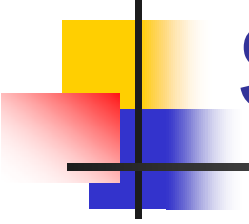


Creating Stored Processes

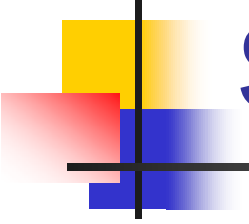
With Cascading, Dynamic Prompts

Harry Droogendyk
Stratia Consulting Inc.



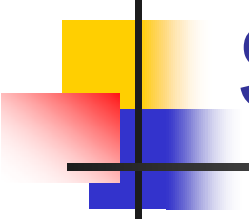
SAS Stored Process

- n SAS program
 - n hosted on a server
 - n registered in the metadata
- n advantageous
 - n centrally located code, server based
 - n flexibility and consistency
 - n multiple ways to invoke



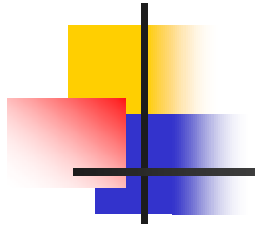
SAS Stored Process

- n invoked a number of ways
 - n Add-in for Microsoft Office - AMO
 - n Web Report Studio - WRS
 - n Information Delivery Portal – IDP
 - n STP web interface
 - n EG
- n runs on Workspace or Stored Process Server



SAS Stored Process

- n easily created
 - n EG project
 - n DI Studio
 - n .sas file
 - n SMC
- n output options
- n input parms



Input Parameters

- n every user wants something different
- n build a common process
 - n user selected parameters to customize
 - n define selection criteria
 - n specify output destination(s)
- n customized reporting

Input Parameters – 9.1.3

The screenshot shows a Windows-style dialog box titled "Add New Parameter". It has two tabs: "General" and "Data Type and Values", with the latter being the active tab. The "Data type:" dropdown is set to "String". The "Data value type:" dropdown is set to "A list of values". Below these, there is a "Value list:" section with a text area containing the prompt "< Click here to enter values >". To the right of the text area is an "Options:" section with several checkboxes: "Default value:" (unchecked), "Single value only" (selected), "Allow value not in the list" (unchecked), "Allow multiple values" (unchecked), "A value is required at runtime" (unchecked), "Prompt for value" (checked), "Allow macro substitution" (unchecked), and "Enclose values within quotes" (unchecked). At the bottom of the "Value list:" section are three small icons (a cross, an up arrow, and a down arrow) and a "Load Values" button. At the bottom of the dialog are four buttons: "Add and New", "Add and Close", "Cancel", and "Help".

