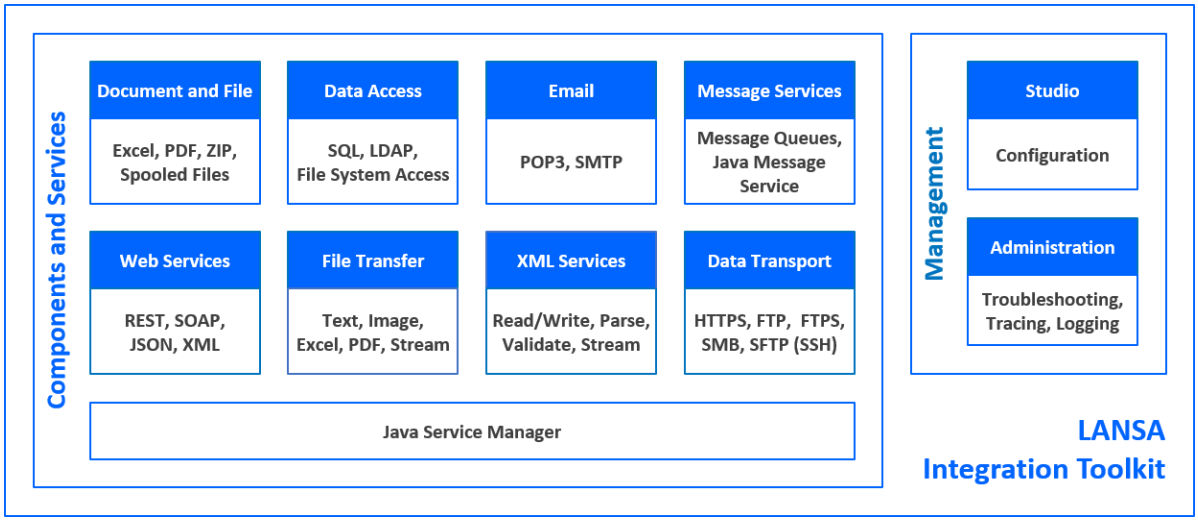


Figure 1: LANSA Integration Toolkit components and services

LANSA Integration Toolkit also provides data receiving and sending services using communications protocols including HTTPS, FTP, SFTP, SMB, SMTP, and POP3. It also provides access to IBM server file system (IFS) and file systems on Windows servers.

Developers can use these services in their RPG applications to transform data from one format to another programmatically and integrate with applications running on remote IBM servers and applications running on Linux or Windows platforms.

What is Data Explorer?

Data Explorer is a web application that you use to query database tables on an IBM server. The Data Explorer page consists of two panels. The left-hand panel is the search filter and folder navigation panel. It contains filters used for table searches, queries and folders where you save the filters. The right-hand panel consists of one or more tabs. The tabs contain table search data, query result data, forms for editing queries and search criteria and setting options.

Figure 2 (page 9) shows two tabs in the right-hand panel. The visible tab labelled "Result (All contacts)", presents the query result data obtained by running the all contacts query filter. The second tab is the Welcome page (out of view).

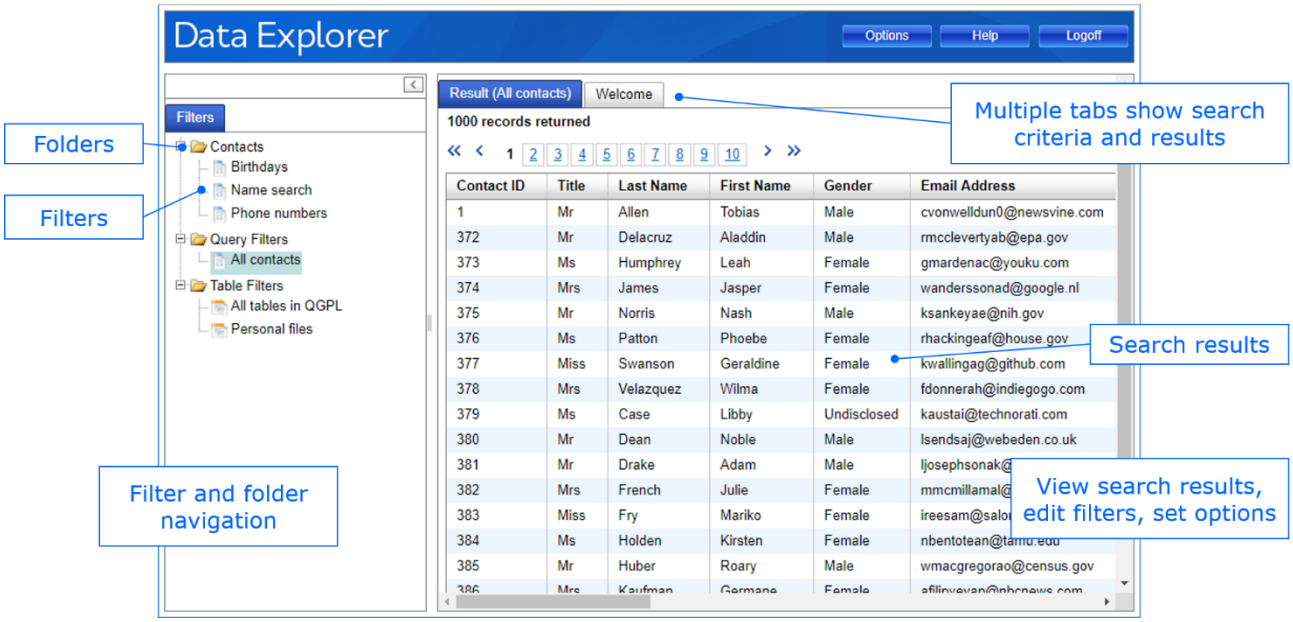


Figure 2: Data Explorer page components and layout

Figure 3 (page 9) shows a floating menu with options for working with query data.

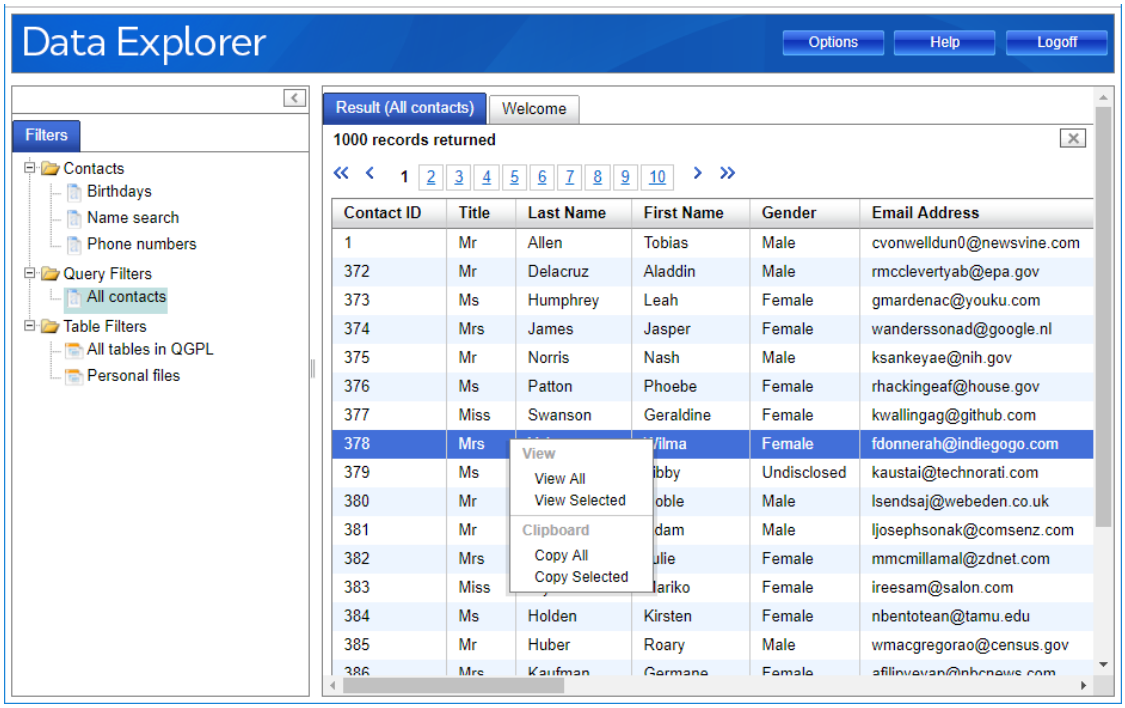
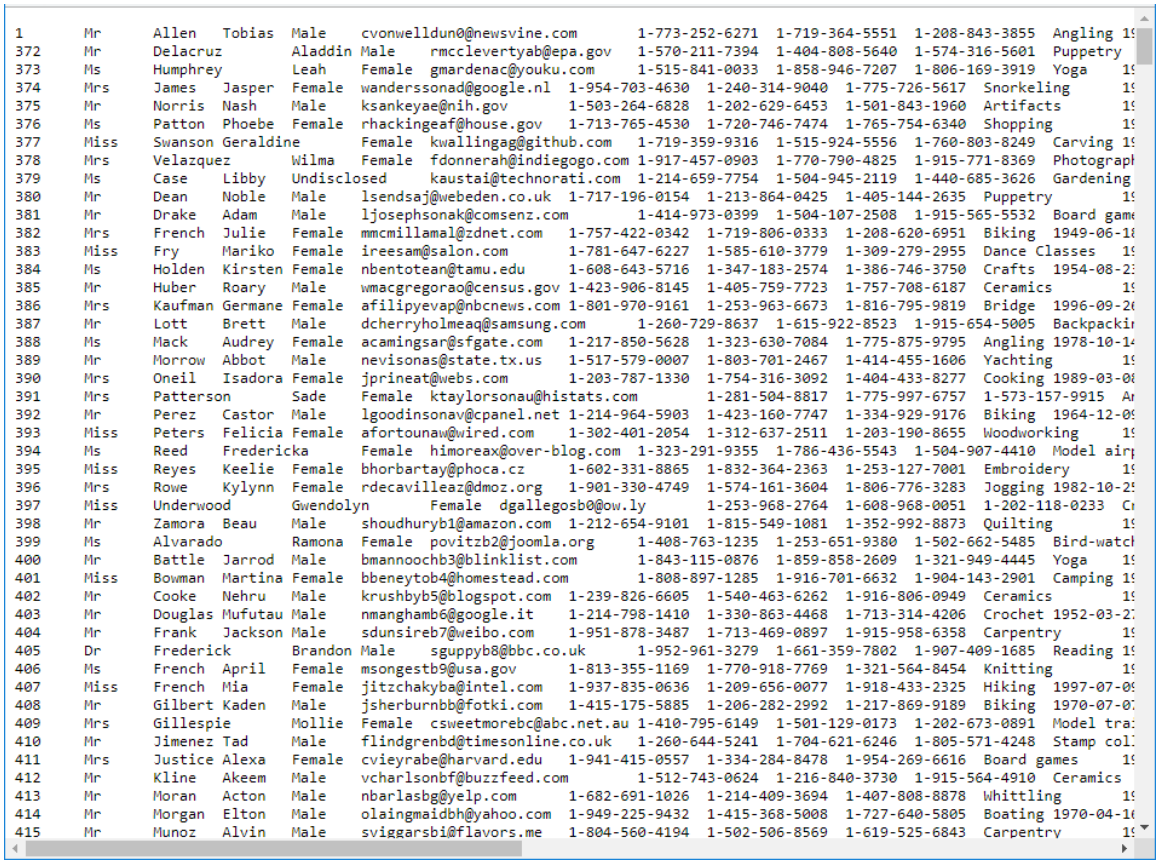


Figure 3: Options for viewing and copying query result data

The options are view all or selected rows in the query result data and copy all or selected rows. Positioning the mouse pointer on a row in the list and clicking a mouse button selects the row. Select multiple rows by holding the Ctrl key and clicking on more than one row with the left mouse button. Clicking a mouse button on a row opens a floating menu showing options for working with query data.

Clicking the View All items from the floating menu opens a new window showing query result data displayed as text.

Figure 4 (page 10) is an example of view all query data. The view selected option presents the same window with only the selected item in the view. The view options present query result data as text formatted as tab separated values. Clicking the Copy All or Copy Selected items from the floating menu copies the query result data to the clipboard. You can paste the query result data to other applications that support the clipboard; Microsoft Excel is an example.



```
1	Mr	Allen	Tobias	Male	cvonwelldun0@newsvine.com	1-773-252-6271	1-719-364-5551	1-208-843-3855	Angling 19
372	Mr	Delacruz	Aladdin	Male	rmcclevertyab@epa.gov	1-570-211-7394	1-404-808-5640	1-574-316-5601	Puppetry
373	Ms	Humphrey	Leah	Female	gmardenac@youku.com	1-515-841-0033	1-858-946-7207	1-806-169-3919	Yoga	19
374	Mrs	James	Jasper	Female	wanderssonad@google.nl	1-954-703-4630	1-240-314-9040	1-775-726-5617	Snorkeling	19
375	Mr	Norris	Nash	Male	ksankeyae@nih.gov	1-503-264-6828	1-202-629-6453	1-501-843-1960	Artifacts	19
376	Ms	Patton	Phoebe	Female	rhackingeaf@house.gov	1-713-765-4530	1-720-746-7474	1-765-754-6340	Shopping	19
377	Miss	Swanson	Geraldine	Female	kwallingag@github.com	1-719-359-9316	1-515-924-5556	1-760-803-8249	Carving 19
378	Mrs	Velazquez	Wilma	Female	fdonnerah@indiegogo.com	1-917-457-0903	1-770-790-4825	1-915-771-8369	Photograph
379	Ms	Case	Libby	Undisclosed	kaustai@technorati.com	1-214-659-7754	1-504-945-2119	1-440-685-3626	Gardening
380	Mr	Dean	Noble	Male	lsendsaj@webeden.co.uk	1-717-196-0154	1-213-864-0425	1-405-144-2635	Puppetry	19
381	Mr	Drake	Adam	Male	ljosephsonak@comsenz.com	1-414-973-0399	1-504-107-2508	1-915-565-5532	Board game
382	Mrs	French	Julie	Female	mmcmillamal@zdnet.com	1-757-422-0342	1-719-806-0333	1-208-620-6951	Biking	1949-06-18
383	Miss	Fry	Mariko	Female	ireesam@salon.com	1-781-647-6227	1-585-610-3779	1-309-279-2955	Dance Classes	19
384	Ms	Holden	Kirsten	Female	nbentotean@tamu.edu	1-608-643-5716	1-347-183-2574	1-386-746-3750	Crafts	1954-08-23
385	Mr	Huber	Roary	Male	wmacgregorao@census.gov	1-423-906-8145	1-405-759-7723	1-757-708-6187	Ceramics	19
386	Mrs	Kaufman	Germane	Female	afilipyevap@nbcnews.com	1-801-970-9161	1-253-963-6673	1-816-795-9819	Bridge	1996-09-26
387	Mr	Lott	Brett	Male	dcherryholmeaq@samsung.com	1-260-729-8637	1-615-922-8523	1-915-654-5005	Backpackin
388	Ms	Mack	Audrey	Female	acamingsar@sfgate.com	1-217-850-5628	1-323-630-7084	1-775-875-9795	Angling 1978-10-14
389	Mr	Morrow	Abbot	Male	nevisonas@state.tx.us	1-517-579-0007	1-803-701-2467	1-414-455-1606	Yachting	19
390	Mrs	Oneil	Isadora	Female	jprineat@webs.com	1-203-787-1330	1-754-316-3092	1-404-433-8277	Cooking 1989-03-08
391	Mrs	Patterson	Sade	Female	ktaylorsonau@histats.com	1-281-504-8817	1-775-997-6757	1-573-157-9915	Ar
392	Mr	Perez	Castor	Male	lgoodinsonav@cpanel.net	1-214-964-5903	1-423-160-7747	1-334-929-9176	Biking	1964-12-09
393	Miss	Peters	Felicia	Female	afortounaw@wired.com	1-302-401-2054	1-312-637-2511	1-203-190-8655	Woodworking	19
394	Ms	Reed	Fredericka	Female	himoreax@over-blog.com	1-323-291-9355	1-786-436-5543	1-504-907-4410	Model airp
395	Miss	Reyes	Keelie	Female	bhorbartay@phoca.cz	1-602-331-8865	1-832-364-2363	1-253-127-7001	Embroidery	19
396	Mrs	Rowe	Kylynn	Female	rdecavilleaz@dmoz.org	1-901-330-4749	1-574-161-3604	1-806-776-3283	Jogging 1982-10-25
397	Miss	Underwood	Gwendolyn	Female	dgallegosb0@ow.ly	1-253-968-2764	1-608-968-0051	1-202-118-0233	Cr
398	Mr	Zamora	Beau	Male	shoudhuryb1@amazon.com	1-212-654-9101	1-815-549-1081	1-352-992-8873	Quilting	19
399	Ms	Alvarado	Ramona	Female	povitzb2@joomla.org	1-408-763-1235	1-253-651-9380	1-502-662-5485	Bird-watch
400	Mr	Battle	Jarrod	Male	bmannoochb3@blinklist.com	1-843-115-0876	1-859-858-2609	1-321-949-4445	Yoga	19
401	Miss	Bowman	Martina	Female	bbeneytob4@homestead.com	1-808-897-1285	1-916-701-6632	1-904-143-2901	Camping 19
402	Mr	Cooke	Nehru	Male	krushbyb5@blogspot.com	1-239-826-6605	1-540-463-6262	1-916-806-0949	Ceramics	19
403	Mr	Douglas	Mufutau	Male	nmanghamb6@google.it	1-214-798-1410	1-330-863-4468	1-713-314-4206	Crochet 1952-03-27
404	Mr	Frank	Jackson	Male	sdunsireb7@weibo.com	1-951-878-3487	1-713-469-0897	1-915-958-6358	Carpentry	19
405	Dr	Frederick	Brandon	Male	sguppyb8@bbc.co.uk	1-952-961-3279	1-661-359-7802	1-907-409-1685	Reading 19
406	Ms	French	April	Female	msongestb9@usa.gov	1-813-355-1169	1-770-918-7769	1-321-564-8454	Knitting	19
407	Miss	French	Mia	Female	jitzchakyba@intel.com	1-937-835-0636	1-209-656-0077	1-918-433-2325	Hiking	1997-07-09
408	Mr	Gilbert	Kaden	Male	jsherburnbb@fotki.com	1-415-175-5885	1-206-282-2992	1-217-869-9189	Biking	1970-07-07
409	Mrs	Gillespie	Mollie	Female	csweetmorebc@abc.net.au	1-410-795-6149	1-501-129-0173	1-202-673-0891	Model tra
410	Mr	Jimenez	Tad	Male	flindgrenbd@timesonline.co.uk	1-260-644-5241	1-704-621-6246	1-805-571-4248	Stamp col
411	Mrs	Justice	Alexa	Female	cvieyrabe@harvard.edu	1-941-415-0557	1-334-284-8478	1-954-269-6616	Board games	19
412	Mr	Kline	Akeem	Male	vcharlsonbf@buzzfeed.com	1-512-743-0624	1-216-840-3730	1-915-564-4910	Ceramics
413	Mr	Moran	Acton	Male	nbarlasbg@yelp.com	1-682-691-1026	1-214-409-3694	1-407-808-8878	Whittling	19
414	Mr	Morgan	Elton	Male	olaingmaidbh@yahoo.com	1-949-225-9432	1-415-368-5008	1-727-640-5805	Boating 1970-04-16
415	Mr	Munoz	Alvin	Male	sviggarsbi@flavors.me	1-804-560-4194	1-502-506-8569	1-619-525-6843	Carpentry	19
```

Figure 4: View all query result data as tab separated text

Installation

Personal computers and mobile devices

You do not need to install any software on your computer or mobile device to use Data Explorer.

