



# NOMADS QUERY AND REPORT WRITER ENHANCEMENTS 2020 - 2024

DireXions 2024



# NOMADS QUERY ENHANCEMENTS 2020 - 2024

DireXions 2024



# AGENDA

- 1. Features**
- 2. Query+ Options**
- 3. Query-Based Utilities**





# FEATURES

## Named Formulas

- Assign a name to a formula
- Easily identify a formula throughout the Query Subsystem

(Columns list, Filters, Formulas, Show/Hide/Reorder Columns,  
Chart Definitions, Copy/Export, Profile columns displays, etc.)

- Now you can:
  - Use the evaluated result of the formula in another formula
  - Use the formula as a parameter in a display option
  - Reference the formula by name in a Report Writer definition
  - Specify a column name for use within the \*QUERY\* interface

# NOMADS QUERY FEATURES

## Named Formulas

- Optional
- Names start with FML\_ (default FML\_QueryName\_n)
  - E.g. FML\_MyFormula

**PVX PLUS TECHNOLOGIES LTD.** Query Formula Definition

**Formula Name** FML\_CreditUsed

**Column Title** Fixed Credit Used

**Formula** (BALANCE\*100)/CREDITLIMIT

**Width** 20 **Alignment** Default **Format** Mask Program Fixed ##0%

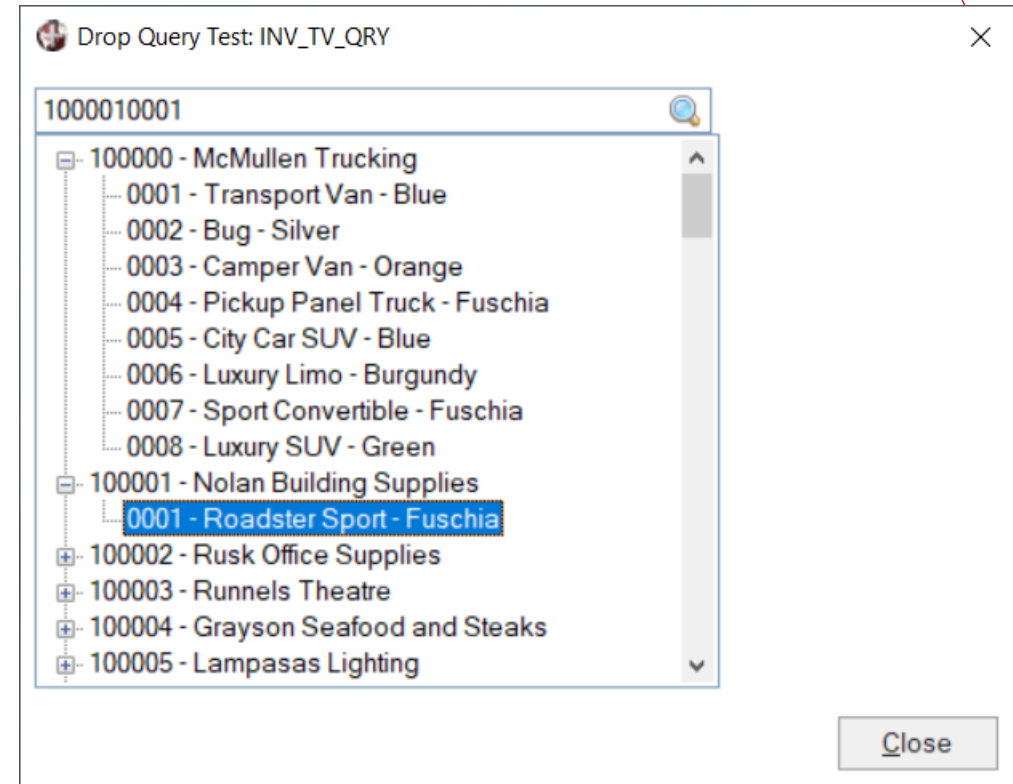
**Display Option** Method: PercentBarWithLabel **Define**

```
Columns
Clientid
ClientName
Balance
Credit limit
FML_CreditStatus:STR(CREDITLIMIT-BALANCE)
FML_CreditUsed:(BALANCE*100)/CREDITLIMIT
<< eof >>
```



## Drop Tree

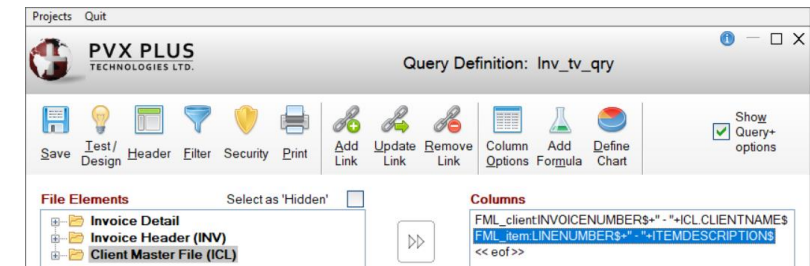
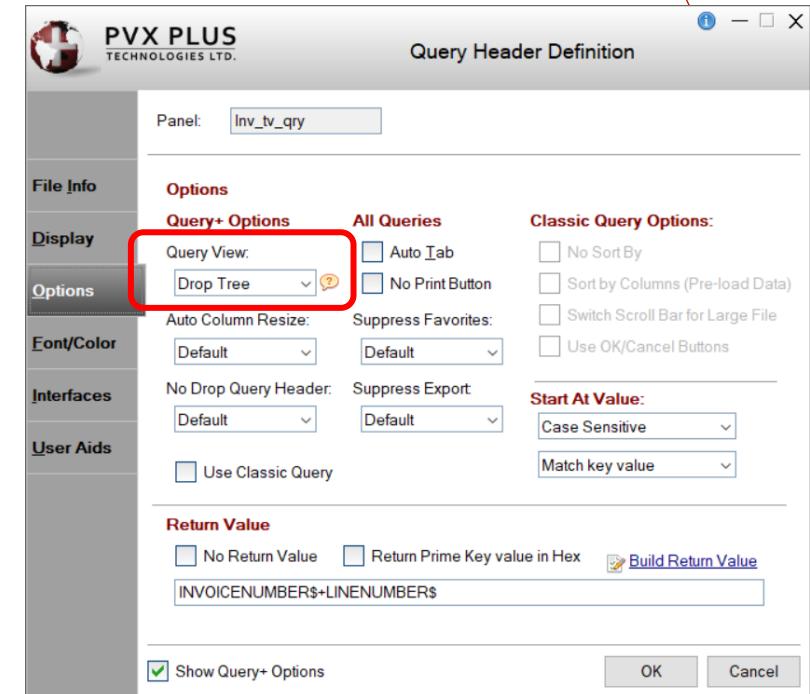
- New query view similar to *Drop Query*, but uses a tree view to display data
- Displayed directly on the current panel adjacent to the multi-line
- Useful when records can be grouped



# NOMADS QUERY FEATURES

## Drop Tree

- Defined in Query Header Options tab - Query View
- Supports limited run-time popup menu:
  - Find, Refresh, Print, Filters, Profile
- Can also be used to load a smart tree view





## Access External Data

- External data can be passed to a query at run-time using global variables (not new)
- Can be used in filters and formulas
- New special %QRY\_VARIOL\$ and %QRY\_VARDATA\$ Query+ variables have been created to pass variable names and values that can be accessed by the query

# NOMADS QUERY FEATURES

## Access External Data

- %QRY\_VARIOL\$ - A compiled IOLIST containing the names of the variables to hold the external data
- %QRY\_VARDATA\$ - The data for the variables in REC() format

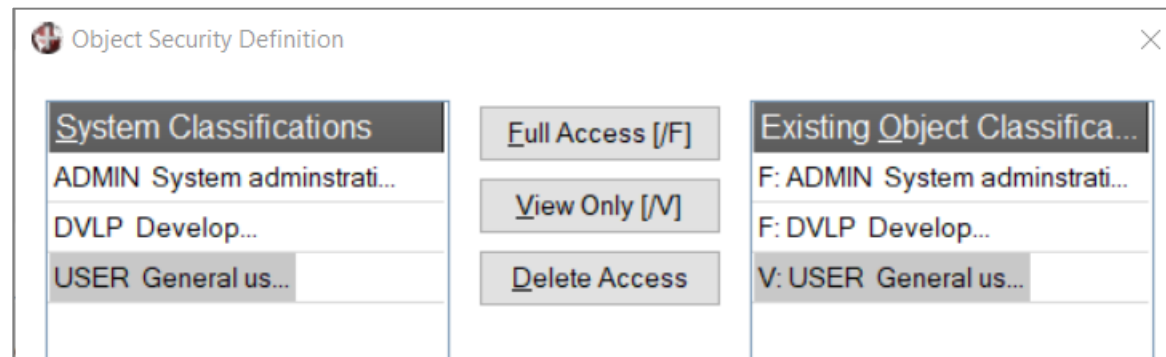
```
LOCAL %QRY_VARIOL$=CPL("IOLIST ThisVal$,ThatVal")
```

```
LOCAL %QRY_VARDATA$=REC(IOL=%QRY_VARIOL$)
```

When the query runs, ThisVal\$ and ThatVal will be populated and can be used in filters, formulas, etc.

## Security

- Previously, security was based on Data Dictionary settings for files and fields, and this is still supported
- New security settings within the Query Definition based on the Security Manager with *Security Classes* and *Users*
  - Set Security Classifications to *Full Access* or *View Only*





# NOMADS QUERY FEATURES

## Security



- Three levels of security:

- Top level (query/main file)

- Determines if query can be displayed at all

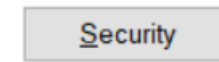
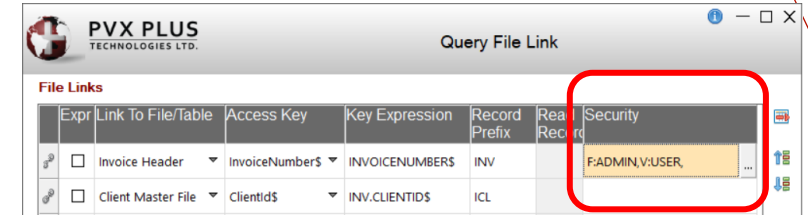
- Link file definitions

- Determines if the fields in the linked files are displayed

- Column definitions (fields/formulas)

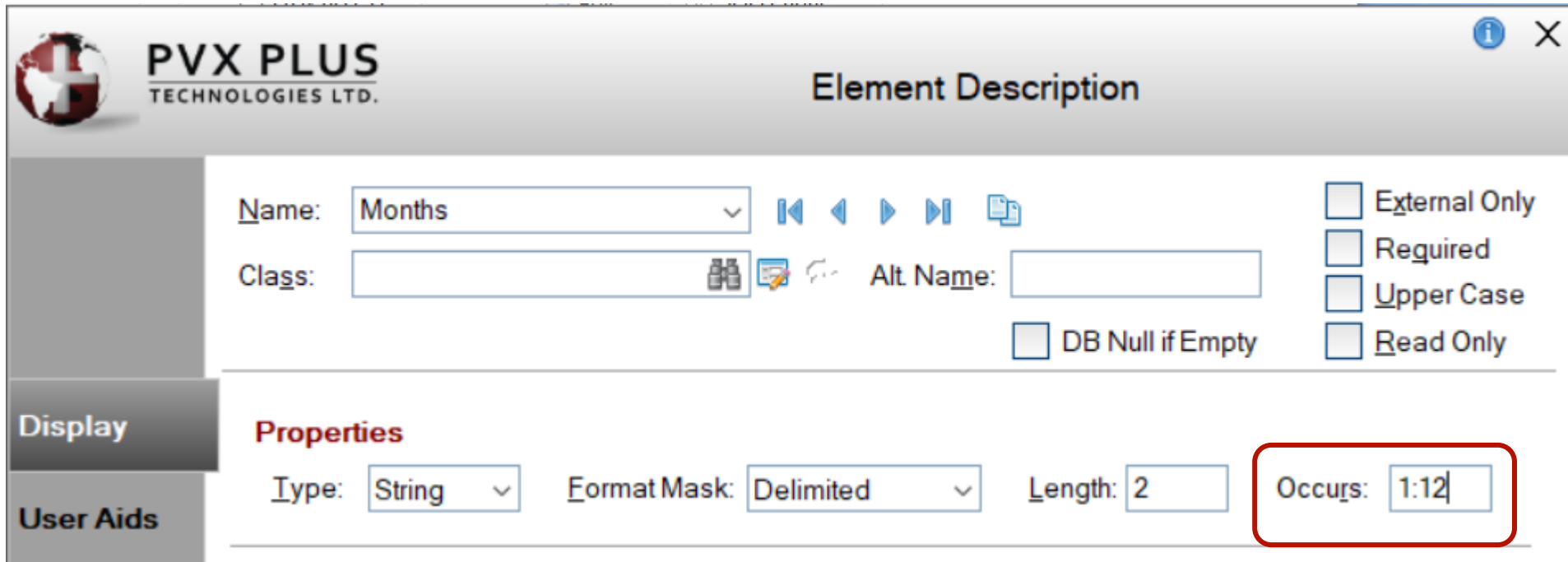
- Determines if specific fields are displayed

- Settings carry through to query-related features such as Smart Controls, Auto Charts, \*QUERY\*, etc.