Add New Parameter

General | **Data Type and Values**

Data type:
String

Data value type:
A list of values

Value list:
< Click here to enter values >

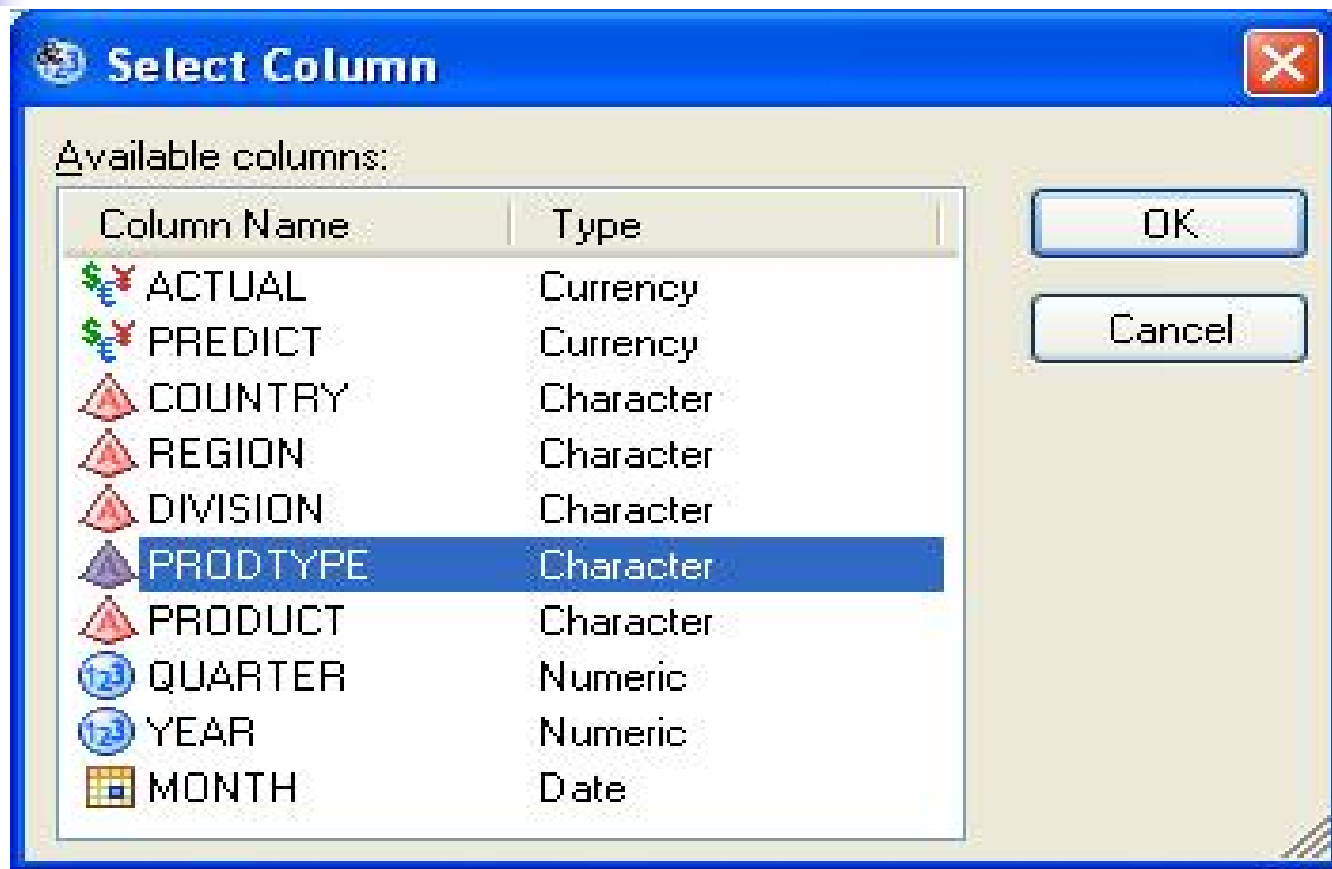
Options:

- ☐ Default value:
- ☒ Single value only
 - ☐ Allow value not in the list
- ☐ Allow multiple values
 - Separator:
- ☐ A value is required at runtime
- ☒ Prompt for value
- ☐ Allow macro substitution
- ☐ Enclose values within quotes