The prerequisites are:

- A supported browser, e.g. Chrome, Edge, Firefox and Safari
- A network connection to the internet and/or corporate network
- The address (URL) for Data Explorer at your site

IBM servers

The "LANSA Integration Toolkit for IBM i Installation and Operation" document explains how to install the server software components on an IBM server.

How to register to use Data Explorer

Data Explorer provides access to database tables on IBM servers. Registration ensures that only authorised persons may use Data Explorer to query database tables. You need an active IBM server user profile and password to log on and operate Data Explorer.

Data Explorer provides administrators with configuration options for automatic registration or administrator registration.

Automatic	When Data Explorer is configured for automatic (or self) registration it will register a user at the first log on attempt. Data Explorer will request a user profile and password and add the user to the registered users list. You do not need to request registration if your administrator allows automatic registration.
Administrator	When Data Explorer is configured for administrator registration users must request registration from an administrator. The administrator will grant or deny the request. When an administrator grants a request he/she will add the user to the registered users list.

How to start Data Explorer

Open the LANSA Integration Toolkit Welcome page

Start a browser on your desktop or mobile device and enter the LANSA Integration Toolkit URL.

URL format	http://[IBM server]:[port number]/index.html
[IBM server]	Substitute the name or IP address of your IBM server.
[port number]	Port number represents the port number defined during installation; 4563 is the default port number.
Example URL	http://lansa999:4563/index.html

The LANSA Integration Toolkit Welcome page Figure 5 (page 12) includes clickable items for Terminal Server, Spooled File Manager, and Data Explorer.

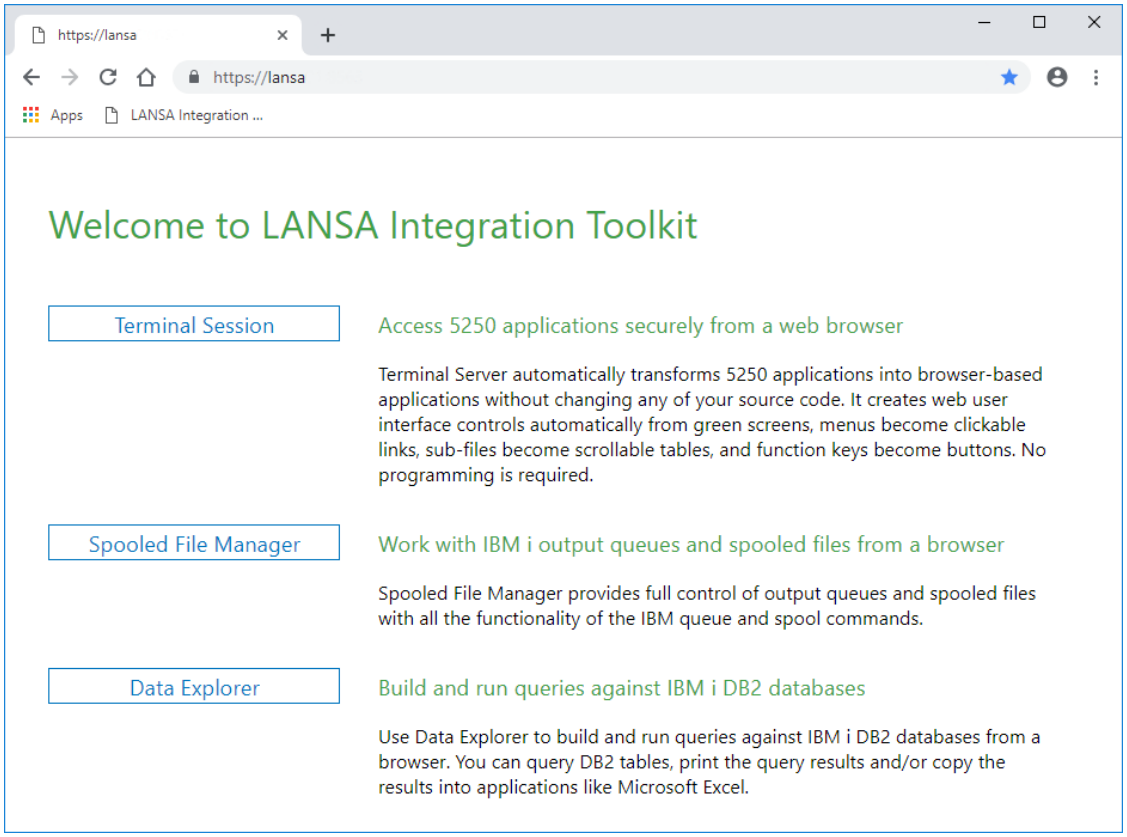


Figure 5: LANSA Integration Toolkit Welcome page

Log on

Click Data Explorer in the LANSA Integration Toolkit Welcome page to log on.

When Date Explorer starts the browser will display the Access log on dialogue.

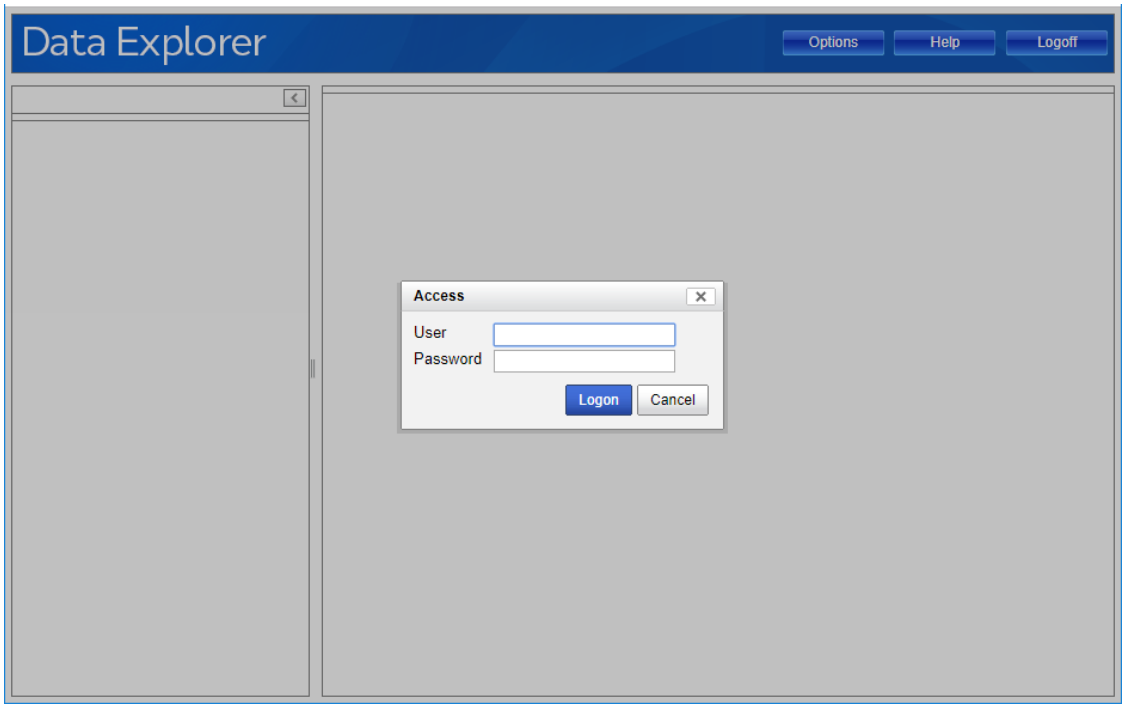


Figure 6: Data Explorer access log on form

To log on to Data Explorer you must provide your user profile and password:

1. Type your user profile.
2. Type your password.
3. Click the Logon button.
4. Wait while Data Explorer verifies your credentials.
   If your log on is successful, Data Explorer will display the next page.
   If your log on is unsuccessful, Data Explorer will display an error message.

If your log on is successful, Data Explorer will display the Welcome page.

If your log on is unsuccessful, Data Explorer will display an error message.

Log on will fail if you make a mistake typing the user profile and/or the password.

Check you have the correct user profile and re-type the password.

Contact your administrator if you forget your user profile and/or password.

Query filters

You can select and retrieve data from database tables by running a query filter that contains data selection criteria expressed as SQL. The first step for running a query is to create a query filter, then you can run the query filter and/or save the query filter.

What is the difference between filters and queries?

Query filter	Query filters define the selection or search criteria expressed as SQL for querying data in a database. You can create, save, edit, delete and run query filters.
Table filter	Table filters define the selection or search criteria expressed as SQL to search for tables residing on your IBM server. You can create, save, edit, delete and run table filters.
Query	Running a query filter or table filter produces query result data. You can view query result data and copy query result data.

Query filters quick reference

How to run a query

To query the data in DB2 databases:

1. Create a query filter.
2. Define the data selection criteria in the query filter.
3. Run the query filter to retrieve the query data.
4. Data Explorer will display the query result data as a list of rows in a grid.

Create a query filter

To create a query filter:

1. Create a query filter.
2. Define the data selection criteria using SQL in the query filter.
3. Save the filter and/or run the query.

Create a query filter with variable selection criteria

To create a query filter with parameters for variable selection criteria:

1. Create a query filter.
2. Define the data selection criteria using SQL in the query filter.
3. Place a question mark in the SQL for each variable parameter.
4. Design the query parameter form.
5. Save the filter and/or run the query.

Change a query filter

To change a query filter:

1. Edit the query filter you want to change.
2. Amend the data selection criteria in the query filter.
3. Save the filter and/or run the query.

Delete a query filter

To delete a query filter:

1. Click the query filter you want to delete.
2. Delete the query filter.

Run a query filter

To run a query filter:

1. Click the query filter you want to run and choose Run from the menu.
2. Wait while Data Explorer runs the query and displays the query data.
3. View the query data.

Create a query filter by writing SQL

Create a query filter → Enter the SQL statements for the query → Run the query and view the results

To create a query filter starting from an empty edit tab you must insert all the SQL statements for your query. To create a query filter in this way:

1. In the filters panel click the folder in which you want to save the filter.
2. From the floating menu choose New - Query Filter.
3. Wait until Data Explorer shows the tab to edit the filter, Figure 7 (page 16).
4. Type your selection criteria for the filter.

   The selection criteria are the SQL statements that define the query.
5. If you need to clear the edit tab, click the Reset button.
6. Click the Save button to save the filter in a folder.

   Data Explorer will ask you to confirm the save action:

   Answer Yes to save the filter.

   Answer No and Data Explorer will not save the filter.
7. Click the Run button to start the query immediately.

   You can run the query without saving the filter.

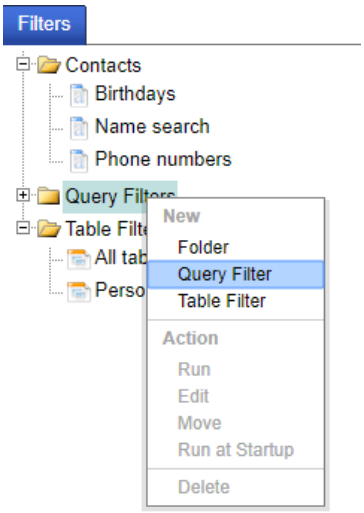


Figure 7 (page 16) shows the edit tab for a new query filter.

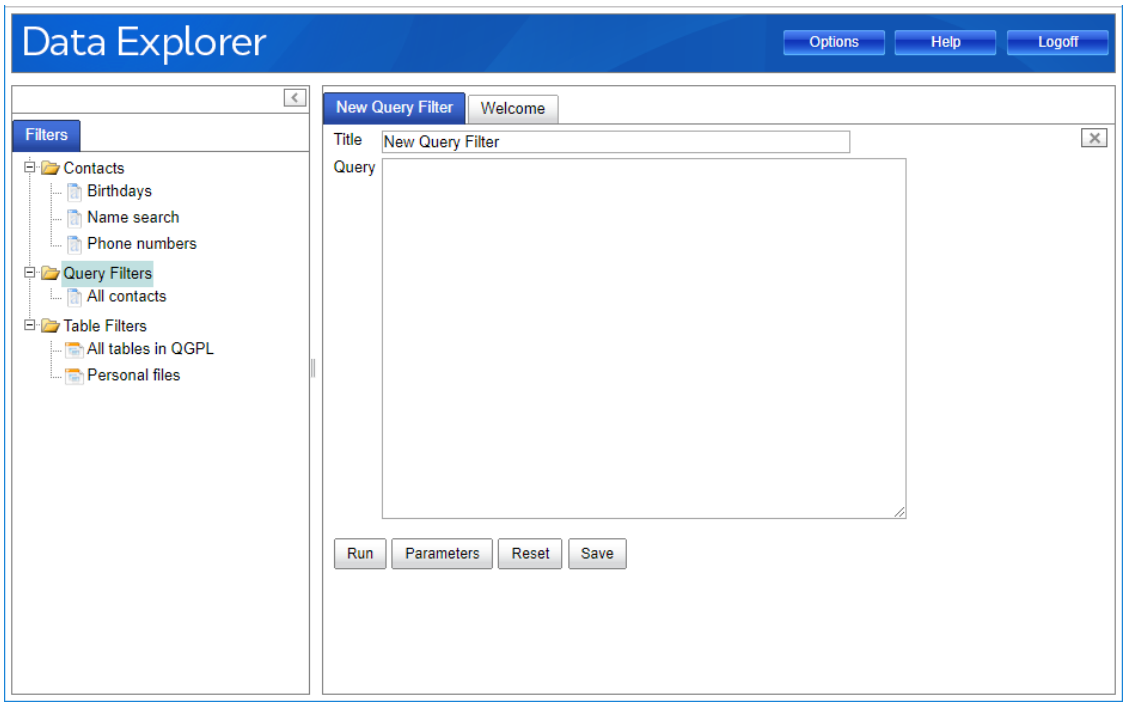
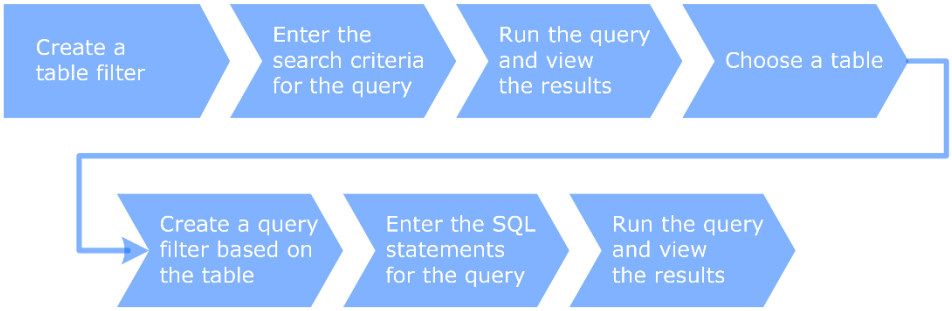


Figure 7: New query filter edit tab

When creating the filter, choose a title (or name) for the filter and define the search and selection criteria using SQL statements.

Create a query filter starting from a table



To create a query filter starting from a table:

1. Create and run a table filter (or use an existing table filter) to find the table you want to use in the query filter.
2. Select a table from the table filter result data.
3. From the floating menu on the table filter result data choose New - Query Filter.
4. Wait until Data Explorer shows the tab to edit the query filter.

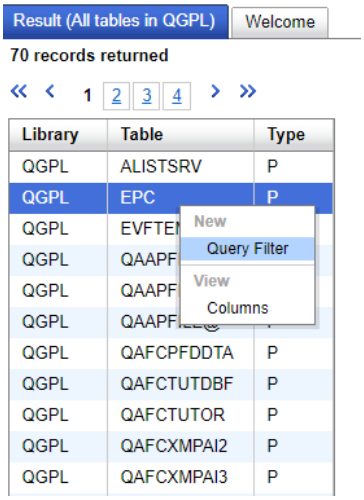
   Data Explorer will insert the SQL for a select query to retrieve all columns from the table.
5. Edit the SQL to suit your selection criteria for the query filter and the columns required for the query result data.
6. Click the Save button to save the filter in a folder.

   Data Explorer will ask you to confirm the save action:

   Answer Yes to save the filter.

   Answer No and Data Explorer will not save the filter.
7. Click the Run button to start the query immediately.

   You can run the query without saving the filter.



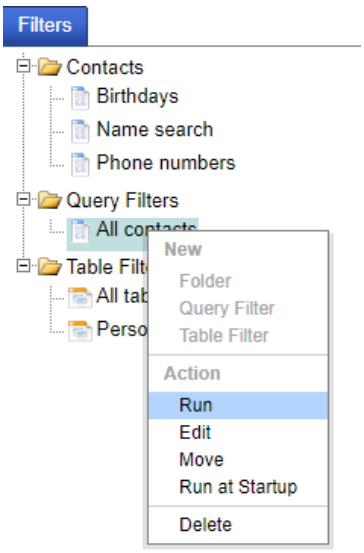
This method is the quickest way to create a simple query using one table. It also provides the basis for extending the query to include additional tables.

Run a query filter: fixed selection criteria

Running a query filter causes the query to select data from the tables based on the selection criteria described in the filter.

To run a query filter:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Run.
3. Wait while Data Explorer runs the query to retrieve the query result data.
4. Data Explorer displays the query result data in a new tab in the right-hand panel.
5. View the query result data.



Query filters with fixed selection criteria will start immediately.

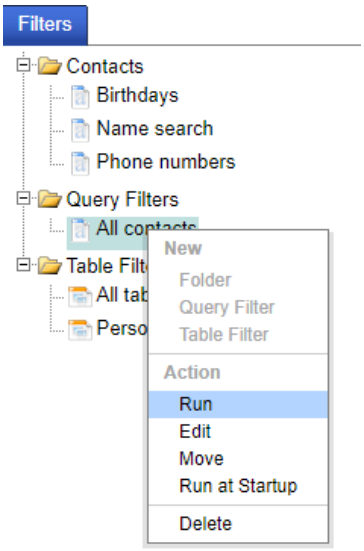
Query filters with variable selection criteria will ask for the selection values before running the query.

Run a query filter: variable selection criteria

When running query filters with variable selection criteria, Data Explorer will ask for values for the selection criteria before running the query. Insert values into the selection criteria to start the query.

To run a query filter with variable selection criteria:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Run.
3. Wait until Data Explorer displays the query parameter form showing the parameters for the variable selection criteria.
4. Insert selection criteria values into the parameters and click the Run button Figure 8 (page 19).
5. Wait while Data Explorer runs the query to retrieve the query data.
6. Data Explorer displays the query result data in a new tab in the right-hand panel.
7. View the query data.



The selection criteria values follow the IBM server SQL WHERE rules. For example, the value A% in a name search will select names beginning with an uppercase letter A.

The values you insert into the parameters for the variable selection criteria will determine the composition of the query result data. Your choice of selection criteria values may return no data.

Figure 8 (page 19) shows an example of a query filter with variable selection criteria and Data Explorer displaying a query parameter form to collect values for the selection criteria before submitting the query.