## Array Support

- Support for Data Dictionary elements defined via “Occurs”

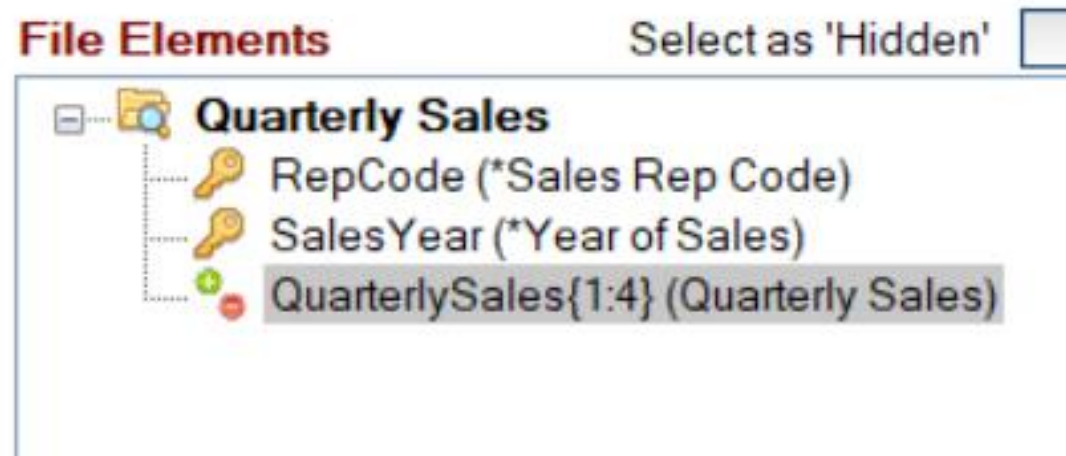


The screenshot shows the 'Element Description' window in PVX PLUS TECHNOLOGIES LTD. The window has a sidebar on the left with 'Display' and 'User Aids' buttons. The main area contains the following fields and options:

- Name:** Months (dropdown menu)
- Class:** (empty text box)
- Alt Name:** (empty text box)
- Properties:**
  - Type:** String (dropdown menu)
  - Format Mask:** Delimited (dropdown menu)
  - Length:** 2 (text box)
  - Occurs:** 1:12 (text box, highlighted with a red border)
- Checkboxes:** External Only, Required, Upper Case, DB Null if Empty, Read Only (all unchecked)

## Array Support

- Displayed in the Query Definition File Elements list with dimension in braces, e.g. `Month${1:1 2}`, `ThreeD{1:2,1:3,1:4}`

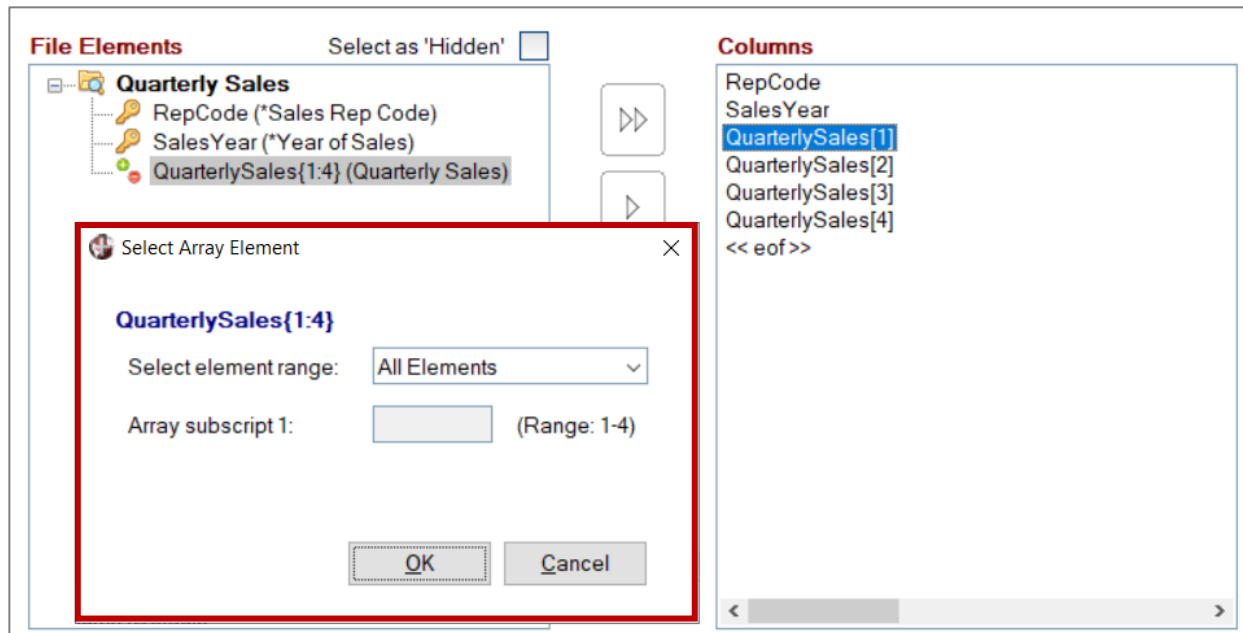




# NOMADS QUERY FEATURES

## Array Support


- When you select an array entry from the *Elements* list you can specify *All Elements* or a *Single Element* by entering a subscript



# NOMADS QUERY FEATURES

## Array Support

- Array elements are identified using square brackets
  - E.g. Month\$[1], ThreeD[2,1,1]

<b>Formula Name</b>	<input type="text" value="FML_Totals"/>	
<b>Column Title</b>	<input type="text" value="Yearly Total"/>	
<b>Formula</b>	<input type="text" value="QUARTERLYSALES[1]+QUARTERLYSALES[2]+QUARTERLYSALES[3]+QUARTERLYSALES[4]"/>	
<b>Width</b>	<input type="text" value="15"/>	
<b>Alignment</b>	<input type="text" value="Default"/>	
<b>Format</b>	<input checked="" type="radio"/> Mask <input type="radio"/> Program	
	<input type="text" value="Fixed"/>	<input type="text" value="\$###,##0.00"/>

## Composite Key Definitions for File Links

- Previously you had to know the segment details to concatenate the key string

E.g. PAD(Company\$,5,\$00\$)+PAD(Department\$,10,\$00\$)+EmployeeID\$

**File Links**

Expr	Link To File/Table	Access Key	Key Expression	Record Prefix	Read Record	Security
<input type="checkbox"/>	Employee	Company\$ + Department\$ + EmployeeID\$	PAD(Company\$,5)+PAD(Department\$,10)+EmployeeID\$	EMP		

Key Expression

**Target Key Definition:**  
Company\$(1,5)+Department\$(1,10)+EmployeeID\$(1,10)

Enter a literal value:

Or a program variable:

**Key Segments:**

- PAD(Company\$,5)
- PAD(Department\$,10)
- EmployeeID\$
- << End >>



# NOMADS QUERY FEATURES

## Composite Key Definitions for File Links

- Now you can generate a `KEY=F1$:F2$` expression just knowing the fields
  - Check the *Generate a KEY=F1\$:F2\$ expression* option
  - Select the fields that make up the key and the *Key Expression Builder* utility builds the expression for you


The screenshot shows a software interface for defining a key expression. At the top, it displays the 'Target Key Definition' as `Company$(1,5)+Department$(1,10)+Employeeid$(1,10)`. Below this, there are two input fields: 'Enter a literal value:' and 'Or a program variable:'. To the right of these fields is a 'Key Segments:' list containing 'Company\$', 'Department\$', 'Employeeid\$', and '<< End >>'. A red box highlights the 'Key Segments:' list. To the right of the list is a checkbox labeled 'Generate a KEY=F1\$:F2\$ expression', which is checked and also highlighted with a red box.

# NOMADS QUERY FEATURES

## Composite Key Definitions for File Links

- Generates a Key Expression using the F1\$:F2\$:f3\$ syntax
  - E.g. KEY(\_\_fileFN,KNO=0,KEY=Company\$:Department\$:EmployeeID\$)

### File Links

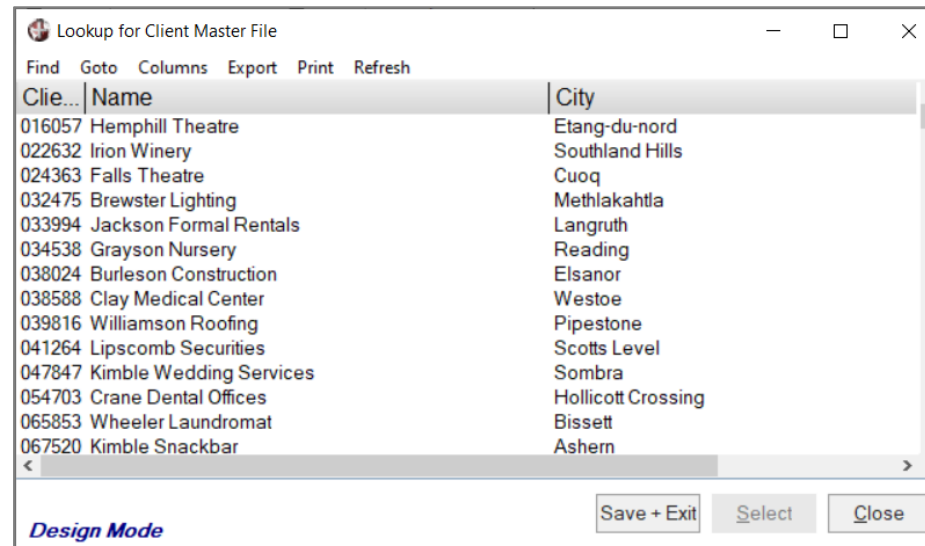
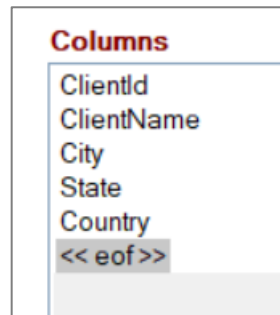
	Expr	Link To File/Table	Access Key	Key Expression	Record Prefix	Read Record	Security
	<input type="checkbox"/>	Employee ▼	Company\$ + Department\$ + Employeeid\$ ▼	KEY(__linkFN,KNO=0,KEY=Company\$:Department\$:Employeeid\$)	... EMP		

## Composite Key Definitions for File Links

- Can handle changes in key segment length if file keys are updated
- Feature also added to other features such as *File Link Definitions*, *Views Data Source Maintenance*, etc.

## Save Changes when Testing

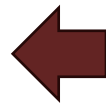
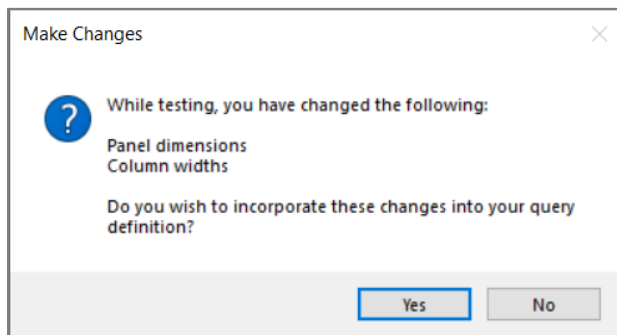
- Often it is difficult to determine the widths of the columns or the size of the panels when creating a query definition



# NOMADS QUERY FEATURES

## Save Changes when Testing

- When testing Query+ and Drop Query definitions certain changes can be saved when exiting the test panel
  - Column widths, *Show/Hide/Reorder Columns* may be altered
  - Query+ panel size can be adjusted
  - Save + Exit button added



Client ID	Name	City	State / Province	Country
016057	Hemphill Theatre	Etang-du-nord	QC	Canada
022632	Iron Winery	Southland Hills	ON	Canada
024363	Falls Theatre	Cuoq	QC	Canada
032475	Brewster Lighting	Methlakahtla	BC	Canada
033994	Jackson Formal Rentals	Langruth	MB	Canada
034538	Grayson Nursery	Reading	NS	Canada
038024	Burleson Construction	Elsanor	MB	Canada
038588	Clay Medical Center	Westoe	SK	Canada
039816	Williamson Roofing	Pipestone	MB	Canada
041264	Lipscomb Securities	Scotts Level	ON	Canada
047847	Kimble Wedding Services	Sombra	ON	Canada
054703	Crane Dental Offices	Hollicott Crossing	NL	Canada
065853	Wheeler Laundromat	Bissett	ON	Canada
067520	Kimble Snackbar	Ashern	MB	Canada
069944	Moore Seafood and Steaks	Black Pines	BC	Canada
072005	Brown Steak House	Westville	NS	Canada
072410	San Saba Office Supplies	Winchester Park	MB	Canada
075395	Midland Formal Rentals	Bend	BC	Canada
078964	Houston Pharmacy	Medora	MB	Canada

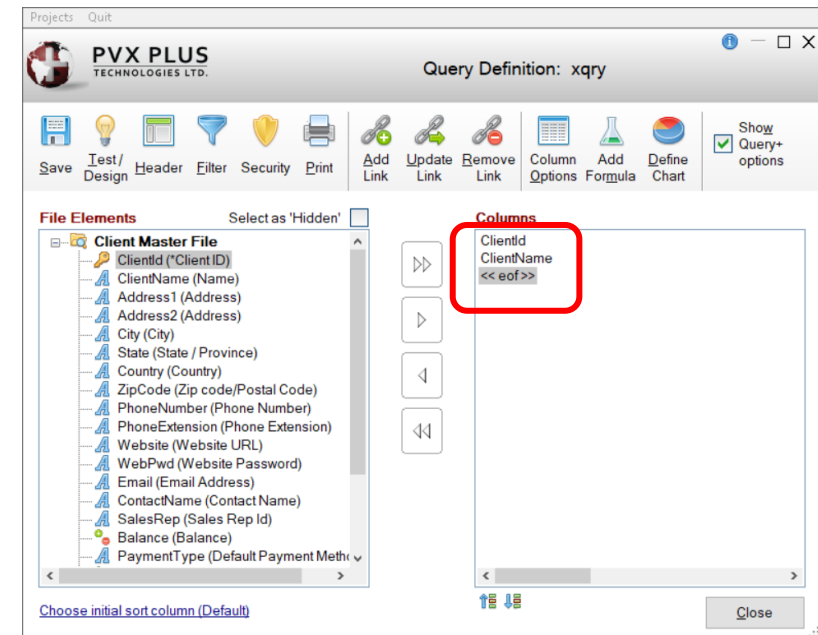
Design Mode

Save + Exit Select Close



## Auto-Select Key Field Columns

- When creating a new query, the Columns list box is now automatically populated with:
  - Elements that make up the chosen key
  - First non-key field  $\geq 15$  characters  
(Not applicable to queries based on Views or manually defined files)
- Then you can add/remove the fields you want



## Query\_Row\$ Added

- Added special Query\_Row\$ variable containing the contents of the query row selected
- Can be used in *Selection Logic* or *Return Value* expressions

Selection Logic



Test  ARG\_1\$="" OR POS(UCS(ARG\_1\$)=UCS(QUERY\_ROW\$))>0

## Query Row\$ Added

- Allows testing the entire row to match a value

Product Code:

Product Code	Product Description	Price	Qty on Hand	Std Cost
CAR-3310-RED	Compact Sedan - Red	8.75	27	6.56
CAR-3311-GRN	Compact Sedan - Green	8.50	208	6.38
CAR-3312-BLU	Compact Sedan - Blue	9.75	105	7.31
CAR-3313-LME	Compact Sedan - Lime	9.50	625	7.13
CAR-3314-PNK	Compact Sedan - Fuschia	9.50	131	7.13
CAR-3315-CYN	Compact Sedan - Cyan	9.25	204	6.94
CAR-4210-YLW	2Dr Sedan - Yellow	8.50	611	6.38
CAR-4211-SEA	2Dr Sedan - Seagreen	9.75	134	7.31
CAR-4212-VIO	2Dr Sedan - Violet	8.25	162	6.19
CAR-4213-LME	2Dr Sedan - Lime	9.25	89	6.94
CAR-4214-RED	2Dr Sedan - Red	10.25	233	7.69
CAR-4215-BLU	2Dr Sedan - Blue	8.75	343	6.56