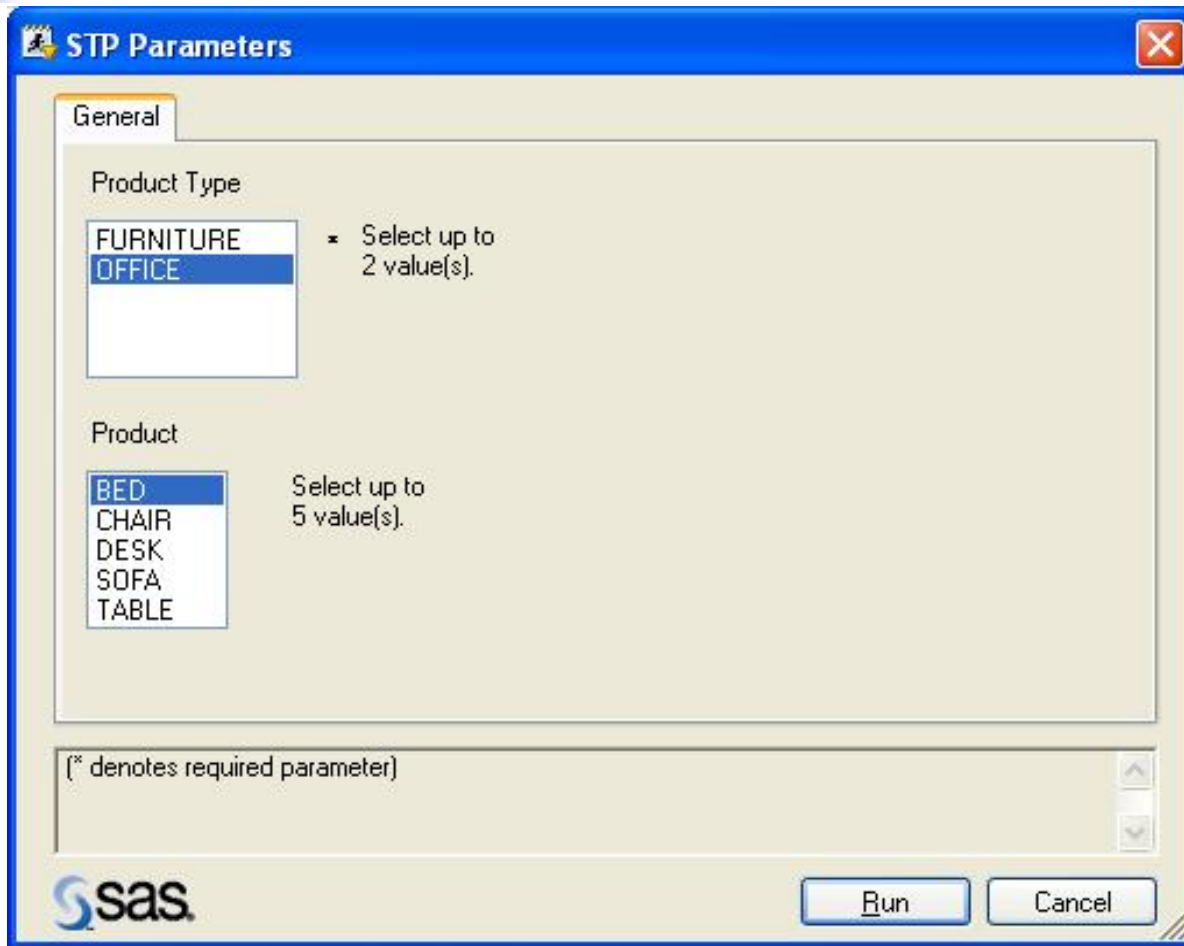
X ↑ ↓ Load Values

Add and New Add and Close Cancel Help

Input Parameters – 9.1.3



Input Parameters – 9.1.3



The screenshot shows a Windows-style dialog box titled "STP Parameters". It has a blue title bar with a close button (X) in the top right corner. The dialog is divided into a "General" tab and a large empty area. Under the "General" tab, there are two sections: "Product Type" and "Product".

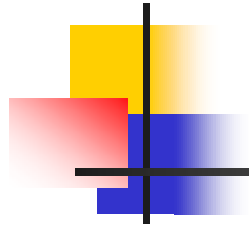
Product Type

Below the label is a list box containing "FURNITURE" and "OFFICE", with "OFFICE" selected. To the right of the list box is a note: "x Select up to 2 value(s).".

Product

Below the label is a list box containing "BED", "CHAIR", "DESK", "SOFA", and "TABLE", with "BED" selected. To the right of the list box is a note: "Select up to 5 value(s).".

At the bottom of the dialog, there is a text area containing the note "(* denotes required parameter)". Below the text area are two buttons: "Run" and "Cancel". The SAS logo is visible in the bottom left corner.



Input Parameters – 9.1.3

- n static

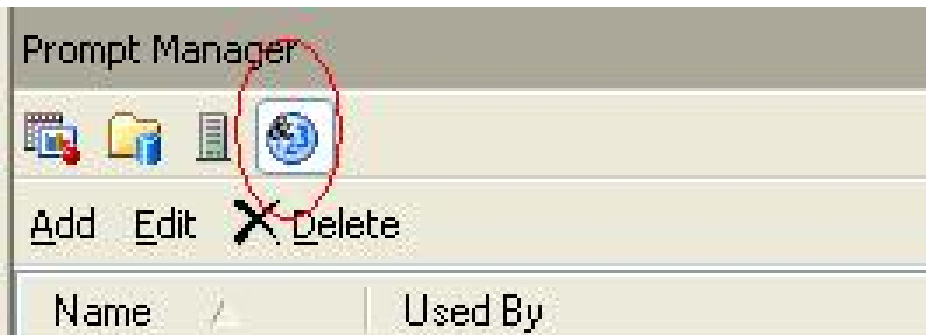
- n list of parm values built when STP defined
 - n now selling kitchen stuff ?