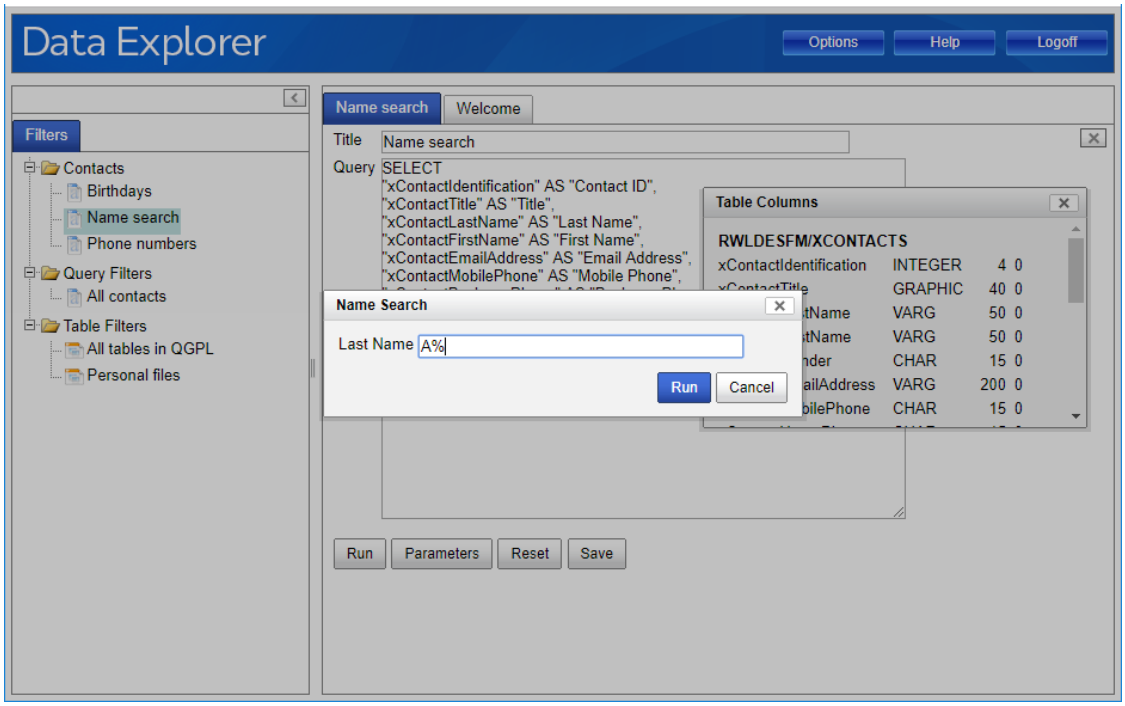


Figure 8: Run query filter with variable selection criteria

Edit a query filter

To change the selection criteria and filter details you edit the query filter.

To edit a query filter:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Edit.
3. Wait until Data Explorer shows the tab to edit the filter.
4. Amend the selection criteria and filter details, Figure 9 (page 20).
5. Click the Save button to save the filter in a folder.
   Data Explorer will ask you to confirm the save action:
   Answer Yes to save the filter.
   Answer No and Data Explorer will not save the filter.
6. Click the Run button to start the query immediately.
   You can run the query without saving the filter.

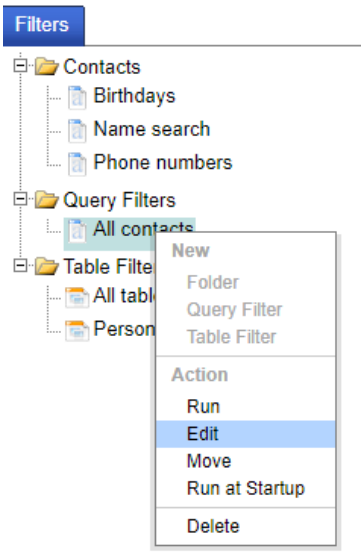


Figure 9 (page 20) shows an example of an edit tab for a query filter.

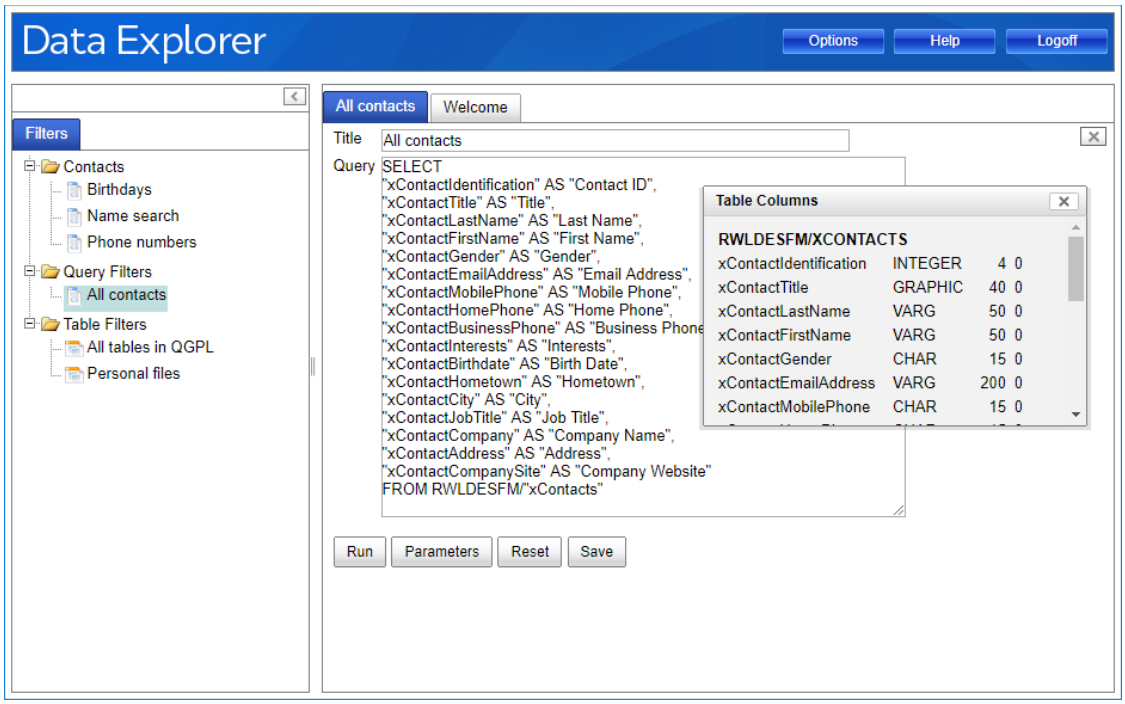


Figure 9: Query filter edit tab

The edit tab shows the name of the query filter. This example shows the edit tab for the query filter titled All contacts and the tab for the Welcome page.

Move a query filter

Move allows you relocate a query filter from its existing folder to another folder.

To move a query filter:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Move.
3. Wait until Data Explorer shows the list of folders available as destinations for the move, in the Select Folder dialog, Figure 10 (page 21).
4. Choose a folder from the list and click the name.
5. Click OK to complete the move.
6. Click Cancel to stop the move.

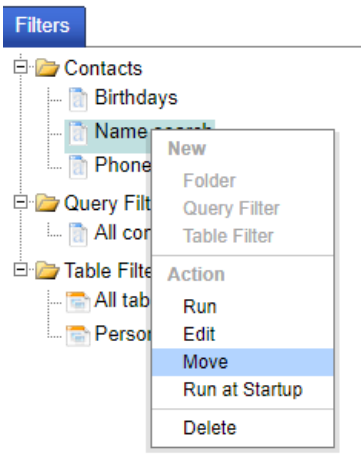


Figure 10 (page 21) shows the list of folders available as destinations when moving a query filter.

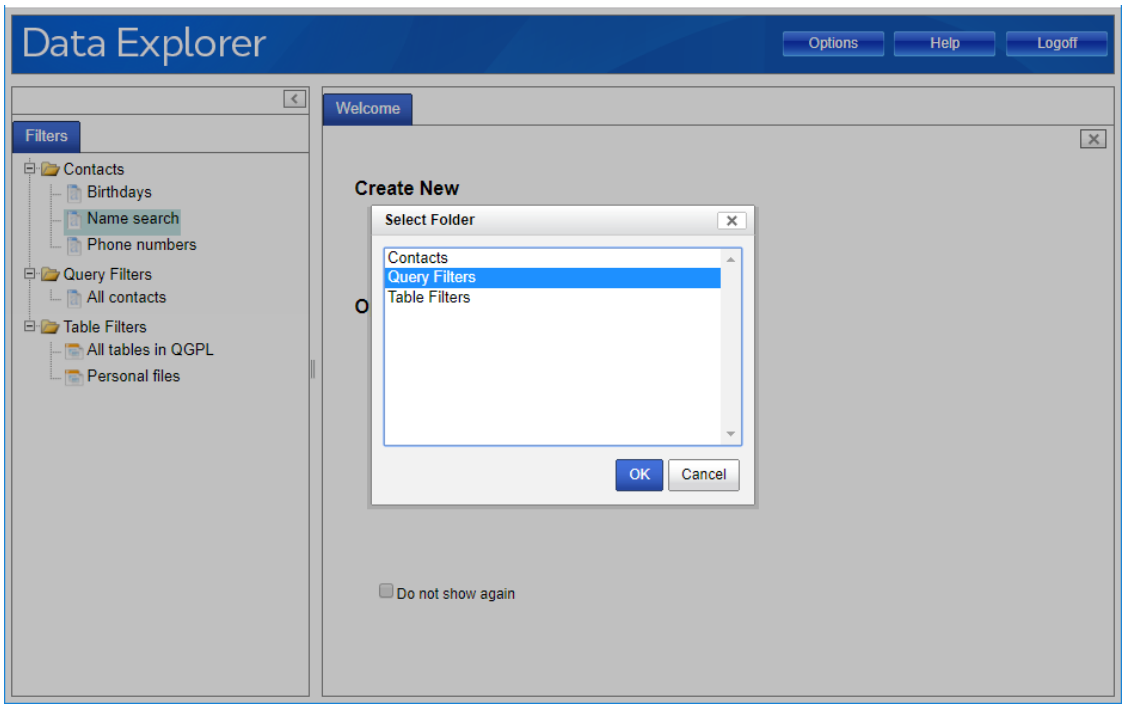


Figure 10: Move a query filter - choose destination folder

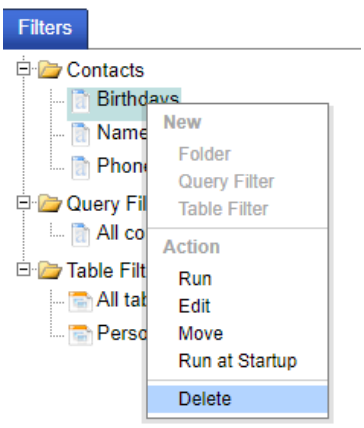
In this example the name search query filter will move from the folder named Contacts to the Query Filters folder.

Delete a query filter

Deleting a query filter removes the filter from Data Explorer.

To delete a query filter:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Delete.
3. Wait until Data Explorer asks you to confirm the delete.
4. Answer Yes to delete the filter.
   Answer No and Data Explorer will not delete the filter.



WARNING	You cannot undelete a query filter. Exercise care when deleting filters.

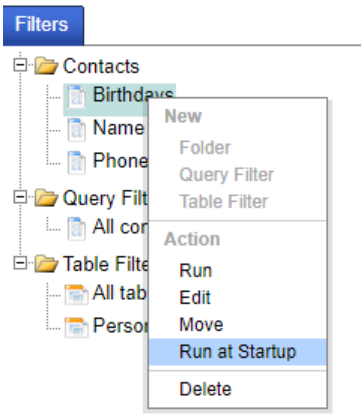
Run a query filter when Data Explorer starts

To run a query filter immediately when Data Explorer starts, set the start-up action for the query filter you want to run.

To run a query filter when Data Explorer starts:

1. In the filters panel click a query filter name.
2. From the floating menu choose Action - Run at Start-up.
3. Data Explorer will set this query filter to run when Data Explorer starts.

   The Options tab shows the name of the start-up filter.



Data Explorer will run only one filter when it starts. The options are a query filter, or a table filter, or no filter.

Running a filter when Data Explorer starts may take some time, depending on the selection criteria described in the query filter and the size of the tables used by the query.

Change the query filter that runs when Data Explorer starts

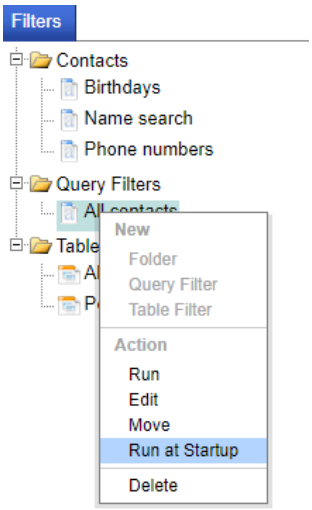
To change the query filter that runs immediately when Data Explorer starts, set the start-up action for another filter you want to run.

To change the query filter that runs when Data Explorer starts:

1. In the filters panel click the filter name that you want to run when Data Explorer starts.
2. From the floating menu choose Action - Run at Start-up.
3. Data Explorer will remove the original query filter as the start-up filter.
4. Data Explorer will set this query filter to run when Data Explorer starts.

   The Options tab shows the name of the start-up filter.

   An alternate method to stop a filter running at start-up is to open the Options tab and click the Clear Start-up Filter button.



Work with query result data

This section describes how to view, sort and copy query result data produced by running query filters and download query result data into office tools like Microsoft Excel.

Retrieve query result data

When you run a query filter, Data Explorer returns the query result data as a set of rows in a grid on a result tab. The query result data comprises rows from the tables that match the selection criteria specified in the query filter.

Figure 11 (page 23) is an example of query data. Running the query filter titled "All contacts" produces query result data including all contacts.

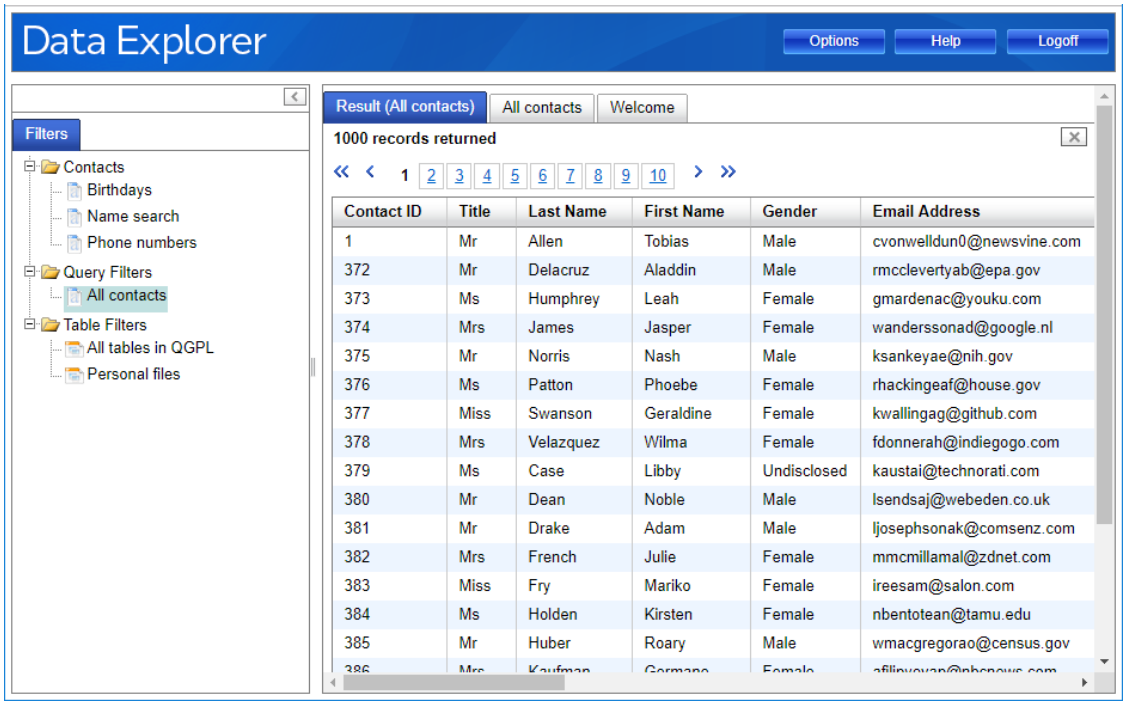


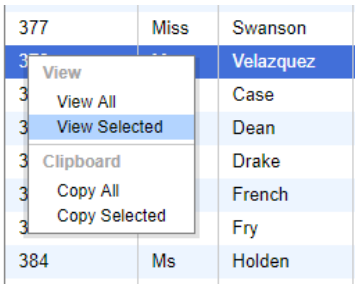
Figure 11: Query result data grid view

View query data

Data Explorer displays query result data in a separate window.

To view query data:

1. Click the row or rows in the query result data to select the data you want to copy.
2. From the floating menu choose,
   View - View All, to see all the query result data.
   View - View Selected, to see the selected row or rows.
3. Wait while Data Explorer retrieves the query result data.
4. Data Explorer will open a new window showing the query result data formatted as tab separated values.



You can copy and paste the query result data rendered this way.

Sort query data

When viewing query result data, you can sort the query result data by a column in the grid.

Click a column heading to sort the query result data based on the data values in the column.

Copy query data

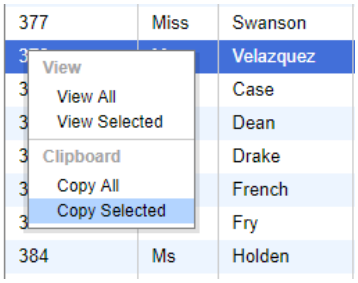
You can copy query result data to the clipboard and from there paste the query result data into other applications that support clipboard operations. For example, you can paste the query result data into a worksheet in a Microsoft Excel workbook.

To copy the query data:

1. Click the row or rows in the query result data to select the data you want to copy.
2. From the floating menu choose,

   Clipboard - Copy All, to copy all the query result data.

   Clipboard - Copy Selected, to copy the selected rows.
3. Wait while Data Explorer copies the query result data.
4. Switch to the application into which you want to paste the query result data.
5. Paste the query result data from the clipboard.



Copying and pasting query result data may produce unexpected results with different applications. You must verify the capabilities of the application to manage data pasted from the clipboard. For example, you may have to use Paste Special and then choose an unformatted text option to achieve your desired result.

Table filters

You can search for tables by running a table filter. Table filters will search for physical files, logical files, indexes and views.

Table filters quick reference

Create a table filter

To create a table filter:

1. Create a table filter.
2. Define the table search criteria in the table filter.
3. Save the filter and/or run the filter to perform the table search.

Change a table filter

To change a table filter:

1. Open the table filter you want to change.
2. Amend the table search criteria in the table filter.
3. Save the filter and/or run the filter perform the table search.

Delete a table filter

To delete a table filter:

1. Click the table filter you want to delete and choose Delete from the menu.
2. Delete the table filter.

Run a table filter

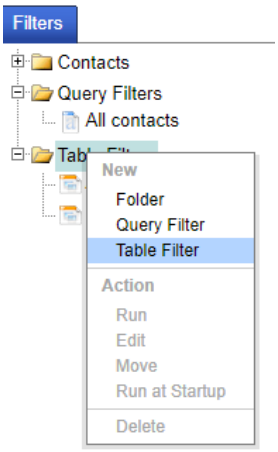
To run a table filter:

1. Click the table filter you want to run and choose Run from the menu.
2. Wait while Data Explorer runs the search for tables and displays the query data.
3. View the list of tables.

Create a table filter

To create a table filter:

1. In the filters panel click the folder name in which you want to save the filter.
2. From the floating menu choose New - Table Filter.
3. Wait until Data Explorer shows the tab to edit the filter.
4. Type your search criteria and filter details.
5. If you need to clear the edit tab, click the Reset button.
6. Click the Save button to save the filter in a folder.
7. Data Explorer will ask you to confirm the save action:
   Answer Yes to save the filter.
   Answer No and Data Explorer will not save the filter.
8. Click the Run button to start the search immediately.
   You can search for tables without saving the filter.



To create a table filter, define the table search criteria and filter properties for the table filter on the new table filter tab, Figure 12 (page 26).