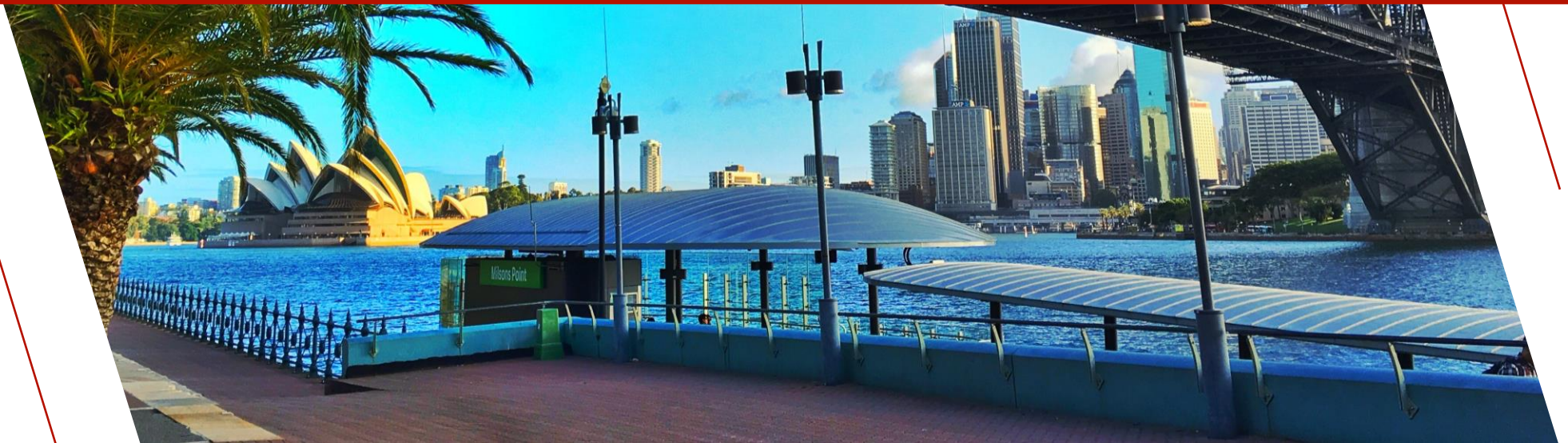
Select Close

### Selection Logic

Test



# QUERY+ OPTIONS





## Suppress Records with Duplicate Return Values

- Show/Process only the first record of a series
  - E.g. Displaying the invoices with VAN products where there could be several VAN type detail lines

Product Code	Item Description	Invoice Number	Name	Sales Rep Name
VAN-2120-BLU	Transport Van - Blue	100000	McMullen Trucking	Chuck Mitchell
VAN-1124-ORG	Camper Van - Orange	100000	McMullen Trucking	Chuck Mitchell
VAN-1125-VIO	Camper Van - Violet	100002	Rusk Office Supplies	Anastasia Nelson
VAN-4111-ROS	Panel Van - Pale Rose	100002	Rusk Office Supplies	Anastasia Nelson
VAN-2121-BUR	Transport Van - Burgundy	100002	Rusk Office Supplies	Anastasia Nelson
VAN-2124-SEA	Transport Van - Seagreen	100003	Runnels Theatre	Betty Turner
VAN-4124-ORG	Passenger Van - Orange	100007	Grimes Landscaping	Donna Kerr
VAN-4110-SLV	Panel Van - Silver	100008	Cameron Electrical Contracting	Anastasia Nelson
VAN-4122-PNK	Passenger Van - Fuschia	100009	Stephens Wine and Spirits	Anastasia Nelson



# NOMADS QUERY OPTIONS

## Suppress Records with Duplicate Return Values

- Query Selection Definition - *Suppress Duplicates*
  - *Suppress records based on duplicate return values* option

### Suppress Duplicates

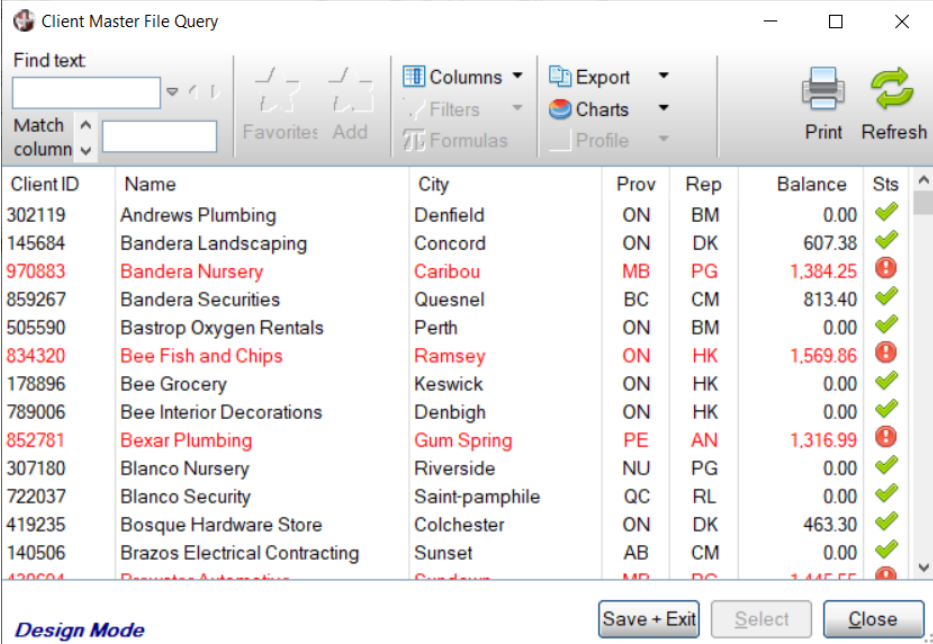
Suppress records based on duplicate return values

- Show/Process only the first record of a series

Product Code	Item Description	Invoice Number	Name	Sales Rep Name
VAN-2120-BLU	Transport Van - Blue	100000	McMullen Trucking	Chuck Mitchell
VAN-1125-VIO	Camper Van - Violet	100002	Rusk Office Supplies	Anastasia Nelson
VAN-2124-SEA	Transport Van - Seagreen	100003	Runnels Theatre	Betty Turner
VAN-4124-ORG	Passenger Van - Orange	100007	Grimes Landscaping	Donna Kerr
VAN-4110-SLV	Panel Van - Silver	100008	Cameron Electrical Contracting	Anastasia Nelson
VAN-4122-PNK	Passenger Van - Fuschia	100009	Stephens Wine and Spirits	Anastasia Nelson
VAN-4124-ORG	Passenger Van - Orange	100011	Cass Theatre	Hank Kane
VAN-1124-ORG	Camper Van - Orange	100014	Leon Bistro and Bar	Olivia Blackwood
VAN-4114-PRL	Panel Van - Pearl	100015	Dawson Farm Equipment	Gordon Taylor

## Row Display Options

- Option to conditionally change color/highlighting on individual rows to highlight a condition:
  - *Bold Text* – Display text in bold font
  - *Colors* – set text & background colors
  - *HiLiteColor* – Set background color
  - *TextColor* – Set text color
  - *User display* – Specify your own display string



The screenshot shows the 'Client Master File Query' application window. The interface includes a search bar, a 'Match column' dropdown, and various menu options like 'Columns', 'Export', 'Charts', 'Filters', 'Formulas', and 'Profile'. The main data table is displayed with columns for Client ID, Name, City, Prov, Rep, Balance, and Sts. The table is styled with conditional formatting: rows with a balance of 1,384.25, 1,569.86, and 1,316.99 are highlighted in red, and their corresponding 'Sts' column values are marked with a red exclamation point. Other rows have a balance of 0.00 and a green checkmark in the 'Sts' column. The application is in 'Design Mode' and has buttons for 'Save + Exit', 'Select', and 'Close'.

Client ID	Name	City	Prov	Rep	Balance	Sts
302119	Andrews Plumbing	Denfield	ON	BM	0.00	✓
145684	Bandera Landscaping	Concord	ON	DK	607.38	✓
970883	Bandera Nursery	Caribou	MB	PG	1,384.25	!
859267	Bandera Securities	Quesnel	BC	CM	813.40	✓
505590	Bastrop Oxygen Rentals	Perth	ON	BM	0.00	✓
834320	Bee Fish and Chips	Ramsey	ON	HK	1,569.86	!
178896	Bee Grocery	Keswick	ON	HK	0.00	✓
789006	Bee Interior Decorations	Denbigh	ON	HK	0.00	✓
852781	Bexar Plumbing	Gum Spring	PE	AN	1,316.99	!
307180	Blanco Nursery	Riverside	NU	PG	0.00	✓
722037	Blanco Security	Saint-pamphile	QC	RL	0.00	✓
419235	Bosque Hardware Store	Colchester	ON	DK	463.30	✓
140506	Brazos Electrical Contracting	Sunset	AB	CM	0.00	✓
428694	Brazos Automotive	Sundown	MB	PG	1,445.55	!

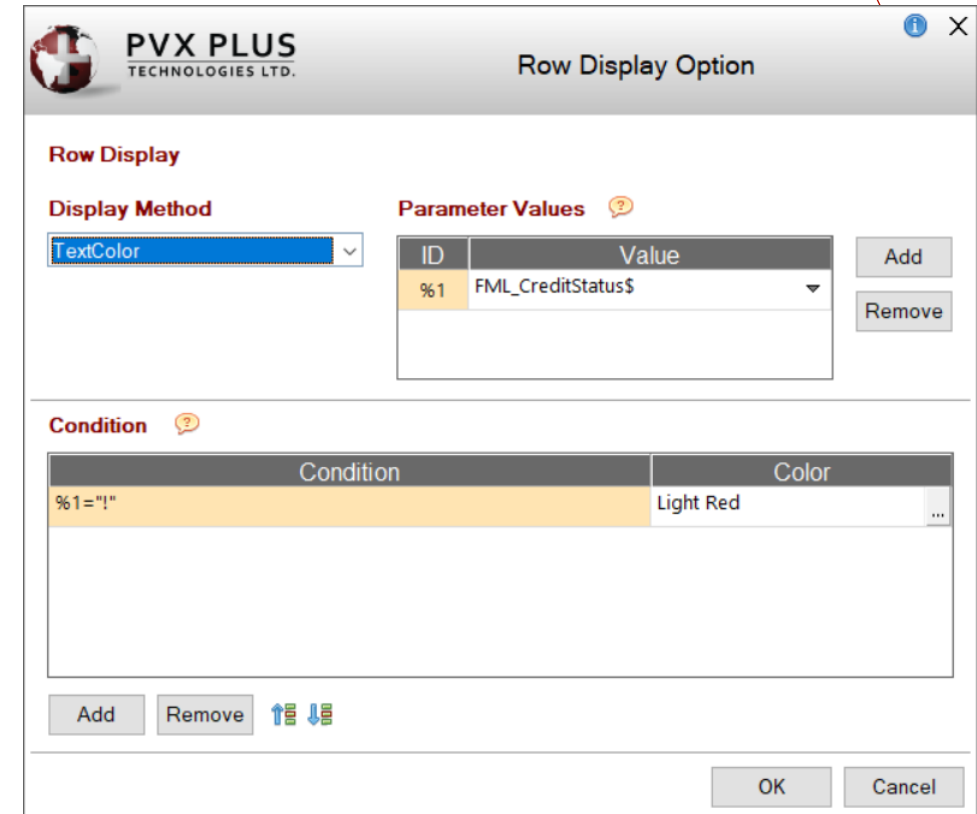
## Row Display Options

- Query Header Display Tab
  - *Row Highlight – Add row display options*

### Row Highlight

 [Edit row display \(TextColor\)](#)

- Row Display Option interface



## Change Font/Color

- Enhanced the Query+ Font/Color definition
  - Add run-time support for Library Default and Panel settings for font and color
  - Allow Font Specification and Attributes for individual queries
  - Allow setting Background color for individual queries

The screenshot shows a dialog box titled "Font Specification" with the following sections:

- Font Specification:** A dropdown menu for "Font" set to "<Default Graphic Font>" and a dropdown menu for "Size" set to "Regular".
- Color:** Two rows, "Foreground" and "Background", each with a text input field set to "Default" and a color selection icon.
- Attributes:** Three checkboxes: "Bold" (unchecked), "Italics" (unchecked), and "ANSI Characters" (checked).
- Theme:** A checkbox for "Expression" (unchecked) and a dropdown menu for theme selection.

## Choose Initial Sort Column

- Allows ascending/descending sort on non-key columns
  - Can even sort on Formula values
  - Occurs after list is loaded when query first displayed
    - Doesn't use Load-on-demand or Background Loading



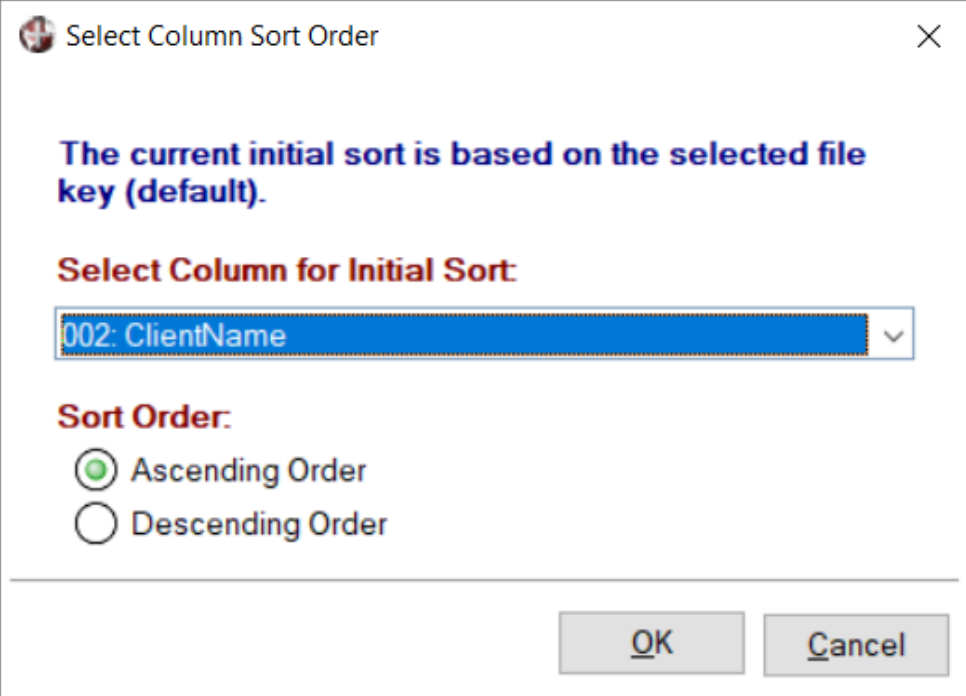
# NOMADS QUERY OPTIONS

## Choose Initial Sort Column

- Choose *initial sort column* at bottom of Query Definition screen

[Choose initial sort column \(Default\)](#)

- Invokes *Select Column Sort Order*



The screenshot shows a dialog box titled "Select Column Sort Order" with a close button (X) in the top right corner. The dialog contains the following text and controls:

- A message: "The current initial sort is based on the selected file key (default)." in blue text.
- A label: "Select Column for Initial Sort:" in red text.
- A dropdown menu showing "002: ClientName" with a downward arrow.
- A label: "Sort Order:" in red text.
- Two radio button options: "Ascending Order" (selected) and "Descending Order".
- Two buttons at the bottom right: "OK" and "Cancel".

## Start Value Option

- Sometimes the value in the query multi-line does not match the sort key used in the query, so the lookup fails
  - E.g. the multi-line has a client code but the query is sorted by client name

Client ID	Name	Sts	City	Prov	Rep	Balance
302119	Andrews Plumbing	✓	Denfield	ON	BM	0.00
145684	Bandera Landscaping	✓	Concord	ON	DK	607.38
970883	Bandera Nursery	!	Caribou	MB	PG	1,384.25
859267	Bandera Securities	✓	Quesnel	BC	CM	813.40
505590	Bastrop Oxygen Rentals	✓	Perth	ON	BM	0.00
834320	Bee Fish and Chips	!	Ramsey	ON	HK	1,569.86
178896	Bee Grocery	✓	Keswick	ON	HK	0.00
789006	Bee Interior Decorations	✓	Denbigh	ON	HK	0.00
852781	Bexar Plumbing	!	Gum Spring	PE	AN	1,316.99
207180	Blanco Nursery	✓	Diverside	NU	BC	0.00

← No match

# NOMADS QUERY OPTIONS

## Start Value Option

- New *Start At Value* option in Header Options
  - *Start At Value* options:
    - *Match Options*
      - *Match Key Value*
      - *Match Return Value*

**Start At Value:**

Default to Uppercase ▾

Match return value ▾

Client ID: 834320

Client Master File Query

Find text: 834320

Match column:

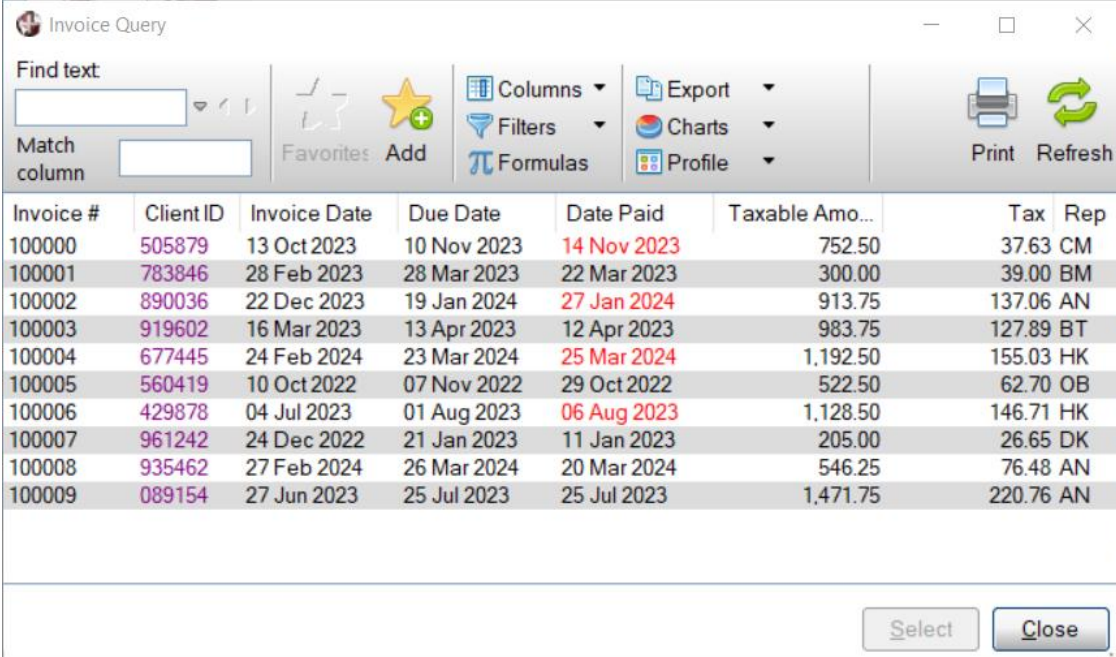
Columns, Filters, Formulas, Export, Charts, Profile, Print, Refresh

Client ID	Name	Sts	City	Prov	Rep	Balance
834320	Bee Fish and Chips	!	Ramsey	ON	HK	1,569.86
178896	Bee Grocery	✓	Keswick	ON	HK	0.00
789006	Bee Interior Decorations	✓	Denbigh	ON	HK	0.00
852781	Bexar Plumbing	!	Gum Spring	PE	AN	1,316.99
307180	Blanco Nursery	✓	Riverside	NU	PG	0.00
722037	Blanco Security	✓	Saint-pamphile	QC	RL	0.00
419235	Bosque Hardware Store	✓	Colchester	ON	DK	463.30
140506	Brazos Electrical Contracting	✓	Sunset	AB	CM	0.00

Select Close

## Continue While

- Selection criteria option for when you want to stop a query before the logical end
  - E.g.
    - First 10 records →
    - When a total is reached
    - Etc.



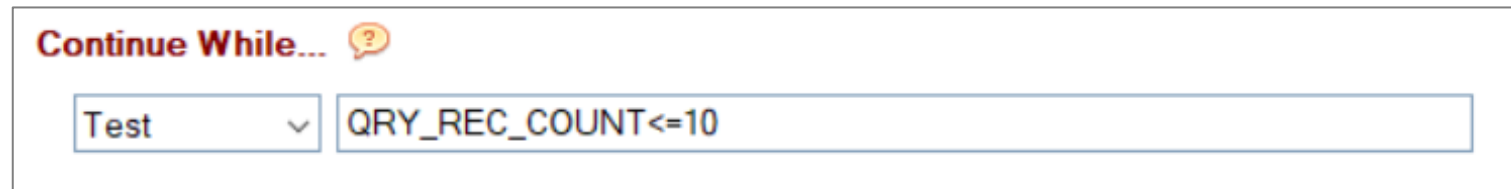
The screenshot shows a window titled "Invoice Query" with a toolbar at the top containing options like "Find text", "Match column", "Columns", "Export", "Filters", "Formulas", "Charts", "Profile", "Print", and "Refresh". Below the toolbar is a table with the following data:

Invoice #	Client ID	Invoice Date	Due Date	Date Paid	Taxable Amo...	Tax	Rep
100000	505879	13 Oct 2023	10 Nov 2023	14 Nov 2023	752.50	37.63	CM
100001	783846	28 Feb 2023	28 Mar 2023	22 Mar 2023	300.00	39.00	BM
100002	890036	22 Dec 2023	19 Jan 2024	27 Jan 2024	913.75	137.06	AN
100003	919602	16 Mar 2023	13 Apr 2023	12 Apr 2023	983.75	127.89	BT
100004	677445	24 Feb 2024	23 Mar 2024	25 Mar 2024	1,192.50	155.03	HK
100005	560419	10 Oct 2022	07 Nov 2022	29 Oct 2022	522.50	62.70	OB
100006	429878	04 Jul 2023	01 Aug 2023	06 Aug 2023	1,128.50	146.71	HK
100007	961242	24 Dec 2022	21 Jan 2023	11 Jan 2023	205.00	26.65	DK
100008	935462	27 Feb 2024	26 Mar 2024	20 Mar 2024	546.25	76.48	AN
100009	089154	27 Jun 2023	25 Jul 2023	25 Jul 2023	1,471.75	220.76	AN

# NOMADS QUERY OPTIONS

## Continue While

- Query Selection Definition – Continue While...
  - Processing continues while the processing condition is true
  - Based on the initial order of the records read
  - Can be a *Test* expression or *Call* a program that returns an EXIT code to stop
  - Added a special query variable QRY\_REC\_COUNT for instances where the limit is the number of records



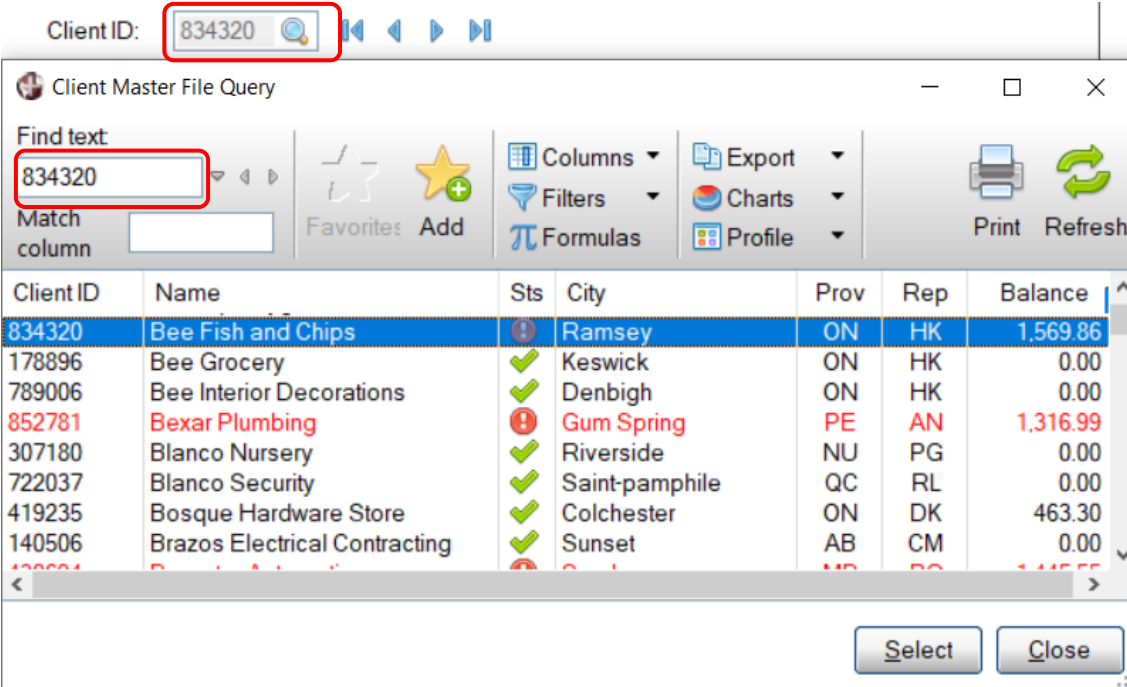
Continue While... ?

Test QRY\_REC\_COUNT<=10



## Find Text

- Display the query multi-line value passed to the query in the *Find Text* box of the run-time query



The screenshot shows a software window titled "Client Master File Query". At the top, there is a "Client ID:" field with the value "834320" entered and a search icon. Below this is a "Find text" field, also containing "834320", with a red box around it and a red arrow pointing to it from the left. The window has a toolbar with icons for "Columns", "Export", "Filters", "Charts", "Formulas", "Profile", "Print", and "Refresh". Below the toolbar is a table with the following data:

Client ID	Name	Sts	City	Prov	Rep	Balance
834320	Bee Fish and Chips	!	Ramsey	ON	HK	1,569.86
178896	Bee Grocery	✓	Keswick	ON	HK	0.00
789006	Bee Interior Decorations	✓	Denbigh	ON	HK	0.00
852781	Bexar Plumbing	!	Gum Spring	PE	AN	1,316.99
307180	Blanco Nursery	✓	Riverside	NU	PG	0.00
722037	Blanco Security	✓	Saint-pamphile	QC	RL	0.00
419235	Bosque Hardware Store	✓	Colchester	ON	DK	463.30
140506	Brazos Electrical Contracting	✓	Sunset	AB	CM	0.00

At the bottom of the window, there are "Select" and "Close" buttons.



# QUERY-BASED UTILITIES



## \*QUERY\*

- Access the contents of a query like a standard read-only file
  - New KNO=\* option to automatically use the key specified in the query definition
  - Enhanced to better handle duplicate, descending and composite keys
    - SEQPFX=Y – Prefixes a 10-digit sequence number to the key value to ensure unique values and correct record sequence
    - KEYPAD=Y – Replaces \$00\$ padding in compound keys with spaces

# QUERY-BASED UTILITIES

2024

## \*tools/qryprint

- Prints a formatted PDF report based on a query definition

Client Master File Query

Find text:

Match column:

Columns, Export, Filters, Charts, Formulas, Profile

Print Refresh

Client ID	Name	City	Prov	Rep	Balance	Sts
302119	Andrews Plumbing	Denfield	ON	BM	0.00	✓
145684	Bandera Landscaping	Concord	ON	DK	607.38	✓
970883	Bandera Nursery	Caribou	MB	PG	1,384.25	!
859267	Bandera Securities	Quesnel	BC	CM	813.40	✓
505590	Bastrop Oxygen Rentals	Perth	ON	BM	0.00	✓
834320	Bee Fish and Chips	Ramsey	ON	HK	1,569.86	!
178896	Bee Grocery	Keswick	ON	HK	0.00	✓
789006	Bee Interior Decorations	Denbigh	ON	HK	0.00	✓
852781	Bexar Plumbing	Gum Spring	PE	AN	1,316.99	!
307180	Blanco Nursery	Riverside	NU	PG	0.00	✓
722037	Blanco Security	Saint-pamphile	QC	RL	0.00	✓
419235	Bosque Hardware Store	Colchester	ON	DK	463.30	✓
140506	Brazos Electrical Contracting	Sunset	AB	CM	0.00	✓
430694	Brewster Automotive	Sundown	MB	PG	1,445.55	!