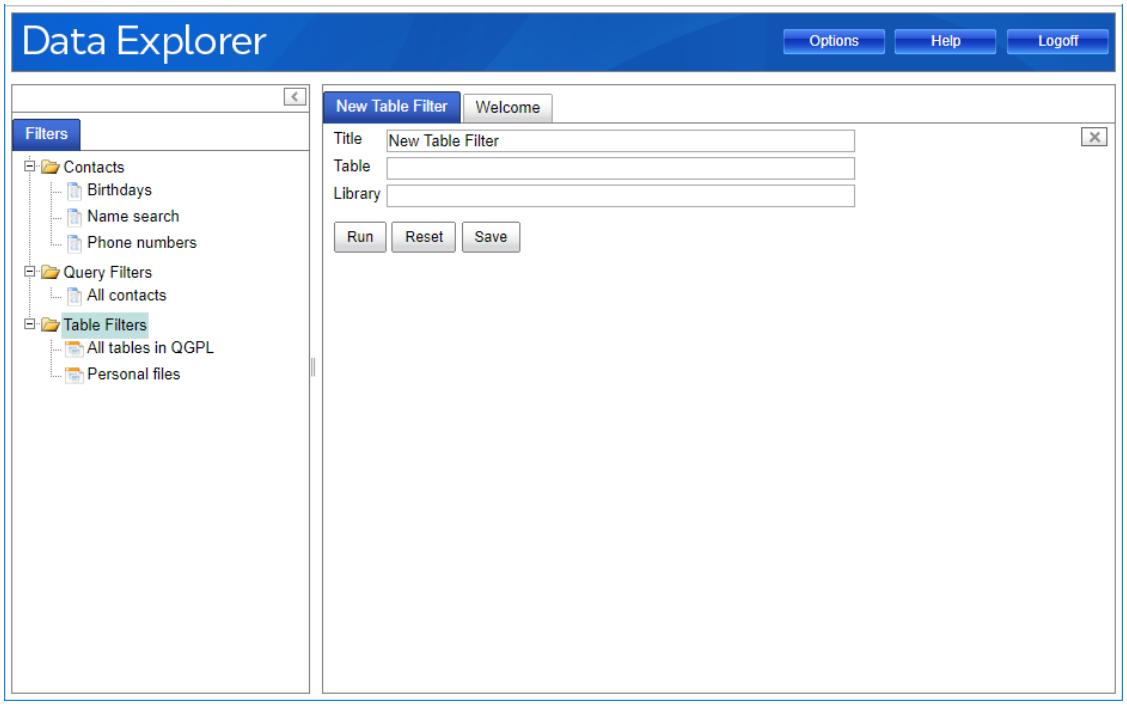


Figure 12: Create table filter

You can move the filter to a folder of your choice at any time.

Run a table filter

Running a table filter starts a search for tables based on the criteria described in the table filter.

To run a table filter:

1. In the filters panel click the table filter name.
2. From the floating menu choose Action - Run.
3. Wait while Data Explorer searches for tables.
4. Data Explorer displays the table filter result data in a new tab in the right-hand panel, Figure 13 (page 27).
5. View the table filter result data.

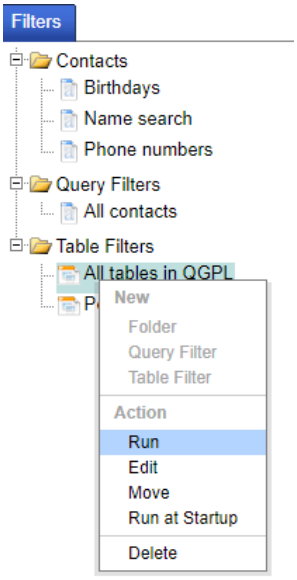


Figure 13 (page 27) shows the query result data produced by a table filter searching for all tables in the library QGPL.

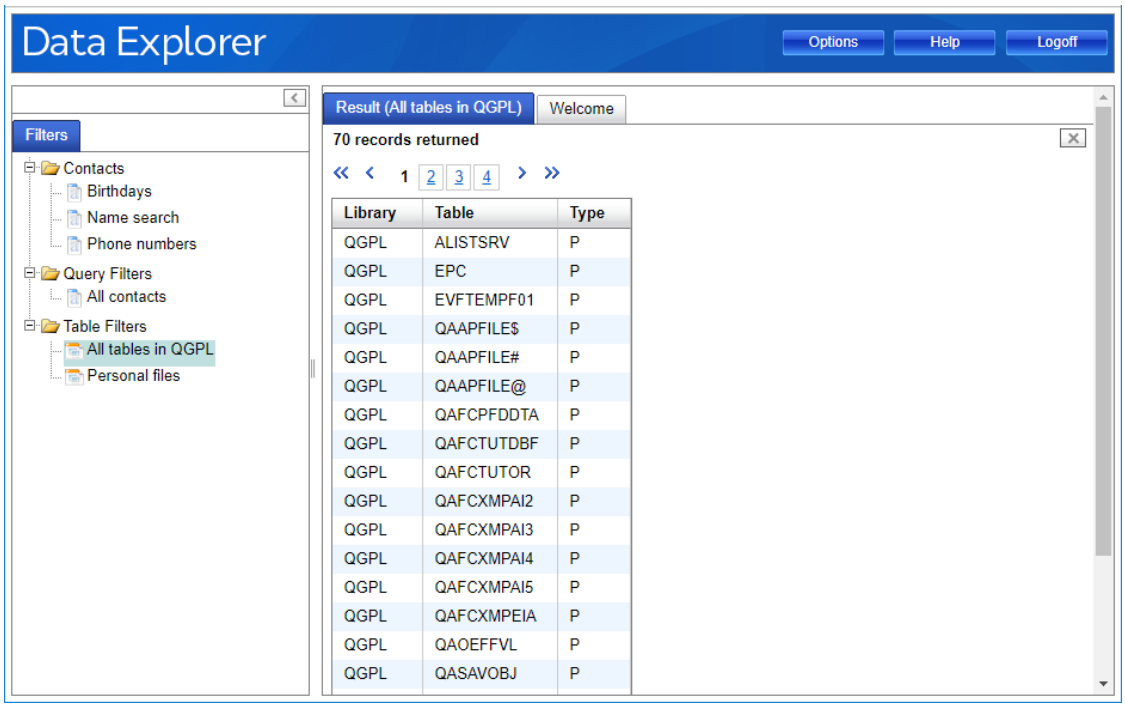


Figure 13: Table filter all tables in QGPL query result data

Edit a table filter

To change the search criteria described by the table filter you edit the filter.

To edit a table filter:

1. In the filters panel click the table filter name.
2. From the floating menu choose Action - Edit.
3. Wait until Data Explorer shows the tab to edit the filter, Figure 14 (page 28).
4. Amend the search criteria and filter details.
5. Click the Save button to save the filter in a folder.
   Data Explorer will ask you to confirm the save action:
   Answer Yes to save the filter.
   Answer No and Data Explorer will not save the filter.
6. Click the Search button to start searching immediately.
   You can search for tables without saving the filter.

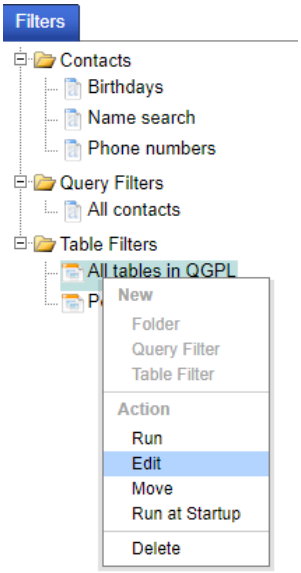


Figure 14 (page 28) shows an example of an edit tab for a table filter.

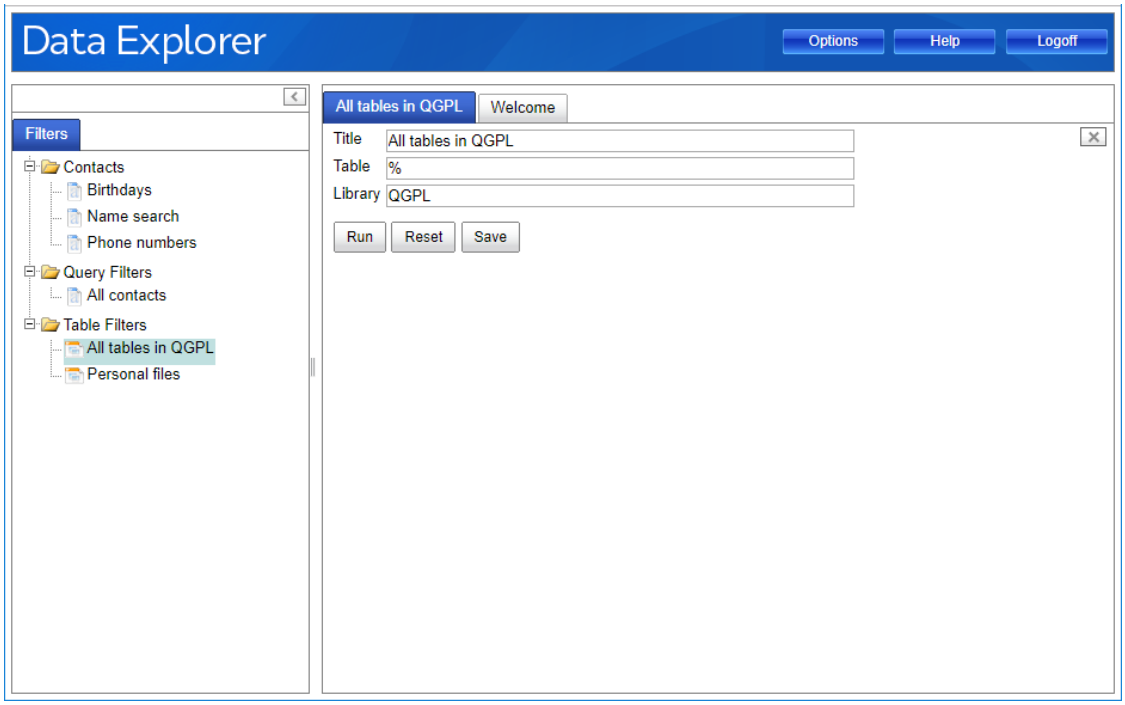


Figure 14: Table filter edit form

Move a table filter

Move allows you relocate a table filter from its existing folder to another folder.

To move a table filter:

1. In the filters panel click the table filter name.
2. From the floating menu choose Action - Move.
3. Wait until Data Explorer shows the list of folders available as destinations for the move, Figure 15 (page 29).
4. Choose a folder from the list and click the name.
5. Click OK to complete the move.
6. Click Cancel to stop the move.

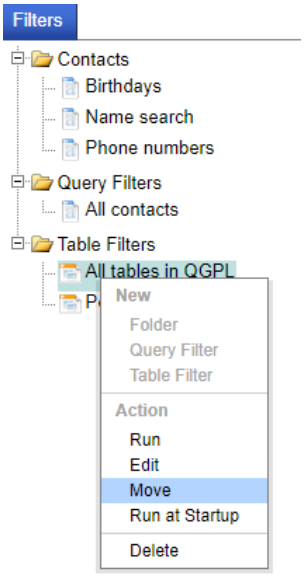


Figure 15 (page 29) shows the list of folders available as destinations when moving a table filter.

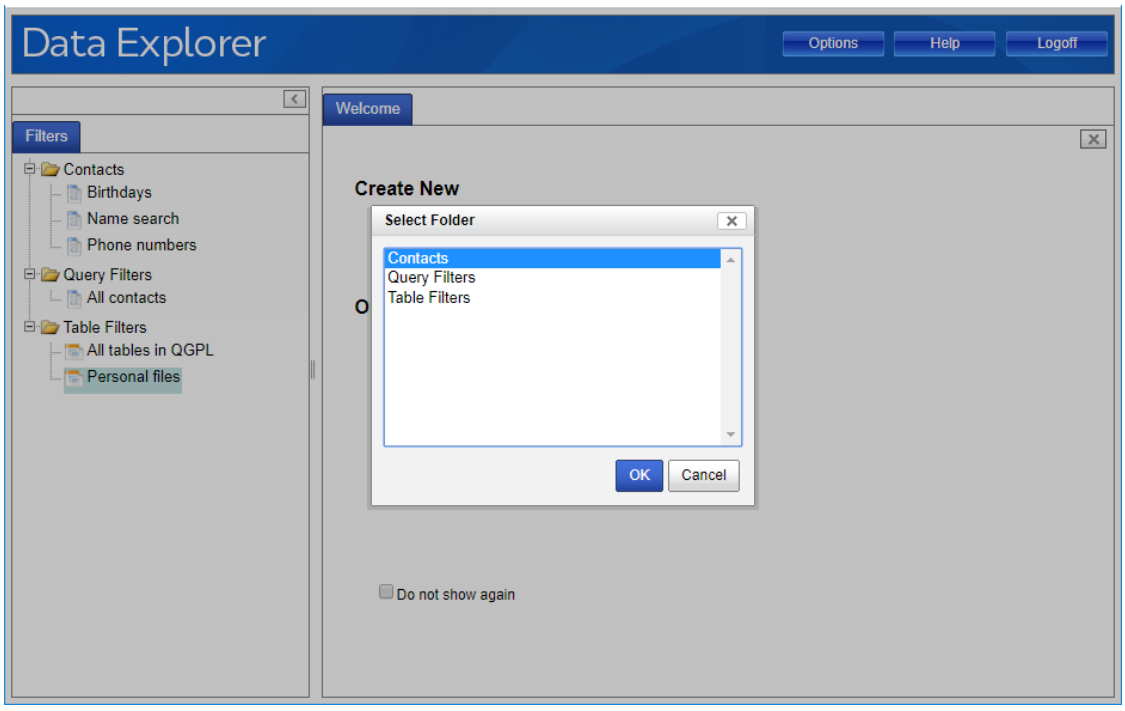


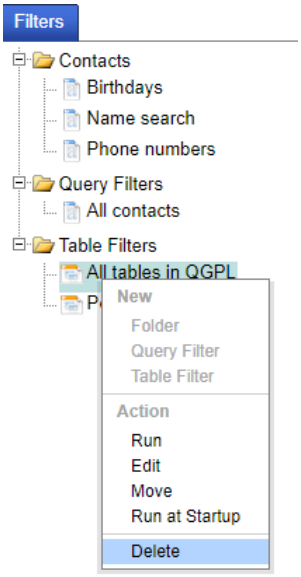
Figure 15: Move a table filter - choose destination folder

Delete a table filter

Deleting a table filter removes the filter from Data Explorer.

To delete a table filter:

1. In the filters panel click a table filter name.
2. From the floating menu choose Action - Delete.
3. Wait until Data Explorer asks you to confirm the delete.
4. Answer Yes to delete the filter.
   Answer No and Data Explorer will not delete the filter.



WARNING	You cannot undelete a table filter. Exercise care when deleting filters.

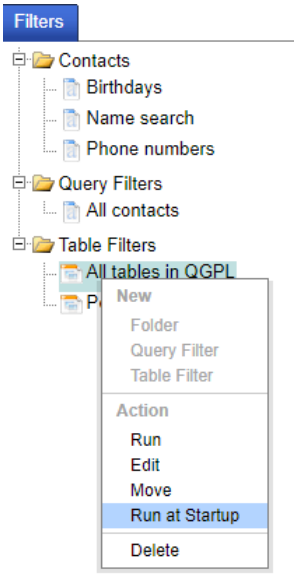
Run a table filter when Data Explorer starts

If you want to run a table filter automatically when Data Explorer starts, set the start-up action for the filter you want to run.

To run a table filter when Data Explorer starts:

1. In the filters panel click a table filter name.
2. From the floating menu choose Action - Run at Start-up.
3. Data Explorer will set this table filter to run when Data Explorer starts.

   The Options tab shows the name of the start-up filter.



Data Explorer will run only one filter when it starts. The options are a query filter, or a table filter, or no filter.

Running a table filter when Data Explorer starts may take some time, depending on the search criteria described in the filter.

Change the table filter that runs when Data Explorer starts

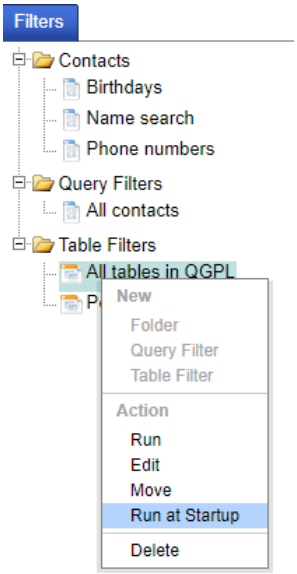
To change the table filter that runs immediately when Data Explorer starts, set the start-up action for another filter you want to run.

To change the table filter that runs when Data Explorer starts:

1. In the filters panel click a table filter name.
2. From the floating menu choose Action - Run at Start-up.
3. Data Explorer will remove the original table filter as the start-up filter.
4. Data Explorer will set this table filter to run when Data Explorer starts.

   The Options tab shows the name of the start-up filter.

   An alternate method to stop a table filter running at start-up is to open the Options tab and click the Clear Start-up Filter button.



Folder management

You can organise query and table filters by saving them in folders. You must create the folders you want to use before you can save a filter in a folder.

Avoid generic names when assigning names to folders. Choose names that indicate the content of the folder. Using appropriate names will help you to find filters quickly.

Create a folder

To create a folder:

1. In the filters panel click a folder name.
2. From the floating menu choose New - Folder.
3. Wait until Data Explorer shows the folder title dialogue.
4. Type a title for the folder in the folder dialogue.
5. Click OK to save the folder.
   Click Cancel if you do not want to keep the folder.

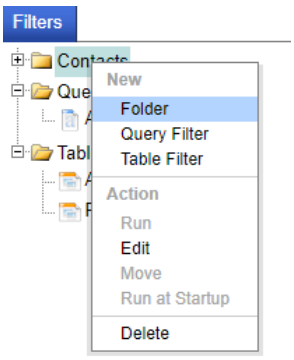


Figure 16 (page 32) shows the dialog to define a title (or name) for a new folder.

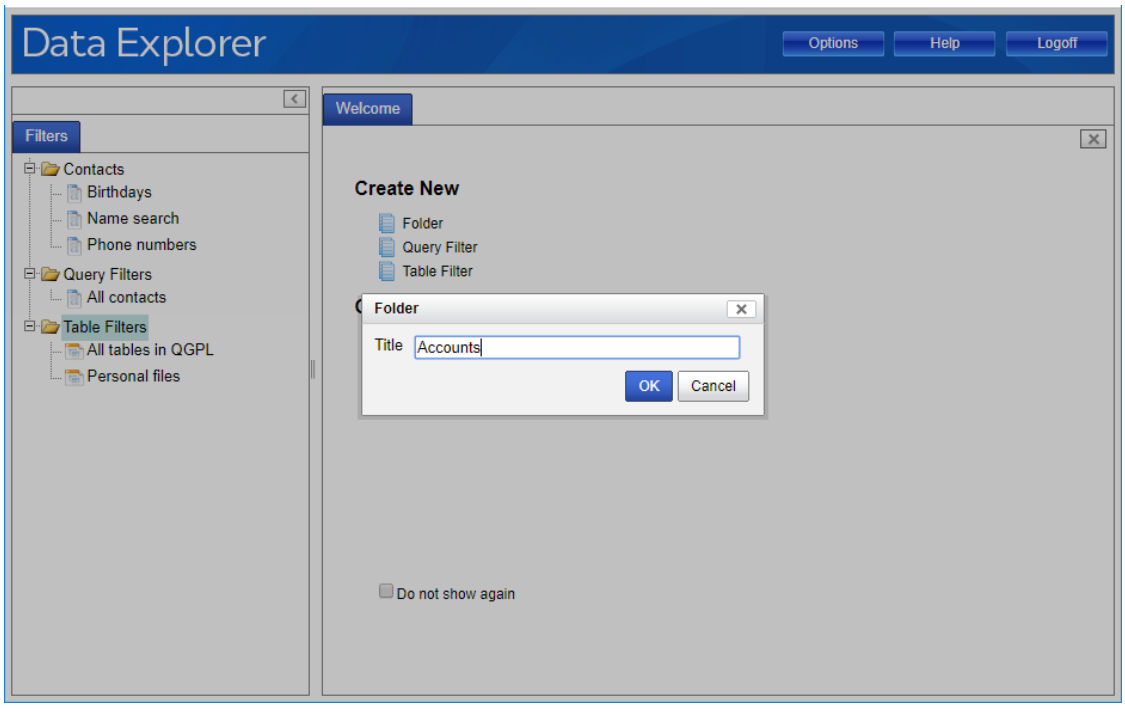


Figure 16: Create folder - define folder title

Edit folder properties

To edit a folder's properties:

1. In the filters panel click a folder name.
2. From the floating menu choose Action - Edit.
3. Wait until Data Explorer shows the folder dialogue.
4. Edit the folder properties in the folder dialogue.
5. Click OK to save the folder.
   Click Cancel if you do not want to change the folder title.