Select Close

07/18/24 Page 1

Client Master File Query

Status: != Over credit limit

Client ID	Name	City	Prov	Rep	Balance	Sts
302119	Andrews Plumbing	Denfield	ON	BM	0.00	
145684	Bandera Landscaping	Concord	ON	DK	607.38	
970883	Bandera Nursery	Caribou	MB	PG	1,384.25	!
859267	Bandera Securities	Quesnel	BC	CM	813.40	
505590	Bastrop Oxygen Rentals	Perth	ON	BM	0.00	
834320	Bee Fish and Chips	Ramsey	ON	HK	1,569.86	!
178896	Bee Grocery	Keswick	ON	HK	0.00	
789006	Bee Interior Decorations	Denbigh	ON	HK	0.00	
852781	Bexar Plumbing	Gum Spring	PE	AN	1,316.99	!
307180	Blanco Nursery	Riverside	NU	PG	0.00	
722037	Blanco Security	Saint-pamphile	QC	RL	0.00	
419235	Bosque Hardware Store	Colchester	ON	DK	463.30	
140506	Brazos Electrical Contracting	Sunset	AB	CM	0.00	
430694	Brewster Automotive	Sundown	MB	PG	1,445.55	!
032475	Brewster Lighting	Methlakahitla	BC	PG	0.00	
072005	Brown Steak House	Westville	NS	OB	1,550.21	
038024	Burleson Construction	Elsanor	MB	CM	557.94	
882769	Burnet Repairs	Forest	ON	DK	206.23	
935462	Cameron Electrical Contracting	Long Lake	PE	AN	74.10	
826016	Cass Theatre	Rutherglen	ON	HK	1,557.99	
962910	Chambers Fish and Chips	Fonthill	ON	DK	0.00	
701743	Chambers Locksmiths	Lac Seul Post	ON	DK	0.00	
599121	Childress Hardware Store	Princeton	ON	HK	703.42	
038588	Clay Medical Center	Westoe	SK	PG	127.60	
299086	Cochran Business Park	Dresden	ON	HK	0.00	
447971	Coke Construction	Finvale	BC	CM	0.00	
137842	Coke Pet Shop	Spencer	NL	AN	1,559.68	!
753284	Coleman Delivery Service	Millhaven	ON	HK	1,333.12	!
706513	Collingsworth Lighting	Winnipeg	MB	PG	0.00	
467530	Collingsworth Wedding Service	Laurentides	QC	GT	10.64	
626449	Coryell Wedding Chapel	Bednesti	BC	CM	814.52	
054703	Crane Dental Offices	Hollicott Crossing	NL	AN	0.00	
585279	Crosby Fish and Chips	Windsor	NS	AN	0.00	
518159	Dawson Business Park	Armstrong	ON	HK	0.00	
336147	Dawson Farm Equipment	Saint-louis-de-terreb	QC	GT	787.75	
503838	Dickens Wine and Spirits	Kiosk	ON	DK	979.43	
762699	Ellis Locksmiths	Bull River	BC	PG	1,739.64	!
313689	Ellis Office Supplies	Iduna	SK	PG	0.00	
350353	Ellis Roofing	New Fellowship	PE	BT	0.00	
024363	Falls Theatre	Cuoq	QC	RL	0.00	
433276	Falls Tree Farm	Prince Rupert	BC	PG	252.00	
764436	Fannin Business Park	Big Sandy	ON	DK	0.00	
841910	Fayette Interior Decorations	Chesley	ON	DK	0.00	
083775	Fayette TV and Stereo Store	Aylesford	NS	AN	2,038.66	!

Jane



# QUERY-BASED UTILITIES

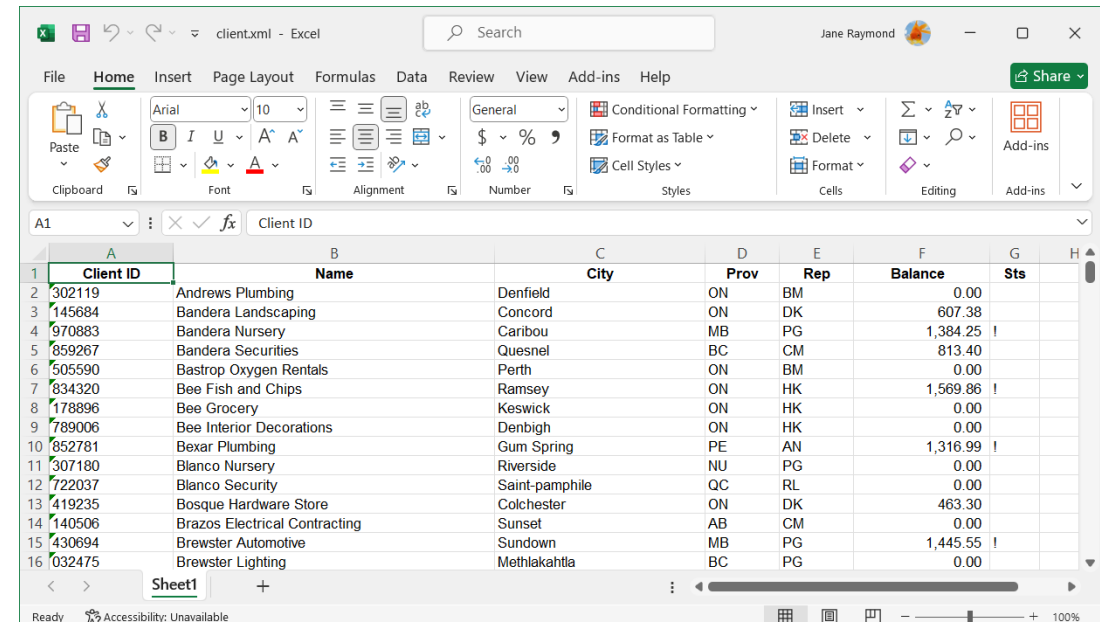
## \*tools/qryprint

**CALL** *"\*tools/qryprint"*, *queryName\$*, *queryLib\$*, *pdffile\$*  
*[, queryopts\$, show\_flg\$, subheader\$]*

- Includes content options (*queryopts\$*) to show hidden columns in the query definition (H) and display numeric calculation options (Total/Average/Minimum/Maximum) in subheader (C)
- Includes interactive options (*show\_flg\$*) to show error messages (E), display a progress bar (P) and display the PDF file when done (D)
- Can include text for a subheader on the first page of the report

## \*tools/qryexport

- Exports data to a spreadsheet-supported file based on a query definition
  - Supported file types:
    - .csv – Comma separated
    - .txt – Tab delimited
    - .slk – Symbolic link
    - .xml – Microsoft XML



Client ID	Name	City	Prov	Rep	Balance	Sts
302119	Andrews Plumbing	Denfield	ON	BM	0.00	
145684	Bandera Landscaping	Concord	ON	DK	607.38	
970883	Bandera Nursery	Caribou	MB	PG	1,384.25	!
859267	Bandera Securities	Quesnel	BC	CM	813.40	
505590	Bastrop Oxygen Rentals	Perth	ON	BM	0.00	
834320	Bee Fish and Chips	Ramsey	ON	HK	1,569.86	!
178896	Bee Grocery	Keswick	ON	HK	0.00	
789006	Bee Interior Decorations	Denbigh	ON	HK	0.00	
852781	Bexar Plumbing	Gum Spring	PE	AN	1,316.99	!
307180	Blanco Nursery	Riverside	NU	PG	0.00	
722037	Blanco Security	Saint-pamphile	QC	RL	0.00	
419235	Bosque Hardware Store	Colchester	ON	DK	463.30	
140506	Brazos Electrical Contracting	Sunset	AB	CM	0.00	
430694	Brewster Automotive	Sundown	MB	PG	1,445.55	!
032475	Brewster Lighting	Methlakahtla	BC	PG	0.00	



# QUERY-BASED UTILITIES

## \*tools/qryexport

**CALL** **"\*tools/qryexport"**, *queryName\$*, *queryLib\$*, *exportfile\$*  
*[, queryopts\$, show\_flg\$]*

- Type of export file determined by file extension
- Includes content options (*queryopts\$*) to show hidden columns in the query definition (H)
- Includes interactive options (*show\_flg\$*) to show error messages (E), display a progress bar (P) and display the file in the default spreadsheet app when done (D)



# REPORT WRITER ENHANCEMENTS 2020 - 2024

DireXions 2024

# AGENDA

The background of the slide is a photograph of a multi-story urban building. The building has a mix of grey stone and bright red brick facades. A black metal fire escape is attached to the red brick section, extending vertically across several floors. Arched windows are visible on both sections of the building. The sky is a pale, clear blue.

- 1. New Input Source**
- 2. Parameter Specifications**
- 3. Report Designer Enhancements**
- 4. New Report Options**
- 5. Dynamic Run-Time Filters**

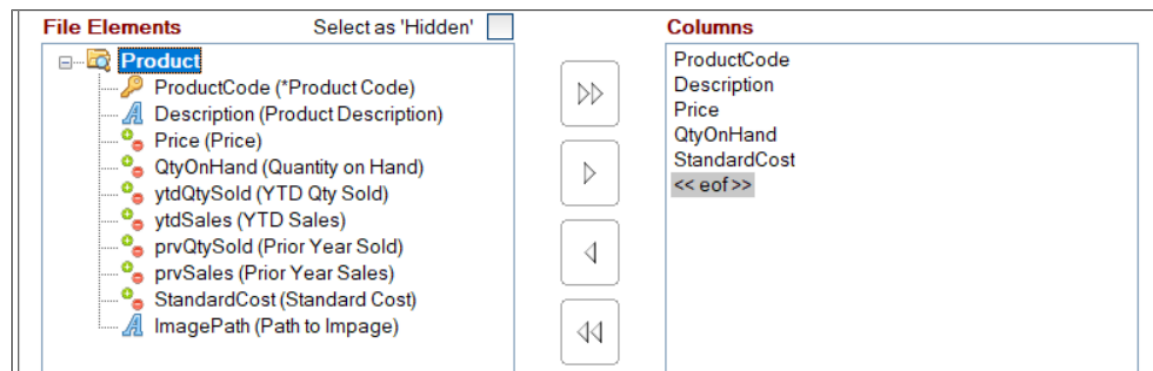


A photograph of the Tower Bridge in London, showing its two stone towers and blue suspension cables. The bridge is partially open, with the walkways raised. The River Thames is visible in the foreground with a small boat. The sky is overcast with grey clouds. A large red banner with white text is overlaid across the middle of the image.

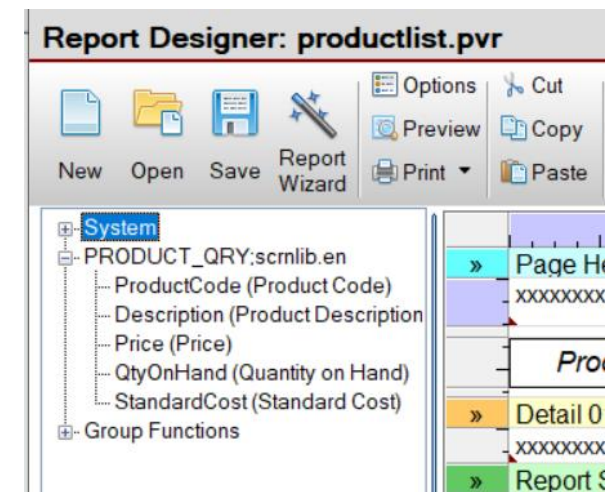
# NEW INPUT SOURCE

## New Input Source

- Query Definition as an Input Source
  - Supports Query Definitions based on PxPlus files with embedded dictionaries, View definitions or external database
  - Adds another way to access a dataset comprised of multiple related files



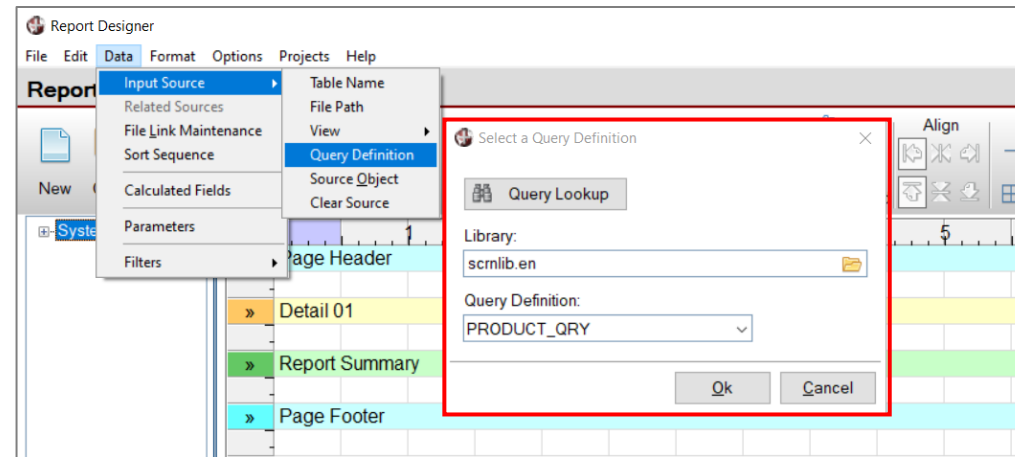
Query Definition  
Report Data



# REPORT WRITER - NEW INPUT SOURCE

## New Input Source

- To assign a query as an input source
  - Data > Input source > Query Definition



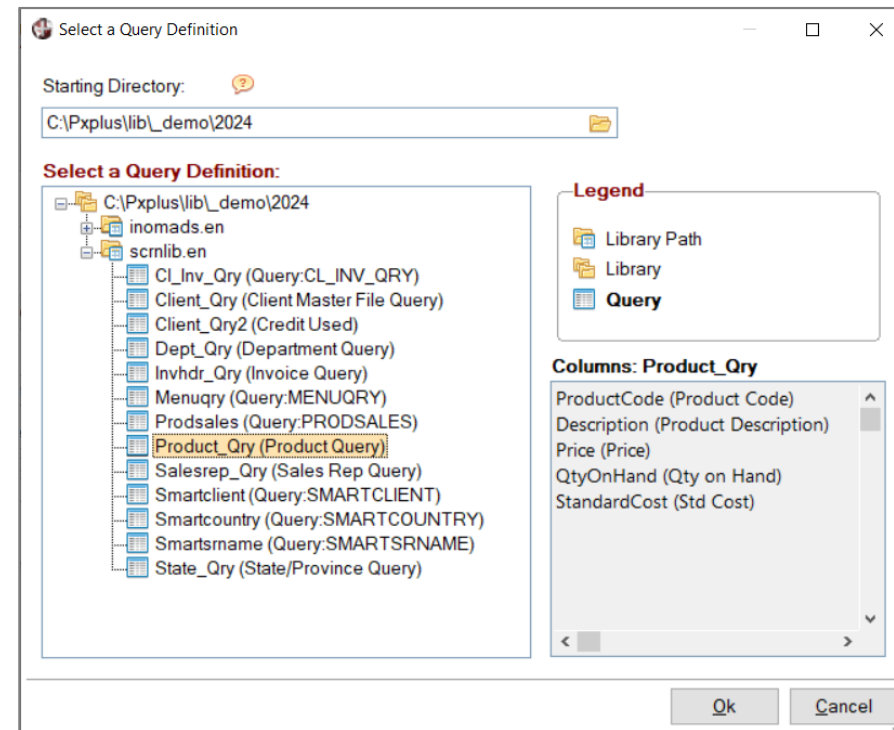
Select the query by identifying the library and query name or by clicking the *Query Lookup* button.



# REPORT WRITER - NEW INPUT SOURCE

## New Input Source

- *Query Lookup* – Select a Query Definition
  - Lists queries that exist in the current directory level and lower



# REPORT WRITER - NEW INPUT SOURCE

## New Input Source

When selected, the query columns are listed in the Report Designer data pane for inclusion in the report layout

The screenshot displays the Microsoft Report Designer interface for a report named 'productlist.pvr'. The interface includes a menu bar with options like New, Open, Save, Report Wizard, Print, Cut, Copy, Paste, Find, Find Next, Row, Column, Insert, Delete, Join Cells, Font, Background, Align, Border width, Borders, and Set Condition (Line, Cell, Switch Cell). The left pane shows the 'System' tree with a selected query 'PRODUCT\_QRY:scmlib.en' and its columns: ProductCode (Product Code), Description (Product Description), Price (Price), QtyOnHand (Quantity on Hand), StandardCost (Standard Cost), and Group Functions. The main report area shows a layout with sections: Page Header, Detail 01, Report Summary, and Page Footer. The report content includes a title 'Product List', a table with columns 'Product Code', 'Description', 'Price', and 'Std Cost', and a summary row 'Total number of products: #,##0'.

A photograph of a stone bridge structure over water, with a red banner overlaid in the center containing the text 'PARAMETER SPECIFICATIONS'. The bridge is made of large, rectangular stone blocks and has a decorative railing on top. The water is greenish and reflects the sky. In the foreground, there are black metal posts connected by chains, likely a railing or barrier. The background shows bare tree branches and a clear sky.

# PARAMETER SPECIFICATIONS

# PARAMETER SPECIFICATIONS

## Parameters

- Values that are supplied by the user or application program when a report is generated.
  - E.g.
    - Generate data for a particular department to be specified by the user requesting the report.
    - Display transactions between a certain start and end date to be specified at run time.
- Can be displayed in the report, used in formulas, or used to set up selection criteria.

## Parameter Expression Support

- Enhanced to allow expressions for Maximum Length, Minimum and Maximum Values, Default Value and Format
  - Expression values preceded by '=', e.g. =DTE(0:"%Y%Mz%Dz")

Parameter Name	Class	Prompt / Description	Type	Maximum Length	Minimum Value	Maximum Value	Default Value	Format
StartDate		Start date	Text	8			=DTE(0:"%Y%Mz%Dz")	
EndDate		End date	Text	8			=DTE(0:"%Y%Mz%Dz")	
			Text					

## Parameters Using Dynamic Data Classes

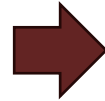
- Data class definitions have descriptions, input lengths, default values, formats and validation rules assigned to them, as well as drop box definitions, checkbox input and queries
- By assigning a *Data Class* to a parameter definition, these settings can be used to format input in the default parameter interface at run-time



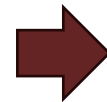
# PARAMETER SPECIFICATIONS

## Parameters Using Dynamic Data Classes

Class selection



Class info



Parameter Name	Class / Prompt / Description	Type	Maximum Length	Minimum Value	Maximum Value	Default Value	Format
SalesCode	from class*	Text	*from class*			*from class*	*from class*
		Text					

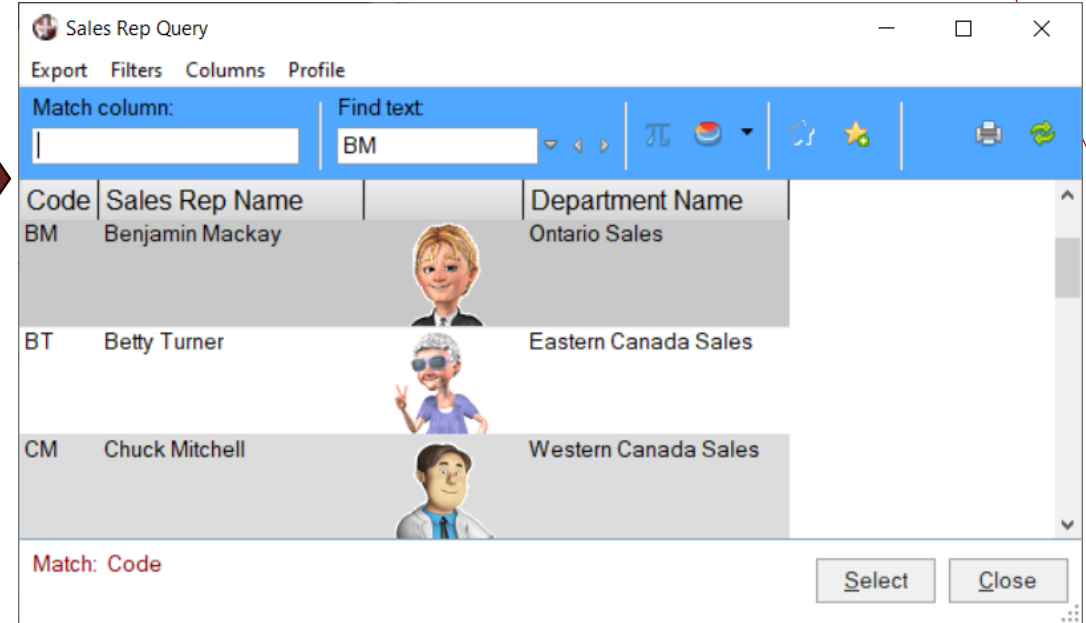
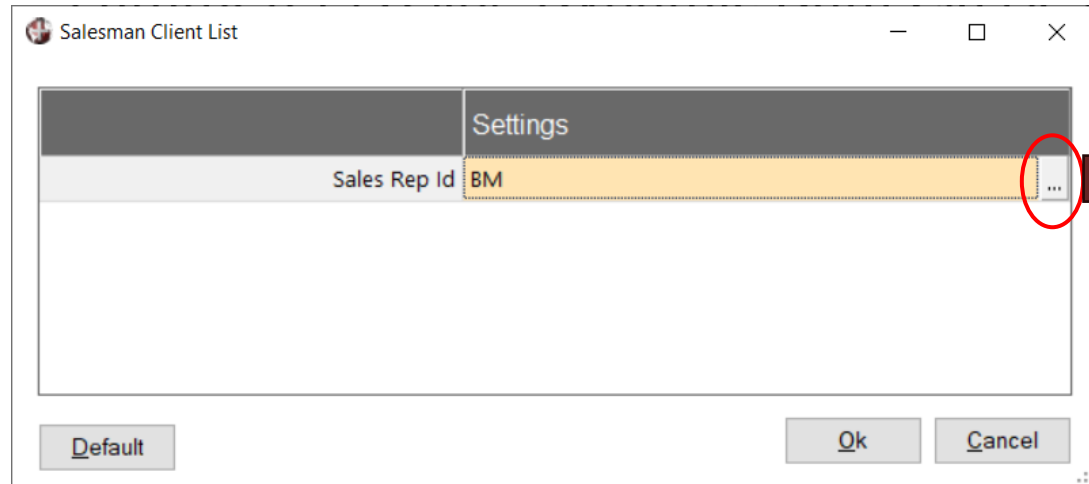
**Data Class Information** Ignore class validation

Settings	
Class Name - Description (Control Type)	SALESREP - Sales Rep Id (Input Field)
Length	3
Query	SALESREP_QRY,scrnlib.en
Validator	prog/Validator;Validate_Salesrep

Ok Cancel

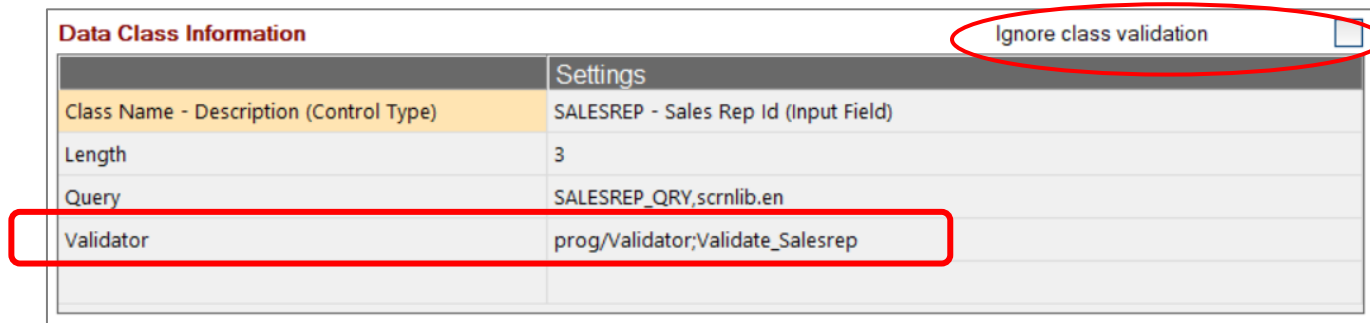
# PARAMETER SPECIFICATIONS

## Parameters Using Dynamic Data Classes



## Parameters – Ignore Class Validation

- Some Data Classes have validation rules assigned
  - Validation rules require an exact match
  - Sometimes you don't want an exact match, such as when setting up ranges
- *Ignore class validation* option
  - Allows you to use the class for input formatting but not for validation



The screenshot shows a table titled "Data Class Information" with a sub-header "Settings". The table has two columns: "Class Name - Description (Control Type)" and "Settings". The "Ignore class validation" checkbox in the top right corner is circled in red. The "Validator" row is also circled in red.

Data Class Information		Ignore class validation <input type="checkbox"/>
		Settings
Class Name - Description (Control Type)	SALESREP - Sales Rep Id (Input Field)	
Length	3	
Query	SALESREP_QRY,scrnlib.en	
Validator	prog/Validator;Validate_Salesrep	



# REPORT DESIGNER ENHANCEMENTS



- [Text Alignment Made Easier](#)

Before



Now

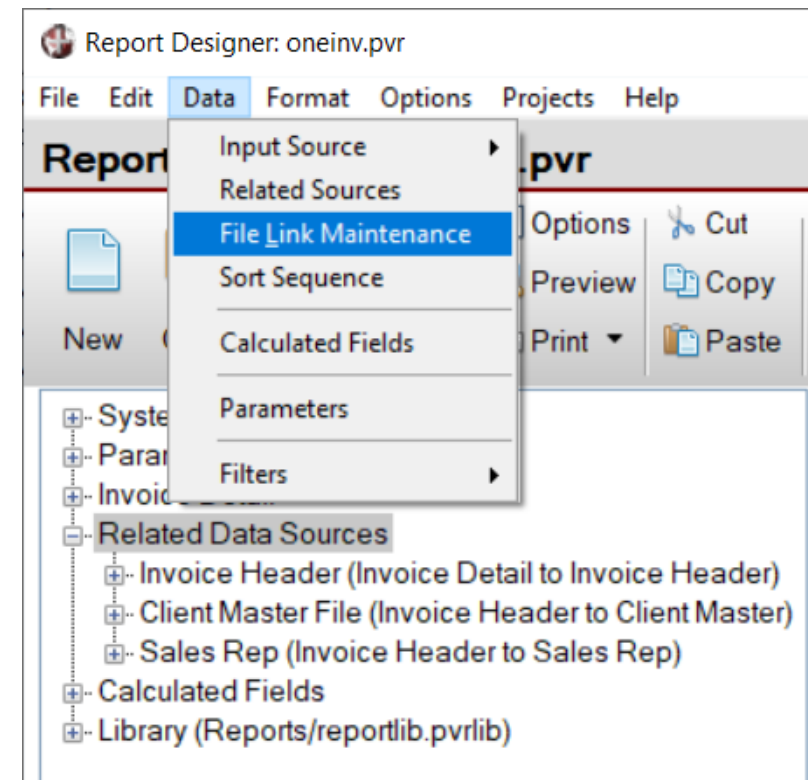


- More choices
- Shows alignment of current cell



## Links to File Link Maintenance

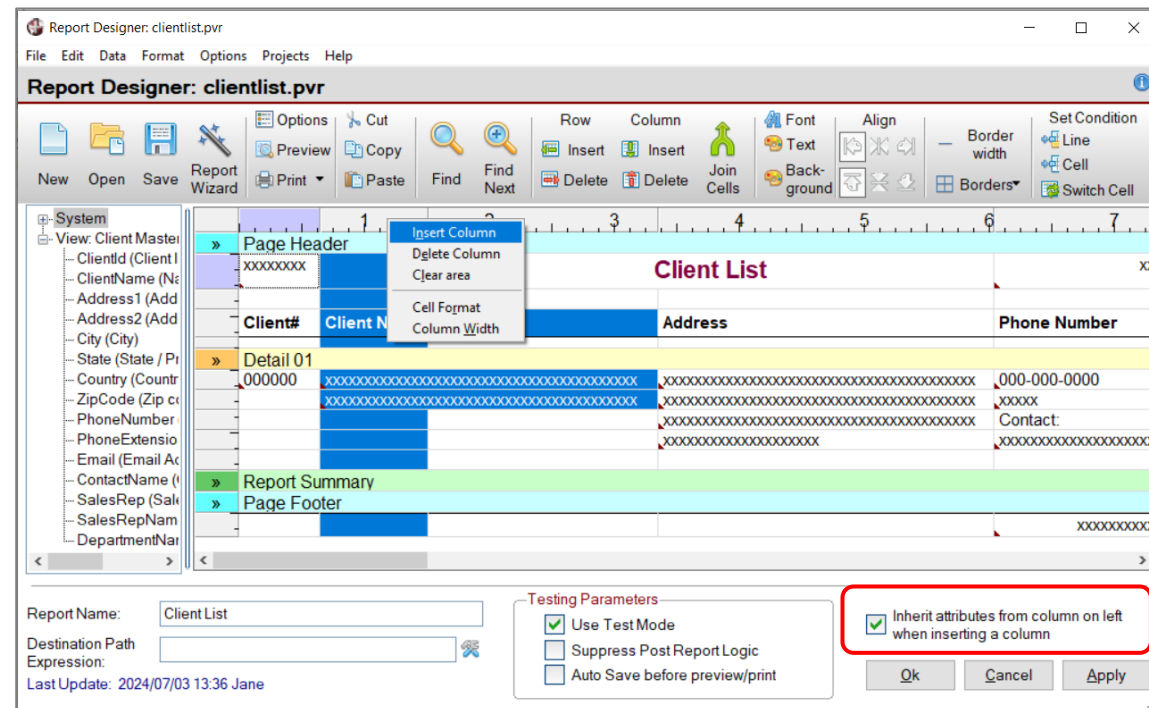
- File Link Maintenance utility lets you define and maintain cross-reference linkages that exist between data files
- Link to *File Link Maintenance* added to *Data* menu
- Don't have to exit the Report Designer to set up file links