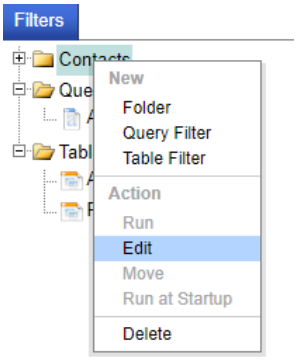


Figure 17 (page 33) shows the folder title changed from "Accounts" to "Accounts queries".

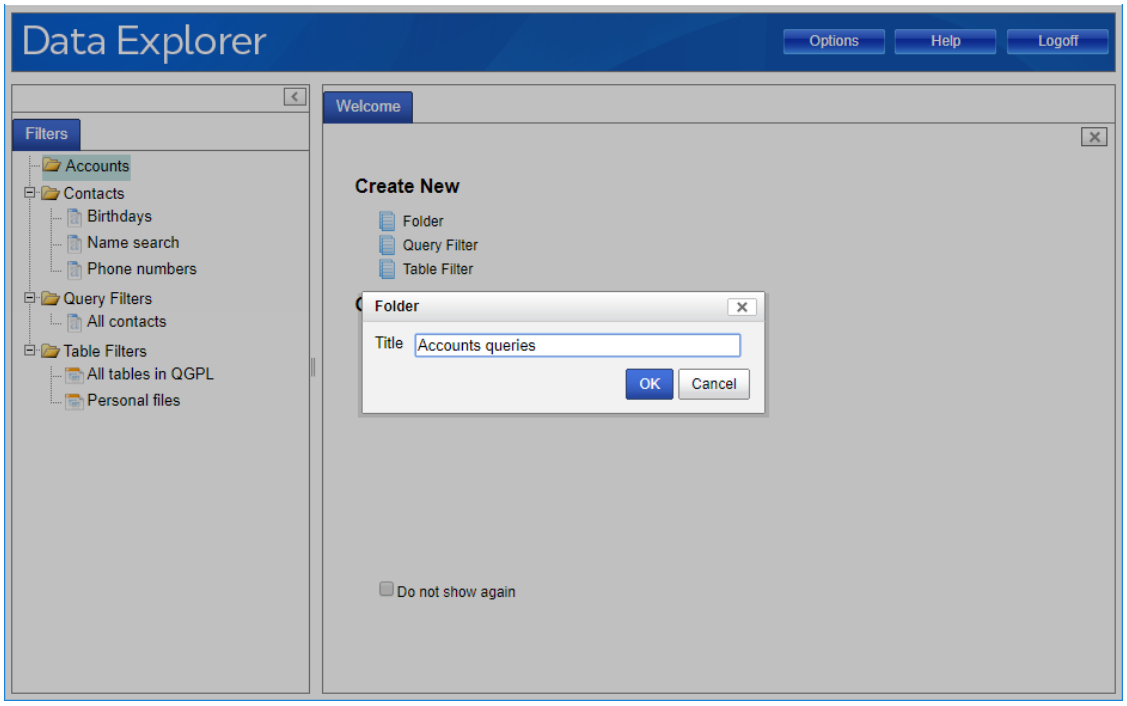
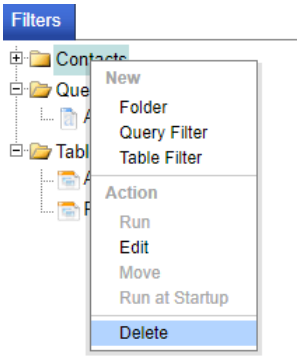


Figure 17: Edit folder title

Delete a folder

To delete a folder:

1. In the filters panel click the folder name.
2. From the floating menu choose Action - Delete.
3. Wait until Data Explorer asks you to confirm the delete.
4. Answer Yes to delete the folder.
   Answer No and Data Explorer will not delete the folder.



When you delete a folder Data Explorer asks for confirmation before deleting the folder, Figure 18 (page 34).

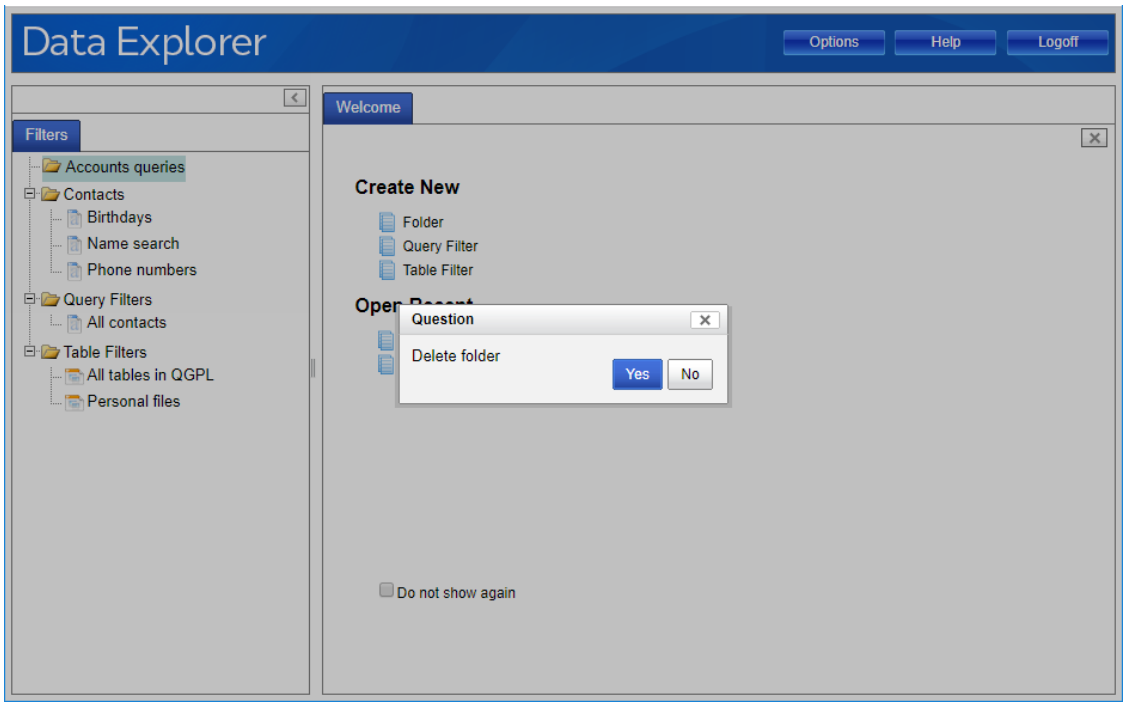


Figure 18: Delete folder - confirm delete

WARNING	Deleting a folder deletes the folder and all filters residing in the folder. You cannot undelete a folder. Exercise care when deleting folders.

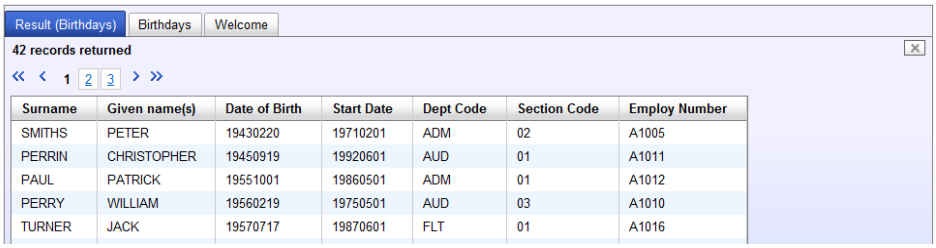
Concepts

The information in this section defines Data Explorer components, explains concepts, describes how Data Explorer operates and answers common questions about Data Explorer components.

Tab layout

Data Explorer displays one or more tabs in the right-hand panel. The tabs include filter edit forms, query result data, table search data, options and the Welcome page.

Figure 19 (page 35) shows three tabs. The visible tab titled, "Result (Birthdays)" shows query result data retrieved by running a query filter. The second tab titled, "Birthdays" is a tab for editing query filter properties including the SQL (this tab is out of view). The third tab is the Welcome page (out of view).



Surname	Given name(s)	Date of Birth	Start Date	Dept Code	Section Code	Employ Number
SMITHS	PETER	19430220	19710201	ADM	02	A1005
PERRIN	CHRISTOPHER	19450919	19920601	AUD	01	A1011
PAUL	PATRICK	19551001	19860501	ADM	01	A1012
PERRY	WILLIAM	19560219	19750501	AUD	03	A1010
TURNER	JACK	19570717	19870601	FLT	01	A1016

Figure 19: Tab layout

Data Explorer will open a new tab when you:

- Create or edit a filter
- Run a query filter
- Run a table filter
- Display the options

Data Explorer will operate with multiple open tabs.

Data Explorer does not close tabs automatically.

Table 1 (page 35) presents questions and answers about tabs.

Table 1: Tab layout questions and answers

Questions	Answers
Can I keep multiple tabs open simultaneously?	You can leave as many tabs open as you require. It is your responsibility to close the open tabs.
How do I close a tab?	Click the close icon on the tab. Right-click the tab title and then click close.
How do I switch from one tab to another?	Click the tab title to bring the tab into view.

What are filters?

Filters contain the selection and search criteria Data Explorer uses when running data queries and performing table searches. Data Explorer operates two types of filters, query filters and table filters.

Query filters select and retrieve data from tables. Running a query filter will retrieve data that matches the selection criteria defined in the query filter.

Table filters search for tables. Running a table filter will retrieve a list of tables.

Table 2 (page 36) presents questions and answers about filters.

Table 2: Filter questions and answers

Questions	Answers
Can I edit the name of the start-up filter on the Options tab?	You set the start-up filter from the filter itself. There is no need to edit the filter name on the Options tab.
Can I save filters?	You save filters in folders. Use the default folders or create your own folders.
Do I need to save a filter to run the filter?	You can create a filter and use it as one task. If you do not want to keep the filter, close the edit tab without saving the filter.
How do I stop a filter running when Data Explorer starts?	Click the Clear Start-up Filter button on the Options tab.
I do not want to run any filters when Data Explorer starts.	Click the Clear Start-up Filter button on the Options tab.
What is a query filter?	Query filters contain the SQL for the selection criteria and filter properties needed to run data queries.
What is a table filter?	Table filters contain the search criteria required to search for tables.
Why are there two types of filters?	Query and table filters work with different objects. Query filters examine the data in tables and retrieve the rows that match the selection criteria defined in the query filter. Table filters allow you to search for the tables that you want to use in a query filter. The search result returned by a table filter is a list of tables. Table filters do not retrieve the data from the tables.
Why run a filter when Data Explorer starts?	When you need the same or similar information regularly, running the filter automatically when Data Explorer starts means the query result data will be available immediately. This saves you the effort of choosing and running a filter.

The questions and answers in Table 2 (page 36) apply to both query and table filters. The following sections include questions and answers specific to query filters and table filters.

Query filters

Queries retrieve data from database tables using SQL. Query filters provide tools to build the queries and the SQL defines the data selection criteria for the query. Data Explorer provides optional parameters for query filters so that you can run the same query filter and insert different values for each run.

Questions and answers

Table 3 (page 37) presents questions answers about query filters.

Table 3: Query filter questions and answers

Questions	Answers
Do I need to know SQL?	You do not need to know SQL to build simple query filters. Data Explorer will help you to construct the SQL for query filters. You should understand SQL if you want to build queries including SQL clauses like WHERE and LIKE. You need to know SQL if you want to build complex queries that join tables.
Do I need to save a query filter to run the query?	You can create a query filter, run the query, and view the query result data as one task. You can amend the SQL and run the query as many times as you wish. If you do not want to keep the query filter, close the edit tab.
Why does Data Explorer allow only SELECT queries?	SQL is a powerful tool allowing you to manipulate data in tables and the tables themselves. The SELECT clause provides only data retrieval (read only) and does not manipulate the data in tables. Data Explorer is a query tool and is not a general-purpose SQL editor. Therefore, SQL statements that manipulate tables or data are inappropriate. The safest way to run database queries in a browser is to use a read-only mode for access to the tables.
Fixed selection criteria?	SQL statements include selection criteria, e.g. A% will search for names beginning with the letter A. Hard-coding selection criteria in the SQL, e.g. WHERE NAME LIKE 'A%', allows no change when a query filter runs. The selection criteria remain the same every time the query filter runs.
Variable selection criteria?	SQL statements that include variable selection criteria do not hard-code the selection criteria. Variable selection criteria SQL includes a ? that defines a parameter, e.g. WHERE NAME LIKE ? and Data Explorer will ask for a value before running the query filter.

Data selection criteria and SQL

Queries consist of an SQL statement that defines the data and selection criteria. When you run a query filter, Data Explorer retrieves the data based on the selection criteria. The SELECT statement defines the data to include in the query data. Data Explorer uses the WHERE clause as the selection criteria when retrieving data from the tables. Queries without a WHERE statement will select all the data from the nominated tables.

You use the query filter edit tab to write the SQL that defines the data selection criteria.

Figure 20 (page 38) shows the components of the edit tab for a query filter.

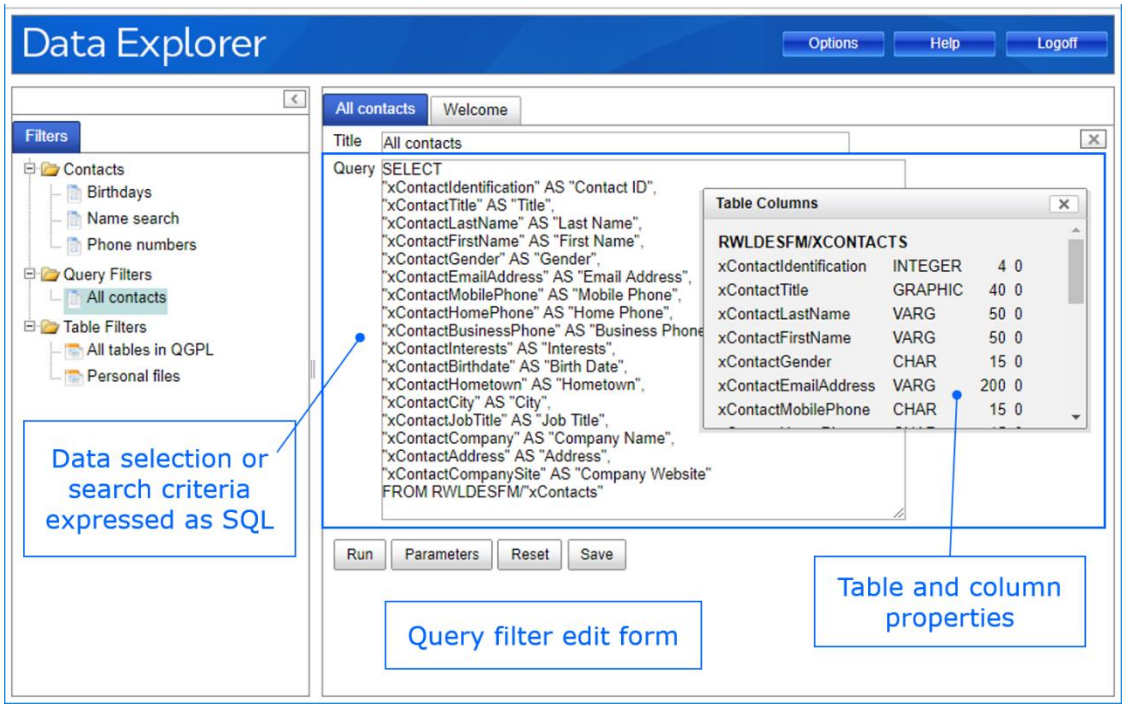


Figure 20: Query filter SQL edit - data selection criteria and table and column properties

Data Explorer provides two ways to create query filters. One way is to write all the SQL starting from an empty query filter. The second way is to search for a table and have Data Explorer generate the basic SQL for the query. Once you have the basic SQL you can edit it to build your query.

Searching for partial data with LIKE

You can use partial data matching in searches using LIKE and the percentage sign %.

To find names beginning with letter B use LIKE B% as the search criteria, e.g. WHERE Name LIKE B%.

To find name including the letters 'ar' use WHERE Name LIKE %ar%.

With Data Explorer you don't need quotes, e.g. LIKE 'B%' with partial data searches.

Data explorer follows the IBM DB2 rules for partial searches.

Data types: binary and character large objects

Database tables may include columns using data type binary large object (BLOB) and/or data type character large object (CLOB). Using Data Explorer, you can create and run query filters with tables that use these data types.

Think carefully before including BLOB and CLOB type columns in query filters. The performance might be slow; and the query filter may return a large volume of query data.

Library and file names

Data Explorer allows table names as table name only or library and table name.

Table name alone	MYTABLE
Library and table name	QGPL/MYTABLE

Multiple-member files

The syntax for table names in SQL does not allow for multiple-member files. SQL is unable to work with individual members without explicit naming. Running a query filter using a multiple-member file without explicit names for the members will query only the first member.

To run a query filter for members in a multiple-member file you must create an alias for each member, or at least an alias for each member you wish to query. The SELECT statement in the query filter will use the alias as the table name.

To create an alias for a member in a multiple-member file:

1. Start the interactive SQL program (STRSQL) from a command line or menu.
   You need a terminal session to run this command.
2. Type the command:
   CREATE ALIAS library/memberalias FOR library/filename(membername)
   Where:
   library: is the name of the library in which the file resides
   memberalias: is the name you wish to use as the alias for the member
   filename: is the name of the file
   membername: is the real name of the member
3. Execute the command to create the alias.
   You could write a program to create aliases instead of performing the task interactively.

You create an alias once and then use the alias to refer to the file and member in query filters. When you rename a member, you must create an alias for the renamed member.

Suppose you have a multiple-member file named MYFILE in the QGPL library and the file has members whose names are THISYEAR and LASTYEAR. To run query filters for each member you need to create an alias for each member.

To create an alias for each member:

1. Start the interactive SQL program (STRSQL).
2. Type and execute the command:
   CREATE ALIAS qgpl/thisyear FOR qgpl/myfile(thisyear)
3. Type and execute the command:
   CREATE ALIAS qgpl/lastyear FOR qgpl/myfile(lastyear)

When you create query filters, use the table names qgpl/thisyear and qgpl/lastyear. For example, the SQL statement, SELECT * FROM qgpl/thisyear, will retrieve all records from the member qgpl/myfile(this year).

Refresh query data

Right clicking on empty space on the query result data tab will open a floating menu.

Choose the Refresh option to have Data Explorer refresh the query result data.

Query filter properties

Table 4 (page 40) defines the properties of a query filter.

Table 4: Query filter properties

Properties	Description
Title	Provide a title for the filter. The title is the name you see in the Filters panel.
Query	The query contains the SQL that the query filter will use to retrieve data from the table(s).

Query filters with variable selection criteria

Why use variable selection criteria?

Query filters with variable selection criteria allow you to run the same query multiple times and set different selection values for each run without having to edit the SQL in the query filter for every run. What are examples of query filters you want to use multiple times, varying the selection criteria each time you run the query?

- Select contacts born in a date range or a specific month
- Retrieve a list of contacts filtered by last names beginning with a specific letter

One way to implement variable selection criteria is to edit the query filter before each run. While this method will achieve the desired outcome, it forces you to edit the query filter multiple times and increases the risk of error.

Data Explorer provides a simpler and safer method by allowing you to define parameters for the variable selection criteria so that you can vary the values each time you run the query without editing the SQL in the query filter.

Inserting different parameter values when you run the query will influence the query result data returned by the query. It is possible to insert the parameter values so that the query returns no query result data or returns a large volume of data.

Build process for query filters with variable selection criteria

The steps in the process Figure 21 (page 40) for building a query filter with variable selection criteria are:

- Create the query filter
- Place question marks in the SQL for the variable selection criteria (parameters)
- Design the query parameter form

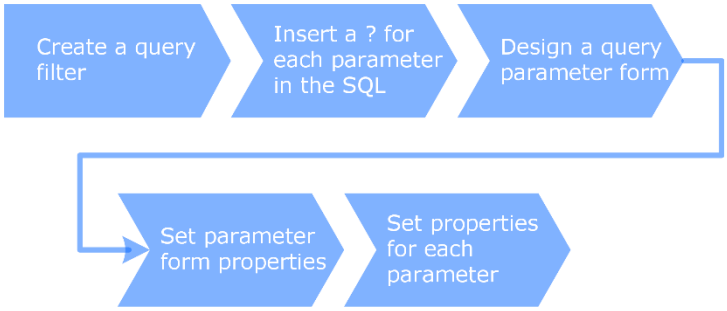


Figure 21: Process for designing queries with variable selection parameters

To use variable selection criteria in query filters you identify variable parameters by placing question marks in the SQL statement after the WHERE or LIKE clauses; for example:

```
SELECT * FROM CONTACTS WHERE NAME LIKE ?
```

When you run the query, Data Explorer will present a query parameter form including a text box for the name, allowing you to insert a value for the parameter as a full or partial name.

Place multiple question marks in the SQL statement when you want to use more than one parameter.

The next step is to design the query parameter form that Data Explorer will present when it runs the query.

Design parameter form

Parameter design panel

To design a query parameter form, edit a query filter and open the parameter design panel by clicking the Parameters button on the query filter edit tab.

The parameter design panel specifies the properties Data Explorer uses to construct the query parameter form. Figure 22 (page 41) presents the components of the parameter design panel showing default property definitions for the query parameter form and default property definitions for a parameter.

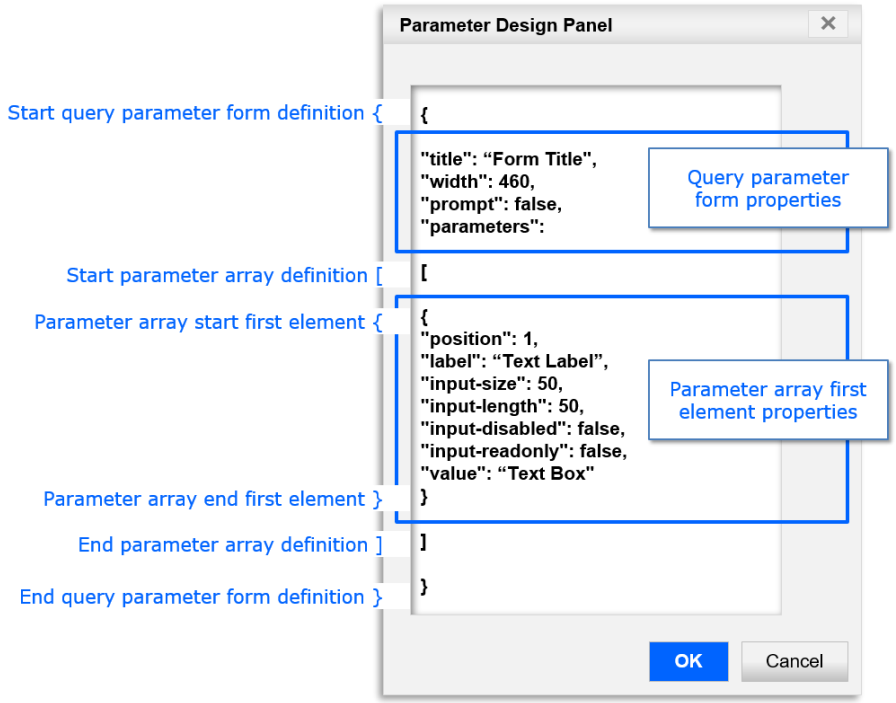


Figure 22: Components of the parameter design panel

Data Explorer allows only one query parameter form for a query filter.

Table 5 (page 42) provides an explanation of each component in the parameter design panel.

Table 5: Parameter design panel components explanation

Components	Description
Begin query parameter form definition {	The left curly bracket marks the beginning of the query parameter form definition
Properties of the query parameter form	The query parameter form properties describe the size, title and behaviour of the form.
Begin parameter array definition [	The left square bracket marks the beginning of the parameter array.
Properties of the elements in the parameter array	The parameter array consists of one or more elements and each element represents one parameter. The array element contains the parameter properties. Curly brackets {} enclose each element. A comma follows each element {}, with these exceptions. When only one element is present no comma is allowed. The last element does not have a following comma.
End parameter array definition]	The right square bracket marks the end of the parameter array.
End query parameter form definition }	The right curly bracket marks the end of the query parameter form definition

The relative positions of the elements in the parameter array determine the vertical position of the parameters on the query parameter form. Data Explorer constructs the query parameter form from the array elements, placing the first element at the top of the query parameter form and the last element at the bottom of the query parameter form.

Layout

The properties of the query parameter form determine the size and layout of the form. Figure 23 (page 42) shows an example of a query parameter form.

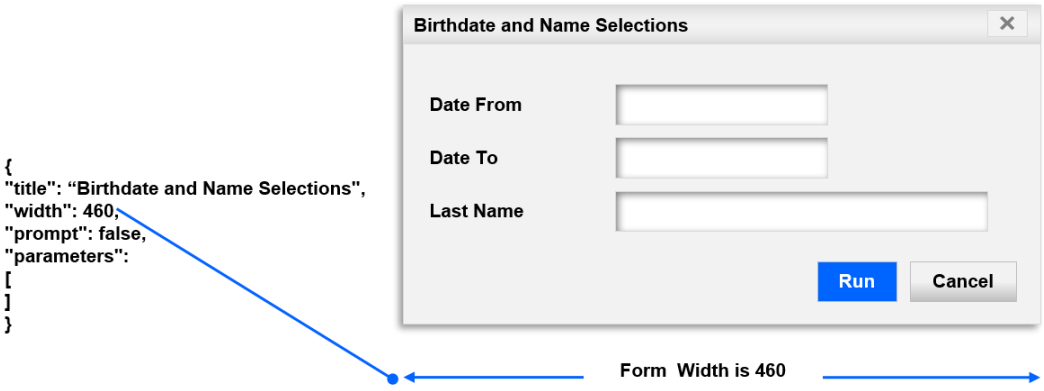


Figure 23: Query parameter form properties

The title property becomes the title at the top of the form and the width defines the horizontal aspect of the query parameter form.

Table 6 (page 43) describes the properties that control the query parameter form.

Table 6: Query parameter form properties

Properties	Description
Parameters	Indicates the parameter array, bounded by left [and right] square brackets.
Prompt	The prompt determines the behaviour of the query parameter form. False: Data Explorer will not show the query parameter form, unless the query filter includes parameters. True: Forces Data Explorer to show the query parameter form every time the query runs.
Title	Defines the title that Data Explorer will use for the query parameter form
Width	Horizontal size of the query parameter form in pixels

Data Explorer will not show the query parameter form for queries without parameters unless the value of the prompt property is true.

Input length and size properties

Each parameter has a set of properties that determine the appearance of the parameter on the query parameter form and the behaviour for accepting parameter values. Figure 24 (page 43) shows the relationship between the input size and input length properties and their appearance on a query parameter form.

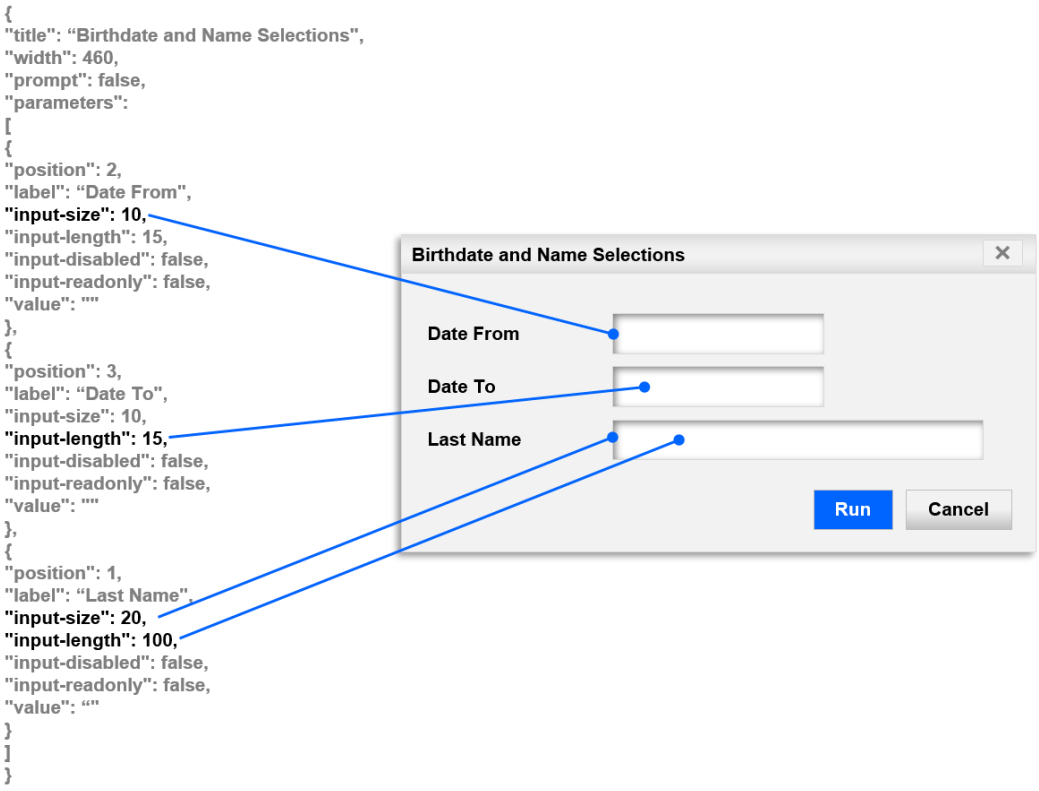


Figure 24: Query parameter form: parameter properties input length and size

Table 7 (page 44) provides an explanation of each property.

Table 7: Query parameter properties

Properties	Description
Position	The position item defines the relative position of the parameter in the SQL statement, indicated by the placement of the question marks. Moving from left to right and top to bottom through the SQL statement, position 1 is the first parameter, position 2 is the second parameter and so on. This property does not determine the placement of the parameter on the query parameter form.
Label	The label is a name to describe the parameter.
Input size	Input size determines the width of the text box for the parameter on the query parameter form. The value of this parameter should not exceed the form width.
Input length	Input length sets the number of characters allowed in the parameter value, including spaces.
Input disabled	Input disabled determines whether you can change the value of the parameter. False: allows you to change the value. True: prohibits all changes. Set input disabled to true for query filters where you want to see the parameter but not be able to change the value of the parameter.
Input read only	Input read only determines whether you can tab to the property, highlight and copy the value of the parameter. False: allows you to copy the value of the parameter. True: prohibits access to the value of the parameter.
Value	Sets the value for the parameter. A default value is optional, and blank is acceptable. Use a default value to illustrate how to use the parameter.

Table 8 (page 44) explains the role and use of the input disabled and input read-only properties. These properties are equivalent to the HTML input attributes.

Table 8: HTML disabled and read only attributes

HTML Attributes	Description
Disabled	The disabled attribute prevents any use of an input element. You cannot use or click a disabled input element (or field).
Read-only	This attribute specifies that an input field should be read-only. Read-only fields cannot be modified. You can tab to it, highlight it, and copy the text from the input field.

For more information about HTML attributes refer to an authority on HTML.

Label and form title properties

Figure 25 (page 45) shows the locations of the parameter form label and title properties.

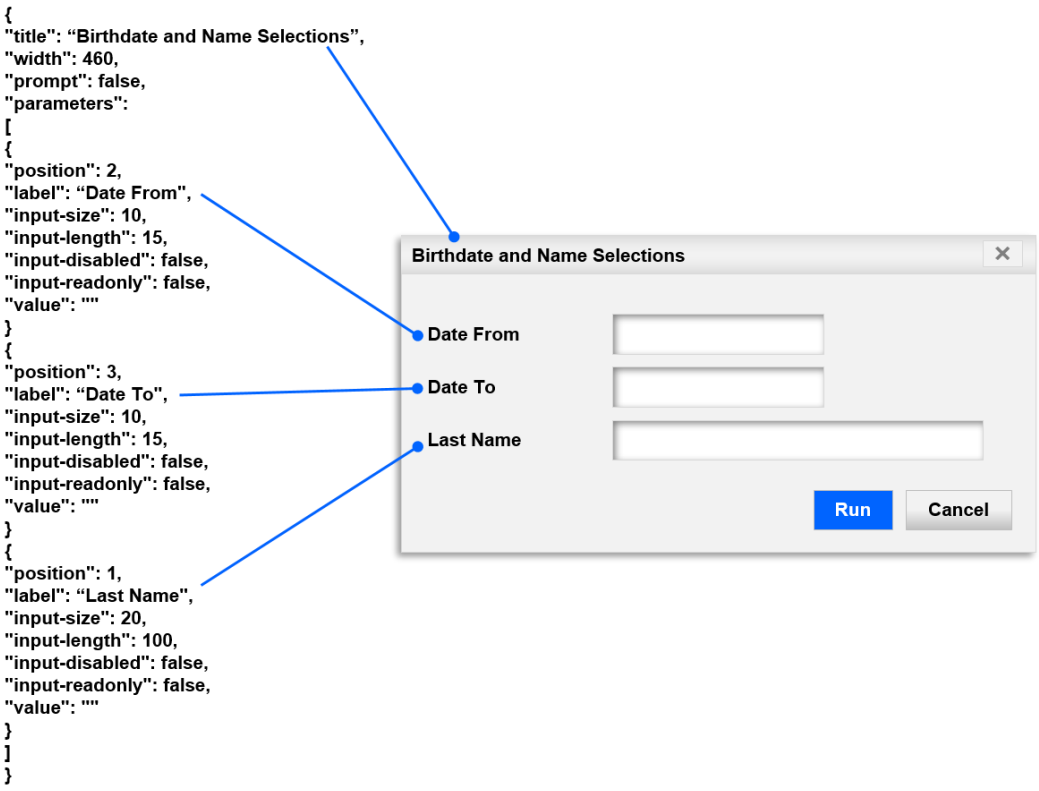


Figure 25: Query parameter form: parameter properties labels and form title

Data Explorer inserts the title property value into the form heading and the property label values beside the associated input controls (e.g. textbox).

Example query with variable selection criteria

The example query searches a contacts table for last names beginning with the letter A.

Figure 26 (page 46) shows the SQL for the last names query. The question mark in the WHERE clause prompts to Data Explorer to present a parameter form that will collect the selection criteria.

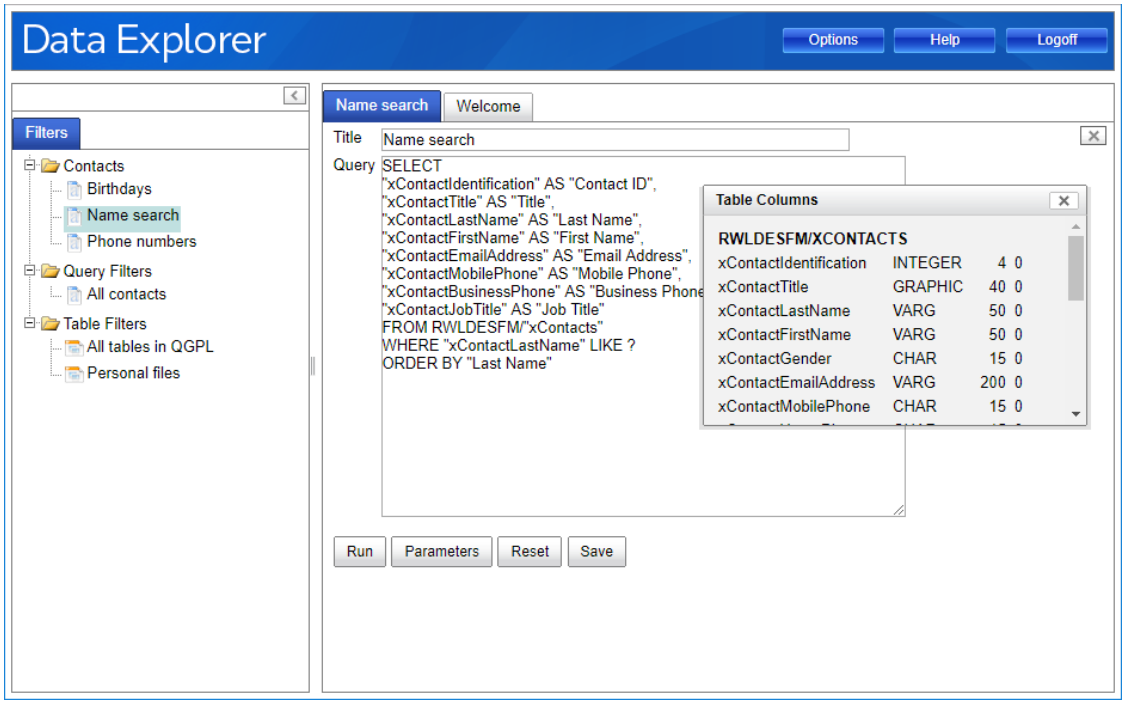


Figure 26: Name search query with variable selection criteria – SQL

Figure 27 (page 46) shows the name search form ready to accept the selection criteria.

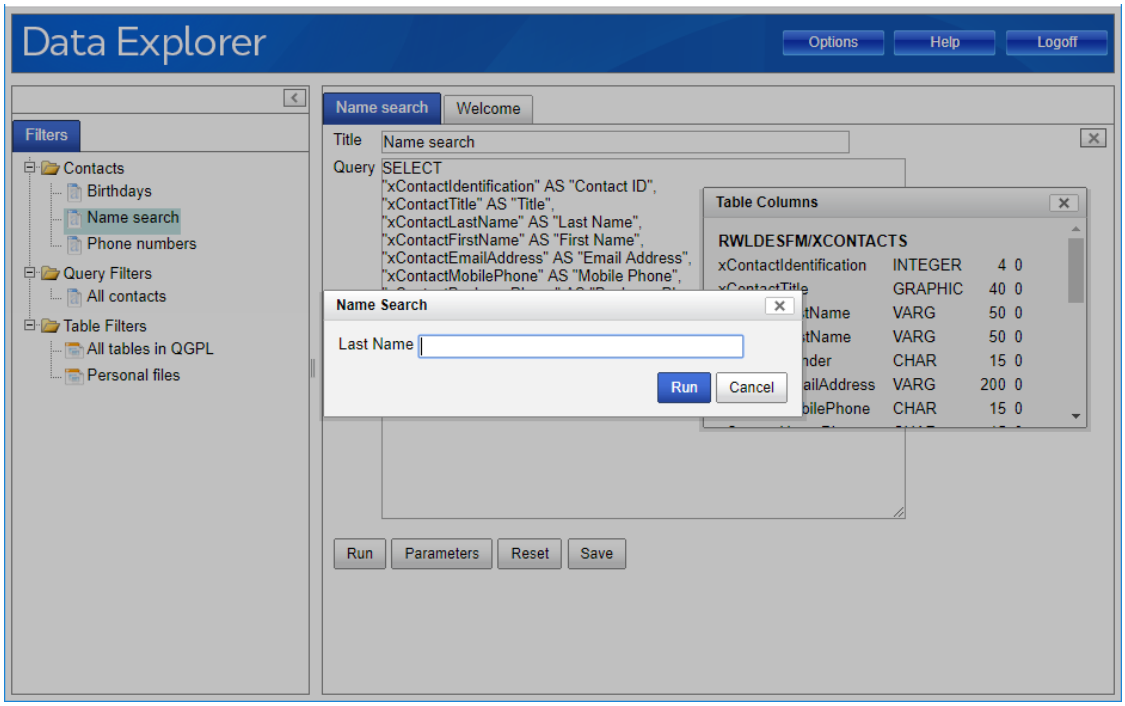


Figure 27: Request a value for the variable selection criteria

Figure 28 (page 47) shows A% as the selection criteria.