## Inherit Cell Attributes from Left when Inserting Column

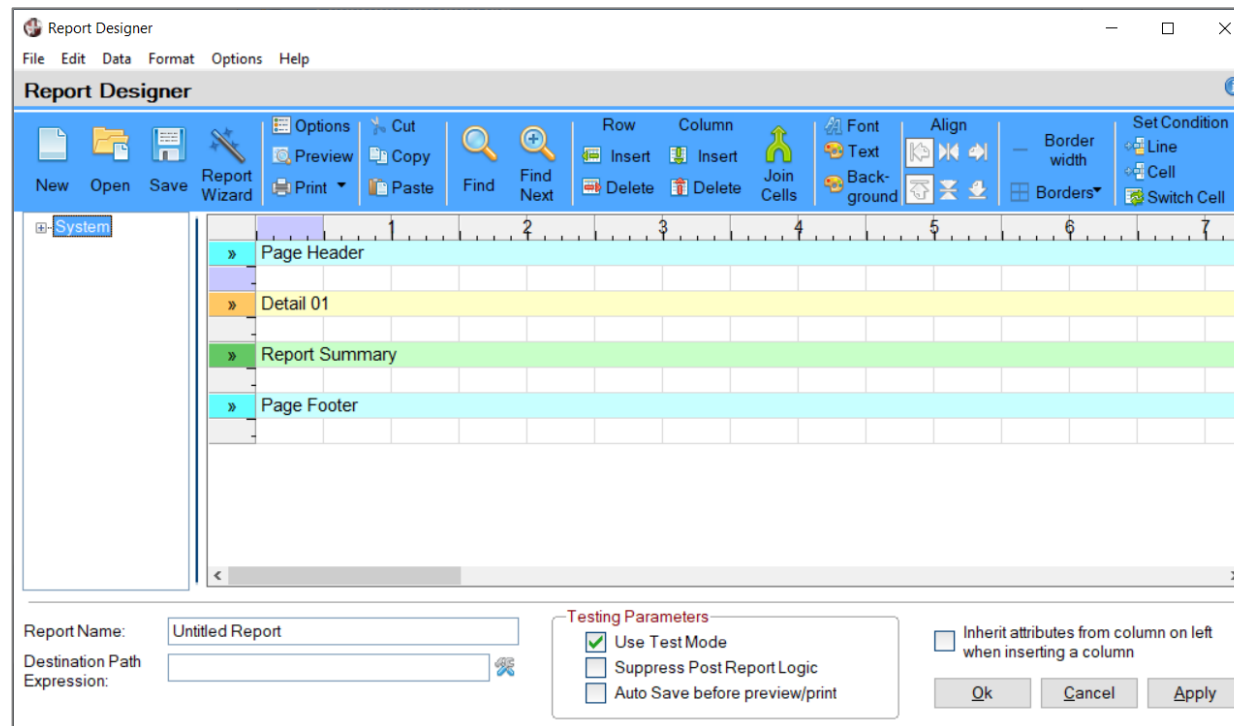
- Option to inherit attributes (font, alignment, word-wrap, colors and borders) from the current cell when inserting a column (like Excel)



# REPORT DESIGNER ENHANCEMENTS

## Theme Colors

- The Report Designer can be a user-facing feature, so will use the application theme colors, if set.







# NEW REPORT OPTIONS

# REPORT WRITER OPTIONS

2021

## Line Advancement

- Control how line advancement occurs
  - Normal Line Advancement 
  - Controlled Line Advancement 


10/07/2024		Sales YTD by Department				1
Dept	Department Name	RepCode	Sales Rep	Sales YTD	Dept. Total	
<b>EAST</b>	Eastern Canada Sales	AN	Anastasia Nelson	\$75,583.54		
		BT	Betty Turner	\$72,536.49	\$148,120.03	
<b>LRGE</b>	Large Account Sales	OB	Olivia Blackwood	\$40,183.01	\$40,183.01	
<b>ONT</b>	Ontario Sales	BM	Benjamin Mackay	\$97,223.07		
		DK	Donna Kerr	\$98,494.33		
		HK	Hank Kane	\$120,618.39	\$316,335.79	
<b>QUE</b>	Quebec Sales	GT	Gordon Taylor	\$85,778.96		
		RL	Roberta Lee	\$49,032.08	\$134,811.04	
<b>WEST</b>	Western Canada Sales	CM	Chuck Mitchell	\$175,886.34		
		PG	Paul Gonsalvez	\$167,909.02	\$343,795.36	
<b>Company Total</b>					\$983,245.23	

10/07/2024		Sales YTD by Department		1
<b>EAST Eastern Canada Sales</b>				
RepCode	Sales Rep			Sales YTD
AN	Ana			\$75,583.54
BT	Bett			\$72,536.49
<b>Departmental Total</b>				\$148,120.03
<b>LRGE Large Account Sales</b>				
RepCode	Sales Rep			Sales YTD
OB	Olivi			\$40,183.01
<b>Departmental Total</b>				\$40,183.01
<b>ONT Ontario Sales</b>				
RepCode	Sales Rep			Sales YTD
BM	Benj			\$97,223.07
DK	Don			\$98,494.33
HK	Han			\$120,618.39
<b>Departmental Total</b>				\$316,335.79
<b>QUE Quebec Sales</b>				
RepCode	Sales Rep			Sales YTD
GT	Gor			\$85,778.96
RL	Rob			\$49,032.08
<b>Departmental Total</b>				\$134,811.04
<b>WEST Western Canada Sales</b>				
RepCode	Sales Rep			Sales YTD
CM	Chu			\$175,886.34
PG	Paul			\$167,909.02
<b>Departmental Total</b>				\$343,795.36
<b>Company Total</b>				\$983,245.23

# REPORT WRITER OPTIONS

## Line Advancement Options

- Normal – Regular line advancement
- Overlay Next Line – Write line, do *not* advance vertical positioning, write next line
- Overlay Previous Line – Write line, advance vertical positioning; subtract vertical positioning and write next line



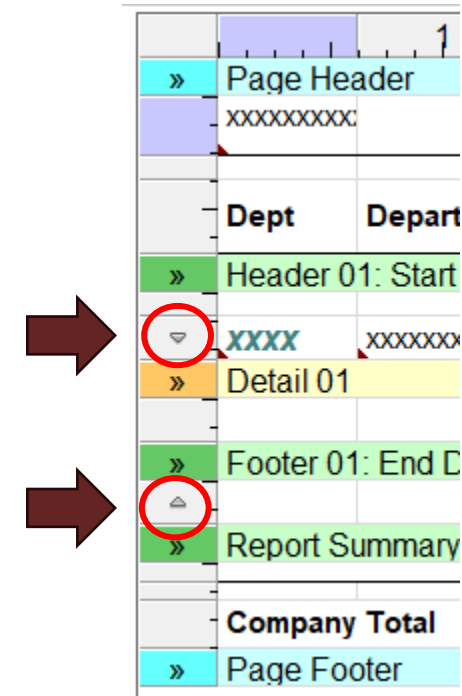
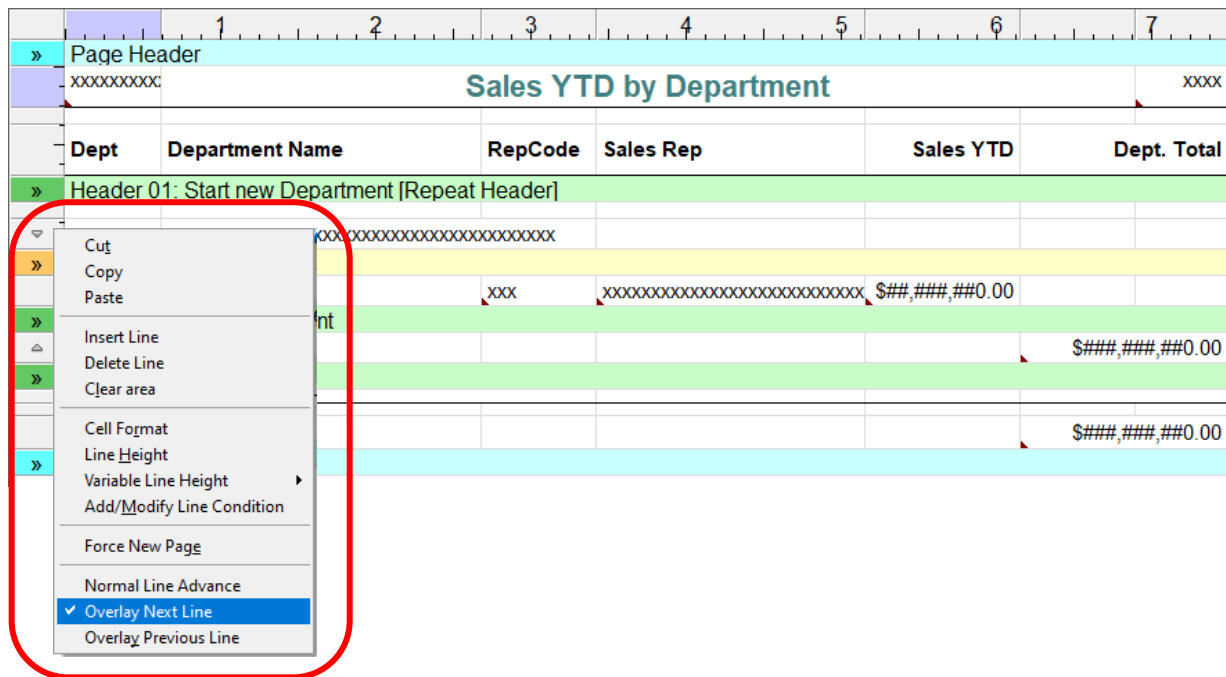
	1	2	3	4	5	6	7
» Page Header	Sales YTD by Department						
xxxxxxx							xxxx
Dept	Department Name	RepCode	Sales Rep		Sales YTD		Dept. Total
» Header 01: Start new Department [Repeat Header]							
▼ xxx	xx						
» Detail 01							
		xxx	xx		###,###,##0.00		
» Footer 01: End Department							\$###,###,##0.00
» Report Summary							
Company Total							\$###,###,##0.00
» Page Footer							



# REPORT WRITER OPTIONS

## Setting Line Advancement Options

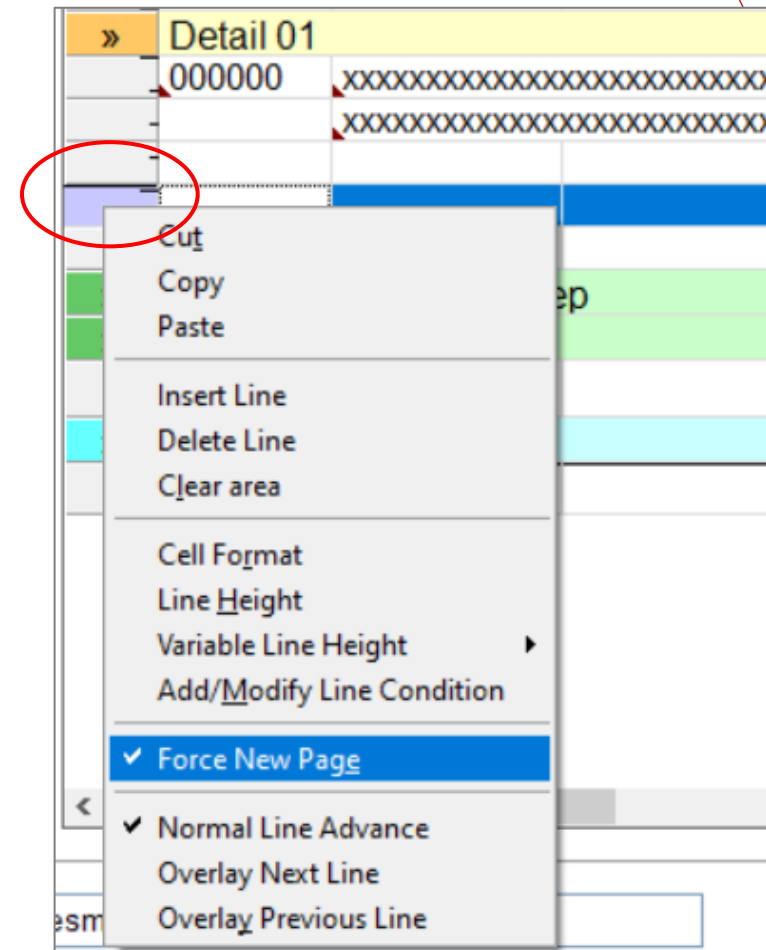
- Set from popup menu by right-clicking on row header column



- Ticks indicate Next/Previous selections

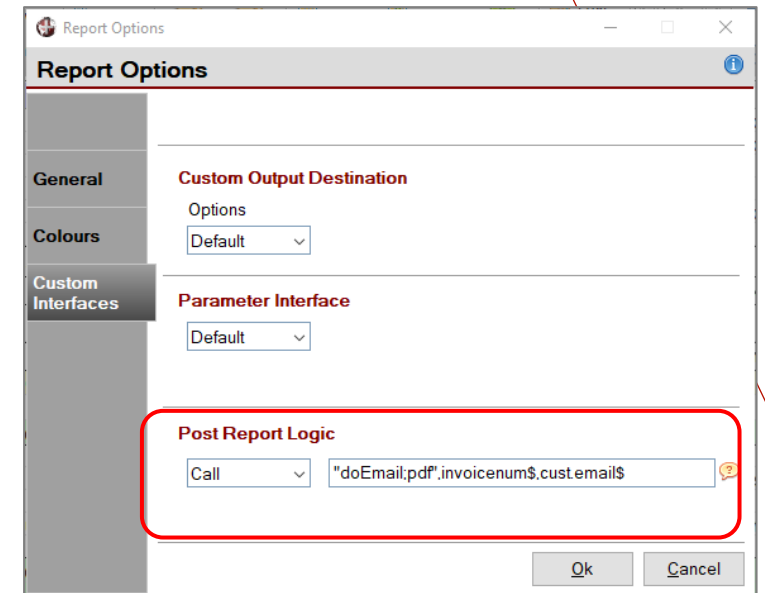
## Force New Page

- Insert form feeds at specific points in the report layout
  - Could always specify new pages for report and group headers and footers
  - Now you can force a new page within a Detail line group
- Set from row header column popup
  - Marked by line indicating new page