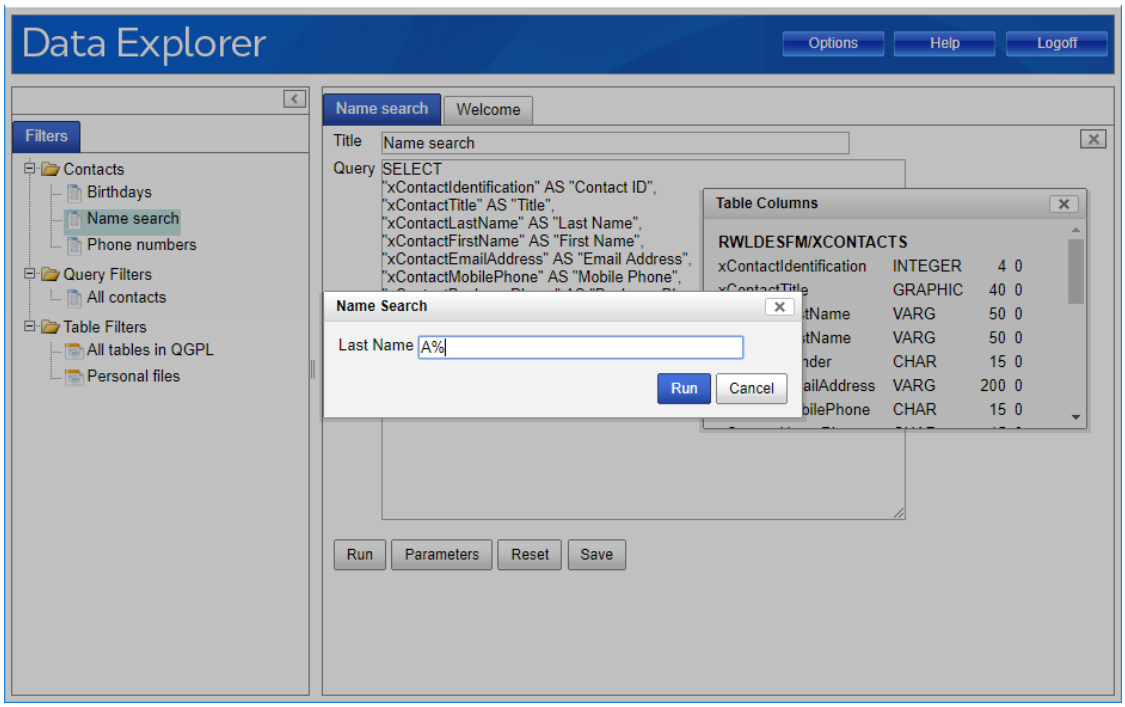


Figure 28: Search for last names beginning with the letter A

Figure 29 (page 47) shows a list of contacts whose last names begin with the letter A.

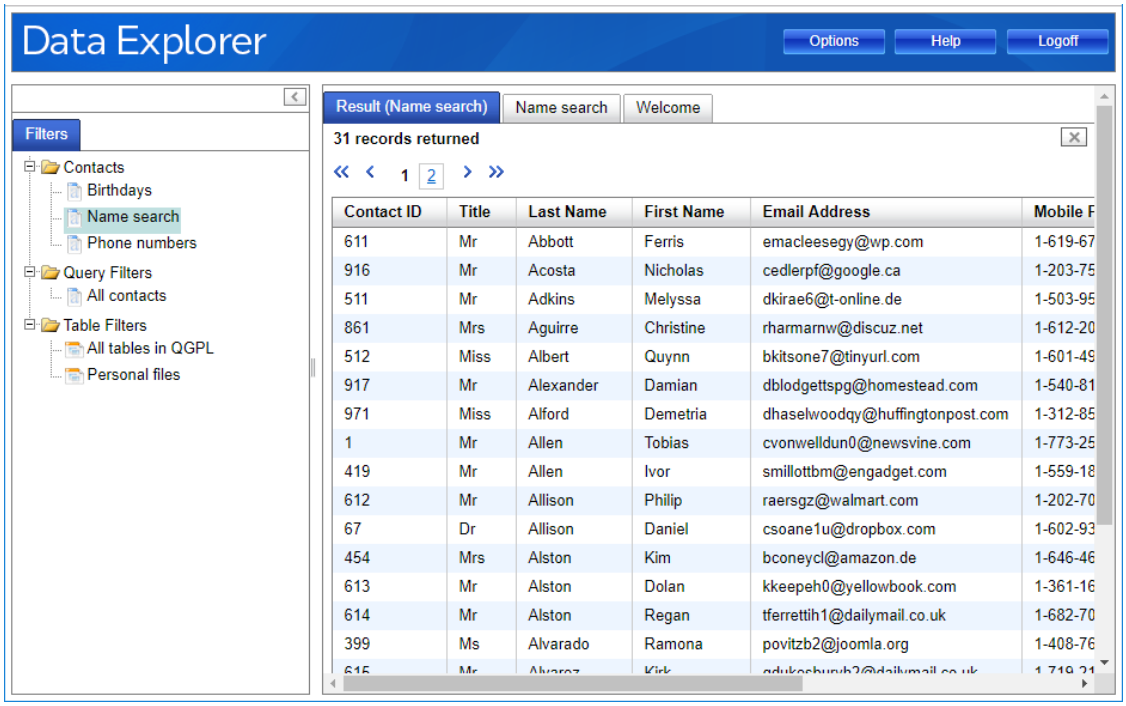


Figure 29: Name search query with variable selection criteria - query result data

Table filters

Table filters are designed for finding tables.

Questions and answers

Table 9 (page 48) presents questions and answers about table filters.

Table 9: Table filter questions and answers

Questions	Answers
Do I need to save a table filter to search for tables?	You can create a table filter, perform the search, and select a table from the search result as one task. If you do not want to keep the table filter, close the result tab.
Can I search for tables with the same name in multiple libraries?	Set the search criteria as the table name and use the percentage (%) character as the library name.
Can I search for all tables in a specific library?	Set the search criteria as the library name and use the percentage (%) character as the table name.

Search criteria

Figure 30 (page 48) shows the edit tab for a table filter and highlights the search criteria.

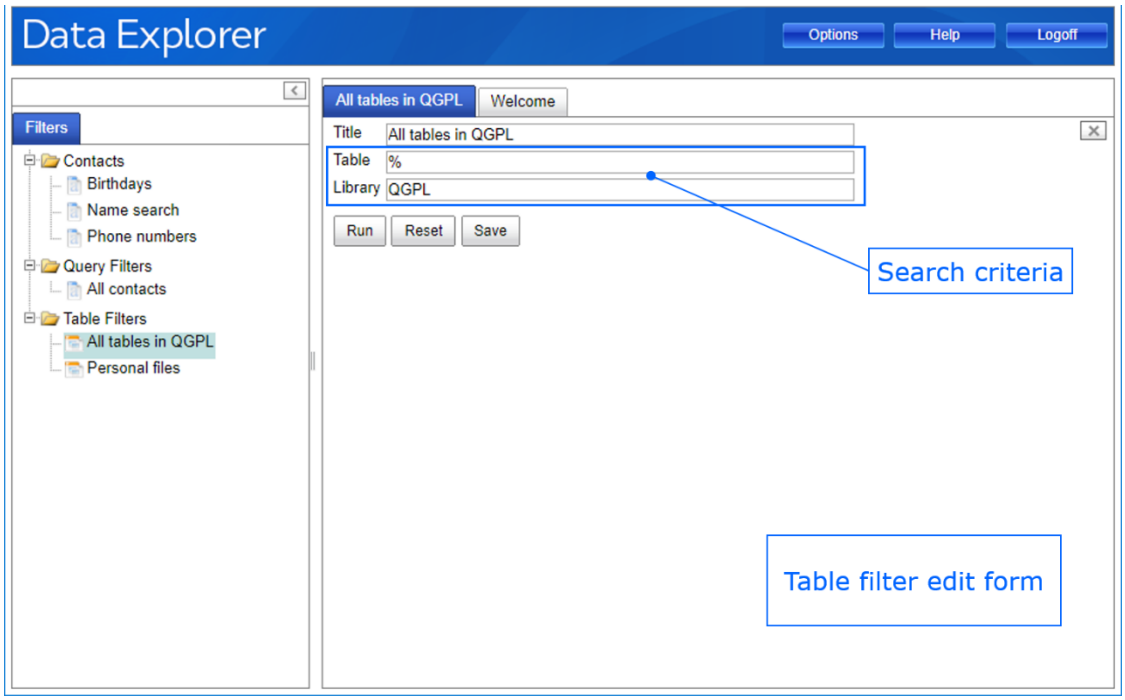


Figure 30: Table filter search criteria

Data Explorer uses the table name and library name properties as the search criteria when searching for tables. You may use a combination of these properties when searching for tables.

Refresh table search result

Right clicking on empty space on the search result tab will open a floating menu.

Choose the Refresh option to have Data Explorer refresh the table search result.

Properties

Table 10 (page 49) defines the table filter properties.

Column one is the property name and column two describes the way Data Explorer uses the property.

Table 10: Table filter properties

Properties	Description
Library	Full name Partial name with a % A % alone implies any library name
Table	Full name Partial name with a % A % alone implies any table name
Title	Provide a title for the table filter. The title is the name you see in the Filters panel.

The search criteria conventions Data Explorer uses when you define searches for tables follows the conventions for partial names and wildcards implemented by the IBM server operating system. The percentage character (%) is a wildcard.

File types available to query filters

Data Explorer will search for the file types defined in Table 11 (page 49).

Table 11: File types available for query

File types	Description
Indexes	Refer to an index by library and file name.
Logical	Refer to logical files by library and file name.
Physical	Refer to physical files by library and file name.
Table	Refer to tables by library and file name.
View	Refer to a view by library and file name.

Running filters at start-up

One of the options on the filters floating menu sets the filter to run when Data Explorer starts. This is the way to set the start-up filter. Data Explorer will run only one filter when it starts. If you want to change the start-up filter, choose the filter you want to run at start-up and Data Explorer will remove the original start-up filter and replace it with your new choice.

To stop any filter running automatically when Data Explorer starts, use the Clear Start-up Filter button on the Options tab.

Running a filter when Data Explorer starts may take some time, depending on the selection criteria described in the query filter and the size of the tables read by the query. You can take no other action while the filter runs. You should decide whether it is better for you to run the filter automatically and wait when Data Explorer starts or have immediate access to Data Explorer and open the filter yourself.

Folders

Why use folders?

Data Explorer recognises that you might want to save query filters and table filters and use them again. Folders provide places for you to save the filters.

Multiple folders will help you find saved filters. They provide a way to organise filters into subject matter groups. Data Explorer provides two default folders, Table Filters and Query Filters.

Questions and answers

Table 12 (page 50) presents questions and answers about folders.

Table 12: Folder questions and answers

Questions	Answers
Can I save all filters in one folder?	Yes; however, finding filters will become more difficult as your collection of filters grows. You will need precise conventions for naming your filters. The alternative is to create additional folders.
Can I undelete folders?	Data Explorer provides no undelete method. Deleting a folder removes both the folder and the filters saved in the folder.
Can I move a folder?	The folder title determines the position of the folder in the folder structure. Data Explorer sorts folders alphabetically by the folder title.
Is there a limit to the number of folders?	Data Explorer imposes no limit to the number of folders.
What happens to the filters in a folder when I delete the folder?	Deleting a folder deletes all filters saved in the folder and the folder itself. If you want to delete a folder but retain the filters, move the filter(s) to another folder before deleting the folder.
What is the maximum number of characters allowed in folder titles?	Eighty (80) characters, including spaces.

Options

The Options tab (Figure 31, page 51) allows you to control the way Data Explorer behaves.

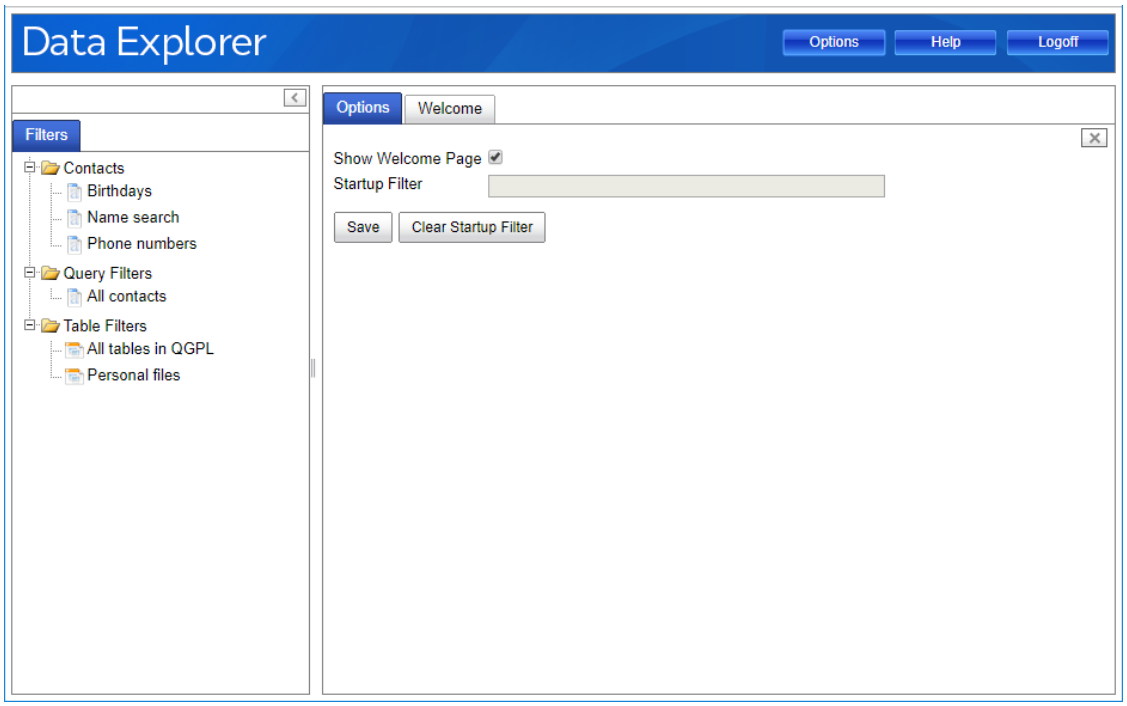


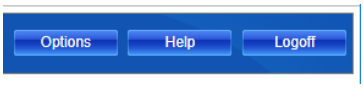
Figure 31: Options tab

The Options tab is where you control the behaviour of the Welcome page, view the name of the filter that runs when Data Explorer starts and clear the start-up filter.

Options tab

To open the Options tab:

1. Click the button labelled Options
2. Wait until Data Explorer displays the Options tab.
3. Once the Options tab is in view you can change any of the available options.



The Options button resides at the top of the page on the right-hand side.

Welcome page

Page content

The Welcome page (Figure 32, page 52) is the default page displayed when you start Data Explorer.

The Welcome page will show each time Data Explorer starts unless you choose to hide it.

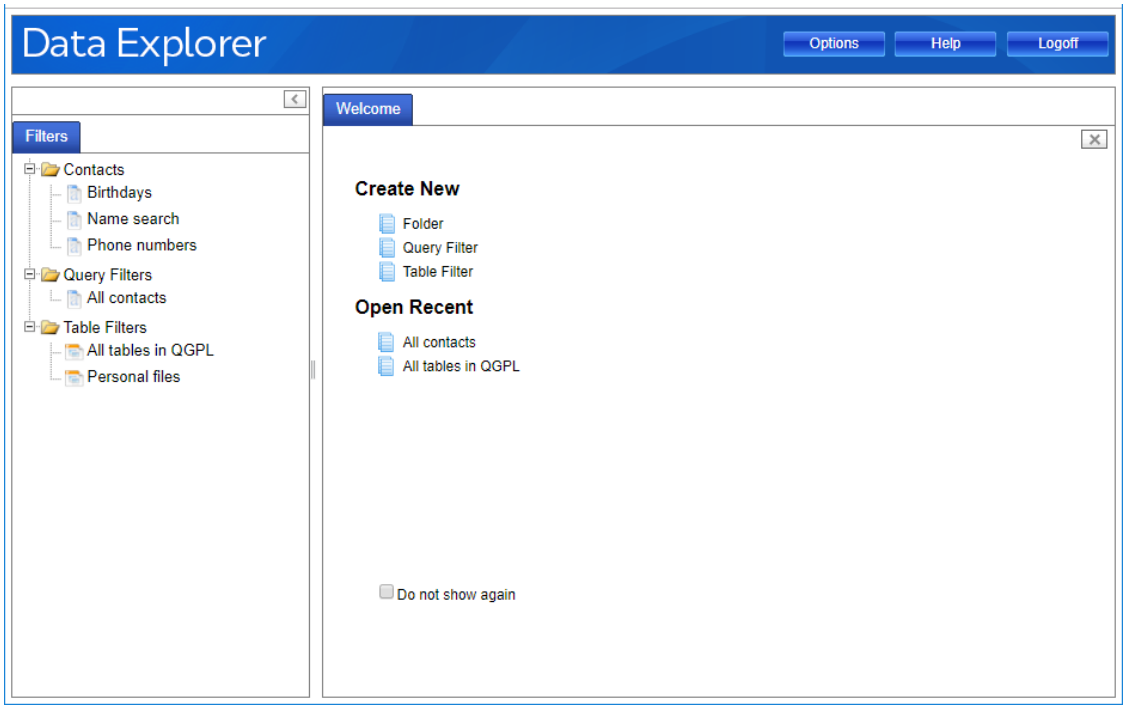


Figure 32: Welcome page

The Welcome page consists of a tab showing a list of the recently used filters, options for creating folders and filters and links to the documentation.

Create New	Click Folder to create a folder. Click Query Filter to create a query filter that will select data from tables. Click Table Filter to create a table filter and search for tables.
Open Recent	Open Recent is a list of recently used filters (both query ad table filters). Clicking on a filter in the list will open the edit tab and run the query or table search.

Hide the Welcome page

If you prefer not to see the Welcome page each time you start Data Explorer, tick the box adjacent to "Do not show again". This action will turn off the Welcome page and it will not show the next time Data Explorer starts.

Close the Welcome page by clicking the Close icon located at the top right of the Welcome page tab.

Show the Welcome page

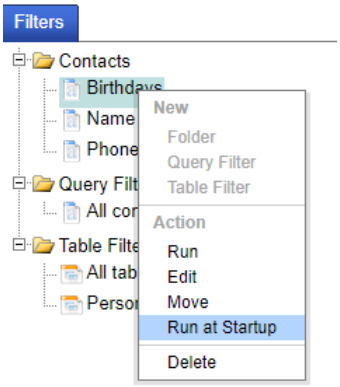
If the Welcome page is turned off and you want to see the Welcome page, turn the Welcome page on from the Options tab. Click the Options button at the top of the page and click the box adjacent to the Show Welcome Page label so that it shows a tick (☑) image.

Run a filter automatically when Data Explorer starts

Run a filter when Data Explorer starts

To run a filter immediately when Data Explorer starts, set the start-up action for the filter you want to run. To run a filter when Data Explorer starts:

1. In the filters panel click a query or table filter name.
2. From the floating menu choose Action - Run at Start-up.
3. Data Explorer will change the filter name on the Options tab



In this example, Data Explorer will run the highlighted query filter.

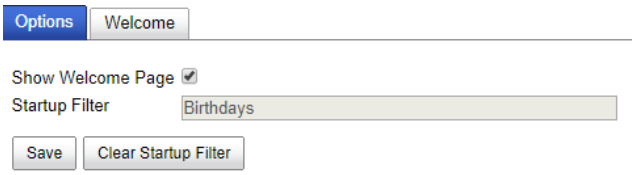
Data Explorer will run only one filter when it starts.

Stop a filter running when Data Explorer starts

To stop a filter running when Data Explorer starts, clear the start-up filter:

1. Click the button labelled Options.
2. Wait until Data Explorer displays the Options tab.
3. Click the Clear Start-up Filter button.
4. Wait until Data Explorer asks you to confirm the clear.
5. Answer Yes to clear the start-up filter.

   Answer No and Data Explorer will not clear the start-up filter.



Start-up filter options

At start-up Data Explorer will run:

One query filter	The nominated query filter will run when Data Explorer starts.
One table filter	The nominated table filter will run when Data Explorer starts.
No filter	No filter will run when Data Explorer starts.

The options are mutually exclusive.

You cannot change the start-up filter by editing the name of the filter on the Options tab.

Query result data

Query result data is the data retrieved from tables by query filters.

View query result data

Data Explorer provides several options for viewing query data. Table 13 (page 54) explains what you see with each option and suggests why and when you might choose an option.

Table 13: Options for viewing query result data

<table>
<tr><th>Display format</th><th>What you see and when to use the display formats</th></tr>
<tr><td>Query result data grid on the query result data tab</td><td>Data Explorer presents the query result data as rows in a grid displayed on a tab in the right-hand panel.
Use this option when you want to examine the query result data retrieved by the query filter using a browser.</td></tr>
<tr><td>Tab separated values</td><td>Data Explorer converts query result data to tab separated value format.
Suppose the SQL statement, SELECT lastname, firstname, mobilephone, birthdate FROM contacts retrieves the following data:<table><tr><th>Last Name</th><th>First Name</th><th>Mobile Phone</th><th>Birthdate</th></tr><tr><td>Smith</td><td>John</td><td>312-123-4567</td><td>02/12/1998</td></tr></table>Data Explorer will convert this data to tab separated values as:
"Smith" → "John" → "312-123-4567" → "02/12/1998"
Use this option when you want to convert the query result data to a format compatible with import capabilities of other applications such as Microsoft Excel.</td></tr>
</table>

Copy and paste query result data

Copying and pasting query result data may produce unexpected results with different applications. You must verify the capabilities of the application to manage data pasted from the clipboard. For example, you may have to use Paste Special and then choose unformatted text option to achieve your desired result.

Manage the size of query result data sets

Queries return a variable number of rows in query result data sets. Large query result data sets can take a long time to complete and may compromise system performance. Adding a database row limit parameter to the Data Explorer configuration will limit the number of rows returned by a query.

```
<parameter name="database.rowlimit" value="500"/>
```

This example sets 500 as the maximum number of rows.

The default value is 10,000.

Data Explorer will present an error when a query result data set row count exceeds the limit.

Questions and answers

Table 14 (page 55) contains questions and answers related to query result data.

Table 14: Query result data questions and answers

Questions	Answers
Can I keep the content of multiple queries open simultaneously?	Data Explorer opens a new tab to display the query result data each time you run a query filter. You can leave the tabs open while you perform other table searches or run query filters. It is your responsibility to close the open tabs.
Can I copy query data?	Select the text in the view query result data window copy the selected text (hold Ctrl and press C), then paste the query result data into another application.
Can I copy query result data to the clipboard?	Data Explorer provides a menu option for copying query result data to the clipboard. You can paste the query result data into another application from the clipboard (Microsoft Excel is an example). The other application must be capable of using the clipboard.
How can I manage queries that return a large volume of data?	Edit or add a database row limit parameter to the Data Explorer configuration.

About SQL

Data Explorer uses SQL as implemented by IBM DB2 on IBM servers. An understanding of SQL and its implementation on IBM servers is a prerequisite for using Data Explorer queries.

Data Explorer does not support any table management or data manipulation clauses.

Consult the IBM i Information Center for information about SQL capabilities and syntax.

Choosing data columns in queries

The configuration file includes directives that control table and column names used in query filters.

```
<parameter name="system.table.schema"    value="false"/>
<parameter name="system.table.name"      value="false"/>
<parameter name="system.column.name"     value="false"/>
```

Setting the directives to false allows Data Explorer to choose the system column names for the query and display the extended column names in query filters.

To obtain the system column names and extended column names for table CONTACTS in library RWLDESFM run a query like this query:

```
SELECT * FROM QSYS2.SYSCOLUMNS
WHERE SYS_DNAME = 'RWLDESFM' AND SYS_TNAME = 'CONTACTS'
```

Substitute your library and table names for RWLDESFM and CONTACTS.

For more information refer to QSYS2.SYSTABLES and QSYS2.SYSCOLUMNS in the system catalogue and IBM documentation.

Supported and unsupported SQL clauses

Data Explorer supports the SQL clauses listed in Table 15 (page 56).

Table 15: Supported SQL clauses

SQL Clauses	Comments
SELECT	Data Explorer supports this clause
SELECT ALL	Data Explorer supports this clause
SELECT DISTINCT	Data Explorer supports this clause

Data Explorer does not support the SQL clauses listed in Table 16 (page 56).

Table 16: Unsupported SQL clauses

SQL Clauses	Comments
CREATE	Data Explorer does not support any of the CREATE clause variations, including: ALIAS, FUNCTION, INDEX, PROCEDURE, SCHEMA, SEQUENCE, TABLE, TRIGGER, TYPE, VIEW
DELETE	Data Explorer does not support this clause
INSERT	Data Explorer does not support this clause
SELECT INTO	Data Explorer does not support this clause
UPDATE	Data Explorer does not support this clause

File terminology differences

SQL and IBM servers refer to files using different terms. Table 17 (page 57) describes the differences.

Table 17: File terminology differences

SQL terms	IBM server terms
Schema: A group of related objects that consists of a library, a journal, a journal receiver, an SQL catalogue, and an optional data dictionary. A schema enables the user to find the objects by name. Another name for a schema is collection.	Library: A group of related objects that enables the user to find the objects by name.
Table: A set of columns and rows.	Physical file: A set of records.
Row: The horizontal part of a table containing a serial set of columns.	Record: A set of fields.
Column: The vertical part of a table of one data type.	Field: One of more bytes of related information of one data type.
View: A subset of columns and rows of one or more tables.	Logical file: A subset of fields or records of up to 32 physical files.
Index: A collection of data in the columns of a table, logically arranged in ascending or descending order.	Index: A type of logical file.

Register users

Why register users?

People using Data Explorer have access to corporate data in databases. Corporate best practice suggests that companies ought to know and control who accesses data in their databases. Compliance and regulatory obligations require companies to maintain audit logs describing who accesses corporate information.

For these reasons you should ensure that only registered users can use Data Explorer to access databases. Each person needs identifying credentials comprising unique user name and password. Shared or generic user profiles will compromise the ability to determine who accesses database files.

What is user registration?

Data Explorer maintains lists of registered users and verifies user registration during the log on process. Each user requires an active IBM server user profile to register and operate Data Explorer.

The configuration file includes a parameter that controls user registration. The parameter allows two behaviours:

- Administrator registration
- Automatic registration

Administrator registration requires an administrator to add each authorised user to the list of registered users before the person can use Data Explorer.

Automatic (or self) registration allows Data Explorer to register users automatically when they first log on.

Registering large numbers of users will be a significant effort for administrators. One way to reduce the effort is to allow automatic registration for a short period after installation. As users log on, Data Explorer will register their user profile. At the end of a short automatic registration period, change the registration parameter to false. This approach will allow people to register automatically and reduce the administrative effort needed to register users.

Use the correct CCSID

Using an appropriate CCSID is essential when registering users manually. Data Explorer uses databases that are DBCS, use a graphic field (CCSID 1200), and data in the tables includes square brackets [ ] and braces { }, also known as curly brackets.

Use CCSID 37 as the job CCSID to ensure correct character conversions. This recommendation applies to all methods that register users manually, both interactive SQL and programmatic updates.

Using an inappropriate CCSID may produce incorrect conversions, for example:

> CCSID 37 produces correct data: {"startupfilterid":0,"recent":[15],"showwelcome":true}
>
> CCSID 500 produces incorrect data: {"startupfilterid":0,"recent":¢15!,"showwelcome":true}
>
> The data created using CCSID 500 interprets the square brackets incorrectly, [becomes ¢ and] becomes !. CCSID 37 produces the correct result.

The command to set CCSID 37 for a job is: CHGJOB CCSID(37)

Configuration

The Data Explorer configuration controls the behaviour of Data Explorer using a set of directives and parameters.

Architecture

Figure 33 (page 59) illustrates the architecture of Data Explorer. Data Explorer is a web application consisting of server components and a user interface presented in a browser. The user interface is a browser page consisting of HTML, CSS and JavaScript.

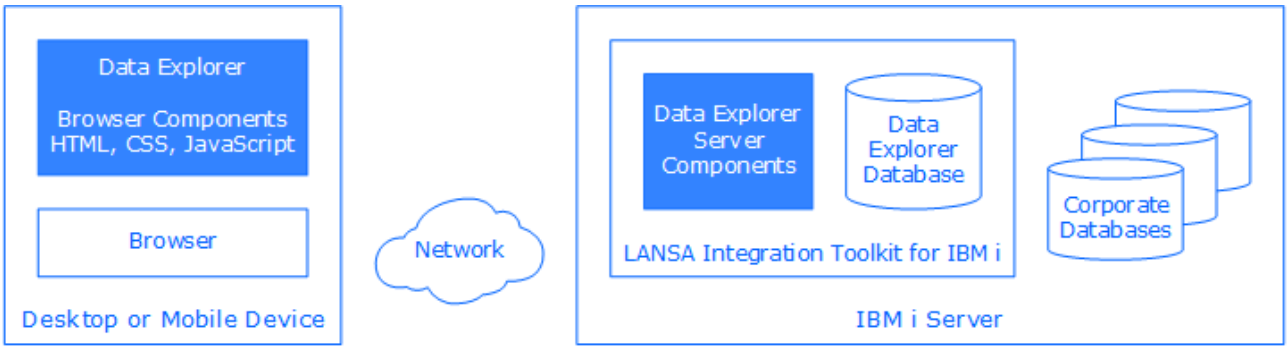


Figure 33: Data Explorer architecture and components

Users connect to and query corporate database tables from their browser by submitting query filters containing SQL. Data Explorer uses the filter to run a query on the server, marshals the query result data and sends the data to the browser. The server components are the LANSA Integration Toolkit and Data Explorer server services.

Data Explorer employs a database to store registered users, the folders they create and the filters they build. The Data Explorer database comprises the tables listed in Table 18 (page 59).

Table 18: Data Explorer database and tables

Table names	Object type	Purpose
DBMUSER	*FILE PF-DTA	The user table contains details about registered users
DBMFOLDER	*FILE PF-DTA	The folder table describes folders created by users; the user table is the parent of this table.
DBMFILTER	*FILE PF-DTA	The filter table describes filters created by users; the user table is the parent of this table.

Data Explorer creates and manages the tables.

The configuration file defines the library where the tables reside.

Administrators are responsible for designing and executing backup processes for the databases.

User profiles beginning with the letter Q

Data Explorer prohibits users logging on with a user profile that begins with the letter Q. If you wish to override this policy and allow the use of these user profiles, you must configure a service.user.allow parameter for each user profile you wish to allow.

Directives and parameters

Directives and parameters in the configuration file control the behaviour of Data Explorer.

Data Explorer will operate with the default configuration; but the default configuration may not satisfy your requirements.

The configuration file name is httpd.xml and it contains a section for each LANSA Integrator service. Table 19 (page 60) presents an example of the Data Explorer section of the configuration file.

Table 19: Data Explorer configuration

```
<match uri="/service/dbmservice.jsp" rewrite=""
    class="com.lansa.mobile.service.HTTPServiceQuery"
    trace="false"
    clienttrace="false">
    <parameter name="service.default.host"      value="LOCAL"/>
    <parameter name="service.remote.activation" value=""/>
    <host name="LOCAL" system="LOCALHOST">
        <parameter name="service.access.log" value="www/instance/logs/dbm.log"/>
        <parameter name="service.user.deny"       value="JOHN"/>
        <parameter name="service.user.allow"      value="*USER"/>
        <parameter name="autoregister"            value="true"/>
        <parameter name="database.host"           value="LOCALHOST"/>
        <parameter name="database.library"        value="{INSTALL_LIB}"/>
        <parameter name="database.rowlimit"       value="10000"/>
        <parameter name="system.table.schema"     value="false"/>
        <parameter name="system.table.name"       value="false"/>
        <parameter name="system.column.name"      value="false"/>
        <parameter name="allow.query.clause.into" value="false"/>
    </host>
</match>
```

Administrators set parameter values in the configuration file.

The example in Table 19 (page 60) includes user allow and user deny directives.

Directive service.user.deny value="JOHN" denies access to user JOHN.

Directive service.user.allow value="*USER" allows access to all users.

Data Explorer processes directives in the sequence in which they appear in the configuration file. The deny user directives should precede allow user directives. Therefore, service.user.allow value="*USER" will not apply to user JOHN.

A service.user.deny value="*USER" denies access to all users.

The directive autoregister value="true" provides automatic user registration.

Configure user registration

Table 20 (page 61) explains how to set configuration parameters to control user registration.

Table 20: Configure Data Explorer for automatic or administrator user registration

Action	Parameter name and values
Allow automatic registration	autoregister="true"
Prevent automatic registration	autoregister="false"

Data Explorer will register users automatically when automatic registration is set to true.

An administrator must register users when automatic registration is set to false.

Query result data row limit

Table 21 (page 61) explains how to set the maximum number of rows returned to a query.

Table 21: Configure Data Explorer to set the maximum rows returned by a query

Action	Parameter name and values
Set the maximum number of rows queries can return	database.rowlimit="10000" The maximum number in this example is 10,000 rows.

Queries return a variable number of rows in the query result data and will be slower to complete when the number of rows is large. Administrators can control the maximum number of rows by setting a value for the database.rowlimit parameter.

User access controls

Table 22 (page 61) explains how to set configuration parameters to control user access.

Users must be registered to use Data Explorer.

Table 22: Configure Data Explorer to control user access

Action	Parameter name and values
Allow all users	service.user.allow value="*USER" Omit the service.user.deny parameter.
Allow individual users	service.user.allow value="MARY" Include a value for each named user.
Prevent individual users	service.user.deny value="JOHN"
Prevent certain users and allow all other users	Create a set of deny parameters and one allow parameter: service.user.deny value ="JOHN" service.user.deny value ="MARY" service.user.allow value ="*USER" Place all service.user.deny parameters first when the service.user.allow parameter value is *USER.

Table 23 (page 62) illustrates an incorrect user access configuration. The intention is to allow JOHN, allow MARY and prevent access to all other users. The deny parameter for all users (*USER) will prevent access for all users including JOHN and MARY. Data Explorer will ignore the allow parameters for JOHN and MARY.

Table 23: Incorrect user access configuration

Action	Incorrect parameter configuration
Allow certain users and prevent all other users.	service.user.deny value = "*USER" service.user.allow value = "JOHN" service.user.allow value = "MARY" Data Explorer will read the deny parameter value, prevent all users and ignore the allow parameters for JOHN and MARY.

Data Explorer processes authorisation in the sequence of the service.user.allow and service.user.deny parameters. Be careful when using service.user.deny value = "*USER" as this value prevents all user access to Data Explorer.

User registration management

To register a user manually, insert a row in the table DBMUSER.

Several insert options are available for adding a user:

- Use SQL
- Write a program
- Load multiple users as a batch job using SQL and/or a program

Use SQL to register users

You can register a user by running the following SQL:

```
INSERT INTO [Library]/DBMUSER (PROFILE,OPTIONS)
                    VALUES('USER','{"startupfilterid":0,"showwelcome":true}')
```

[Library] is the name of the library in which the table resides.

USER is the user profile in uppercase.

To use this SQL the CCSID for the job must not be 65535. Use the CHGJOB command to change the CCSID. The user profile must be an active user profile for the IBM server.

Before loading a new user, check DBMUSER to ensure that the user is not already loaded.

Write a program to register users

To automate user registration, write a program that accepts a user profile and inserts the user into the DBMUSER table. The program may use the SQL above to insert the user.

Register multiple users as a batch job

To load multiple users as a batch job, create a text file containing a list of users. Then load the users into the DBMUSER table using SQL or write a program to load the users into the table from the text file.

How to remove registered users

Remove a registered user by deleting the user from the filter table (DBMFILTER), the folder table (DBMFOLDER) and the user table (DBMUSER). Deleting the user from the user table but not the other tables will leave folders and filters without a related user.

The steps in the removal process are:

1.	Determine the table rows associated with the user profile you want to remove. For example, run a SELECT query with a WHERE clause user profile is "user profile".
2.	Delete rows in the filter table using the row identification.
3.	Delete rows in the folder table using the row identification.
4.	Delete rows in the user table using the row identification.

You can delete the rows manually, write SQL or write a program.

Workstation requirements

This section describes prerequisites and system requirements for running Data Explorer on your computer or mobile device.

Hardware

Devices with a faster processor and more memory will provide better performance.

Data Explorer requires no disk space other than the cache used by the browser.

Software

To use Data Explorer, you need one of the supported browsers and the device operating system. No other software is necessary.

Connectivity

To use Data Explorer, you need a TCP/IP connection to an IBM server from an internal network or the internet.

Glossary

Table 24 presents definitions for concepts and abbreviations used in this guide.

Table 24: Glossary

Concepts	Definitions and explanations
Data selection criteria	The term "data selection criteria" refers to the SQL defined in a query filter.
Files	The IBM servers refer to data residing on disks as files. SQL uses the word table. This guide follows the SQL convention.
Filter	Data Explorer uses the word "filter" to describe a collection of search criteria when searching for tables and selection criteria for queries.

Concepts	Definitions and explanations
Queries	Queries describe the selection criteria for data in tables expressed as SQL statements is the query.
Query result data	Query result data refers to data sets produced by running query filters. A data set contains data that matches the selection criteria specified in the query filter. The query result data consists of data retrieved from database tables.
Table search criteria	Search criteria determines what Data Explorer looks for when searching for tables. Suppose you want a list of tables in the QGPL library with names that begin with the letter Q. You express the search criteria as library "QGPL" and table name like "Q%" to find tables in QGPL whose names begin with the letter Q.
Selection criteria	The selection criteria determine the rules used by queries when retrieving data from tables. Data Explorer uses SQL to express the selection criteria.
SQL	Structured Query Language (SQL) is the language used to interrogate relational databases. An example of an SQL query is: SELECT lastname, firstname, mobilephone FROM contacts WHERE lastname LIKE 'A%' ORDER BY firstname This SQL selects contacts whose last name begins with the letter A and sequences the query result data by the first name. The query result data consists of last name, first name and mobile phone number.
SQL clauses	SQL clause examples are SELECT, FROM, WHERE and ORDER BY.
SQL statement	SQL statements refer to the whole set of SQL parameters and clauses used in query filters. SELECT * FROM demolib/contacts is an example of an SQL statement.
Table	The IBM servers refer to data residing on disks as files. SQL uses the word table. This guide follows the SQL convention.

Assumed and prerequisite knowledge

This guide provides no tutorial for creating databases or SQL. Table 25 defines the prerequisite knowledge needed to use the guide.

Table 25: Assumed and prerequisite knowledge

Subject matter	Explanations
Files and tables	The guide assumes that you understand the concepts behind files (tables) on IBM servers, including physical files, logical files and views.
Libraries	The guide assumes that you understand the concepts behind libraries for IBM servers.

Subject matter	Explanations
Query concepts	The guide assumes that you understand the concepts behind querying tables in databases on IBM servers.
SQL	The guide assumes that you understand how to create SQL, especially for cases when you need complex SQL (examples are joining tables and complicated WHERE clauses).
Using the clipboard	You need to know how to use the clipboard for copying and pasting data between applications.