## Post-Report Logic

- Specify logic to execute when a report is complete
  - E.g. mail PDF files to a client's email account
- Options:
  - Call – Program to call and optional arguments
  - Execute – PxPlus statement to execute
  - Method – Method in user-defined Logic Object Interface + arguments



## Suppress Post Report Logic

- Testing Parameter on the Report Designer
  - Suppresses the execution of *Post-Report Logic* while testing

Testing Parameters

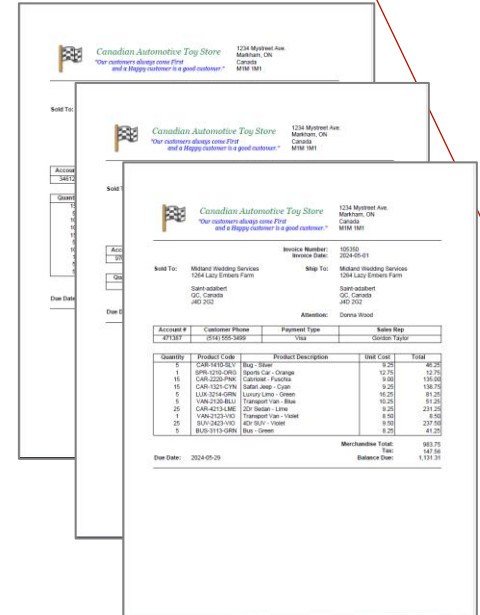
Use Test Mode

Suppress Post Report Logic

Auto Save before preview/print

## Multiple Report Generation

- E.g. Printing invoices, customer statements, etc.
- Previously...
  - Generate multiple reports to a printer
  - Generate multiple concatenated reports to a single file
  - Write program code to execute single reports multiple times
    - Only this last option lends itself to doing *Post-Report Logic*





# REPORT WRITER OPTIONS

## Multiple Report Generation

- Now...
  - One call generates multiple reports to separate physical files
    - Post-Report logic executed for each report
  - You need only:
    - Supply a [Destination Path Expression](#) to evaluate for a unique name for each file, e.g. `_DateYYYYMMDD$+ClientID$[+”.pdf”]`

Destination Path  
Expression:



- Set a *Group Header* option to generate multiple individual reports

# REPORT WRITER OPTIONS

## Multiple Report Generation

- Dependent on report grouping
  - E.g. When the Invoice number or Client code changes
  - [Group Header Option](#) - When group changes:
    - *Continue with in-line placement*
    - *Start new page* – Starts a new page for each new group
    - *Start new report* – Creates a separate individual report for the group, including report summary, header and footer sections

Group Definition

Item to be grouped: ?

(Grouped items may have their own header and/or footer, with summary lines, totals, counts, etc.)

Group 02: InvoiceNumber (Break when InvoiceNumber changes)

Group Header Options

When group changes:  
Start new report

Group Footer Options

Lock group footer to bottom of page

Reset page number to one (1)

Repeat group header on each new page

Ok Cancel



# DYNAMIC RUN-TIME FILTERS

# DYNAMIC RUN-TIME FILTERS

## Static Filters

- Previously...
  - Set specific filters and parameters within the report definition
  - Filter values entered as parameters at run-time
  - E.g. Client list for a specific salesman
  - One-use report

### Report Parameters

Parameter Name	Class	Prompt / Description	Type	Maximum Length	Minimum Value	Maximum Value	Default Value
SalesCode		Sales Rep Code	Text	3			
			Text				

Define Static Filters

Set #1 of 1 Accept data if all conditions in this set are met

Element	Condition	Case Sensitive	Value 1	Value 2
ZipCode (Zip code/Postal Code)	None	<input type="checkbox"/> Yes		
PhoneNumber (Phone Number)	None	<input type="checkbox"/> Yes		
PhoneExtension (Phone Extension)	None	<input type="checkbox"/> Yes		
Email (Email Address)	None	<input type="checkbox"/> Yes		
ContactName (Contact Name)	None	<input type="checkbox"/> Yes		
SalesRep (Sales Rep Id)	Equal to <Value1>	<input checked="" type="checkbox"/> Yes	SalesCode\$	
SalesRepName (Name)	None	<input type="checkbox"/> Yes		

Salesman Client List

Settings

Sales Rep Code AN

## Dynamic Filters Defined by User at Run-Time

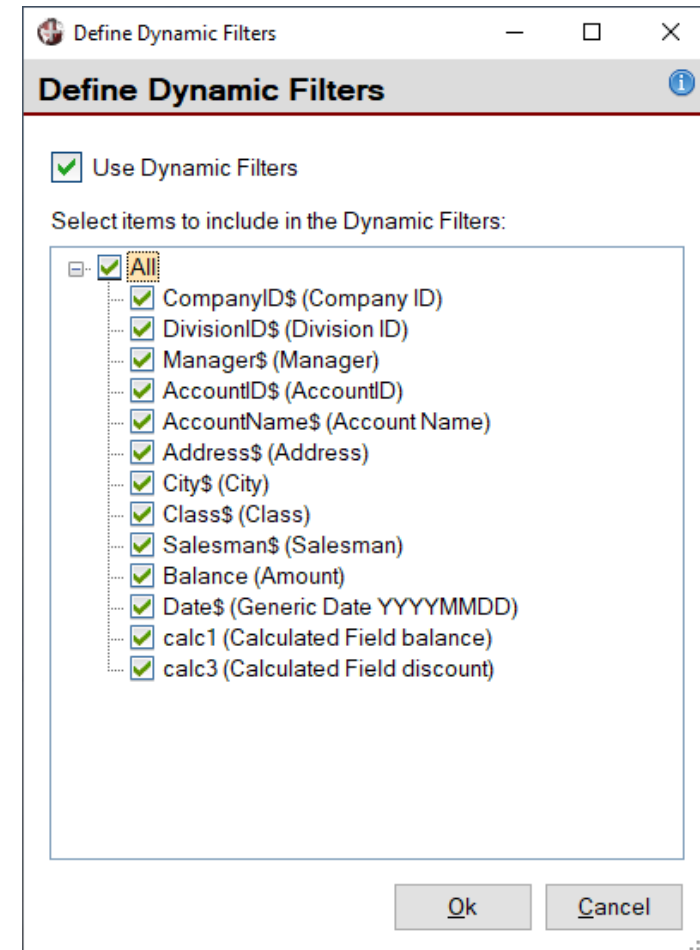
- Now...
  - The user can define their own filters at run-time
  - Results in *flexible multi-use* reports
    - E.g. Client list for a salesman, contact person, region, etc.
    - Can include/exclude records based on multiple conditions



# DYNAMIC RUN-TIME FILTERS

## Setting up Dynamic Filters for a Report

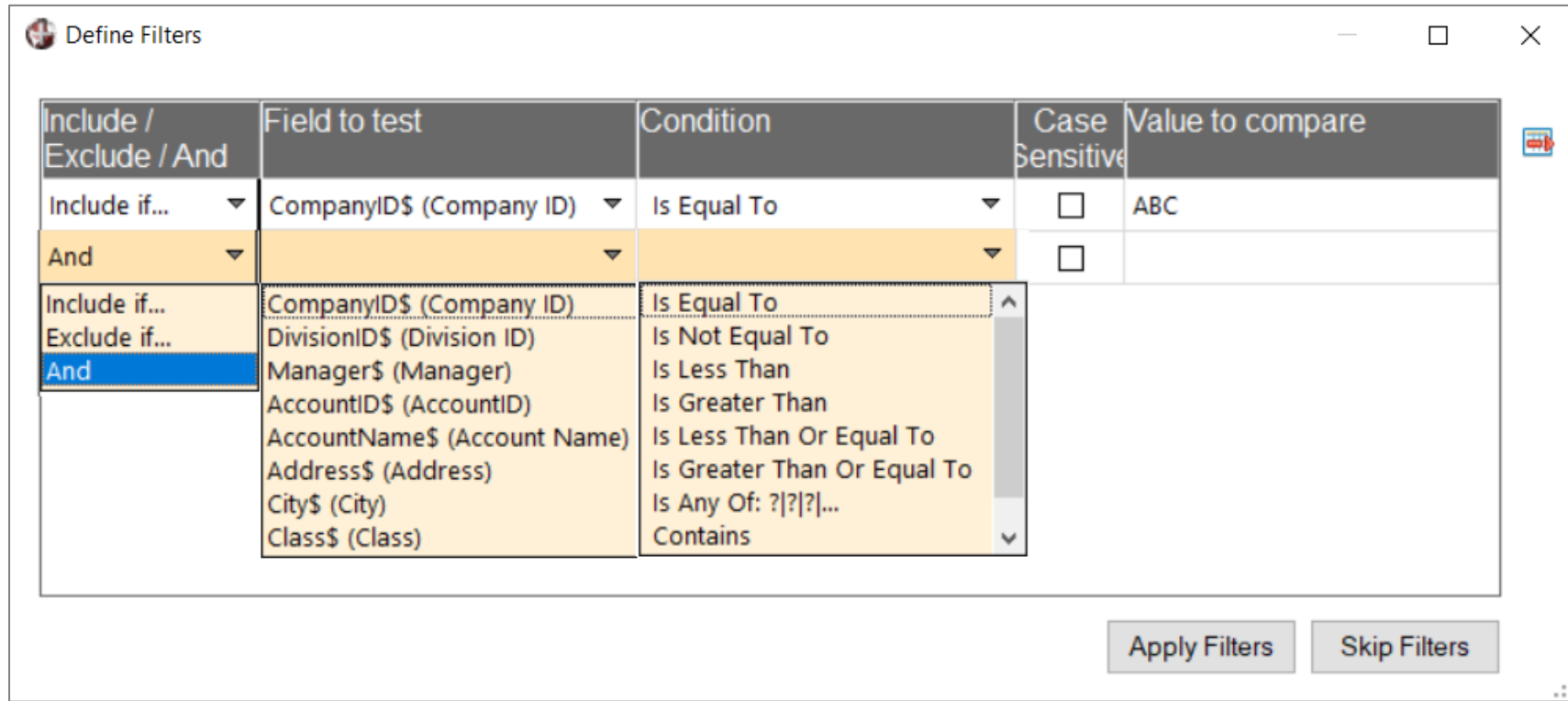
- *Data > Filters > Dynamic Filters*
  - *Define Dynamic Filters*
    - *Use Dynamic Filters* option
    - *Select the items to include*



# DYNAMIC RUN-TIME FILTERS

## Filters Defined by User at Run-Time

- At run-time...



The screenshot shows a dialog box titled "Define Filters" with a table of filter rules. The table has five columns: "Include / Exclude / And", "Field to test", "Condition", "Case Sensitive", and "Value to compare". The first row is "Include if..." with "CompanyID\$ (Company ID)", "Is Equal To", and "ABC". The second row is "And". The third row is "Include if..." with "CompanyID\$ (Company ID)", "Is Equal To", and an empty value. A dropdown menu is open for the "Condition" column of the third row, showing options like "Is Not Equal To", "Is Less Than", "Is Greater Than", "Is Less Than Or Equal To", "Is Greater Than Or Equal To", "Is Any Of: ?|?|?...", and "Contains". The "And" option in the dropdown is highlighted. At the bottom right, there are "Apply Filters" and "Skip Filters" buttons.

Include / Exclude / And	Field to test	Condition	Case Sensitive	Value to compare
Include if...	CompanyID\$ (Company ID)	Is Equal To	<input type="checkbox"/>	ABC
And			<input type="checkbox"/>	
Include if...	CompanyID\$ (Company ID)	Is Equal To		
Exclude if...	DivisionID\$ (Division ID)	Is Not Equal To		
And	Manager\$ (Manager)	Is Less Than		
	AccountID\$ (AccountID)	Is Greater Than		
	AccountName\$ (Account Name)	Is Less Than Or Equal To		
	Address\$ (Address)	Is Greater Than Or Equal To		
	City\$ (City)	Is Any Of: ? ? ?...		
	Class\$ (Class)	Contains		

# DYNAMIC RUN-TIME FILTERS

## Filters Defined by User at Run-Time

Define Filters

Include / Exclude / And	Field to test	Condition	Case Sensitive	Value to compare
Include if...	Description\$ (Product Descrip	Contains	<input type="checkbox"/>	camper
And	Price (Price)	Is Less Than	<input type="checkbox"/>	10
And			<input type="checkbox"/>	

Apply Filter

15/07/2024

1

### Product List

Product Code	Description	Price	Std Cost
VAN-1120-LME	Camper Van - Lime	8.25	6.19
VAN-1122-PNK	Camper Van - Fuschia	8.50	6.38
VAN-1123-GRN	Camper Van - Green	8.00	6.00
VAN-1125-VIO	Camper Van - Violet	8.50	6.38

Total number of products: 4

---

Jane

Include if Description\$ contains 'camper' and Price<10

System *Dynamic Filter* variable available to include in your report

# OBJECT-ORIENTED PROGRAMMING

All of the features and options described in this presentation are supported in the Report Writer Object-Oriented interface.

```
! Change the output destination to HTML file
!
  rpt=new("**rpt/pvxreport");
  if rpt=0 \
    then end
!
  serial "myrpt.htm ",err=*next
  open purge (hfn,err=WrapUp)"myrpt.htm";
  prt=lfo
!
  if rpt'open("MyRptDef.pvr")=0 \
    then goto WrapUp ! open and init the report definition
  rpt'OutputHTML(prt) ! set the output channel
  if rpt'ParamCount(>0) \
    then rpt'AcceptParameters() ! get parameter values from user
  rpt'RunReport() ! generate the report
  rpt'close() ! close the report object
  close (prt)
!
  system_help "myrpt.htm"
!
WrapUp: \
  drop object rpt
end
```