- n unlinked

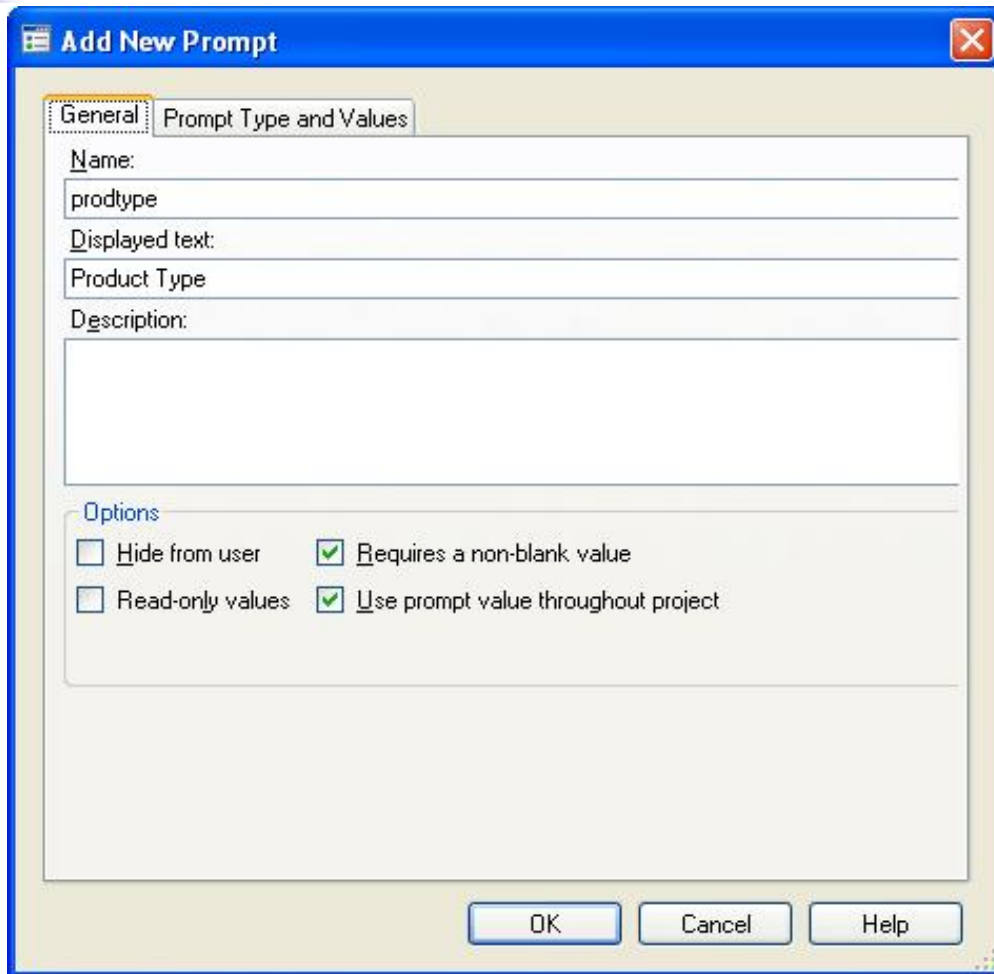
- n office / bed
 - n empty report
 - n ;-(

Define Parameters – 9.2

- n define prompts to the EG project



Define Parameters



The screenshot shows a Windows-style dialog box titled "Add New Prompt". It has two tabs: "General" (selected) and "Prompt Type and Values". The "General" tab contains the following fields and options:

- Name:** A text box containing "prodtype".
- Displayed text:** A text box containing "Product Type".
- Description:** A large, empty text area.
- Options:** A section containing four checkboxes:
 - ☐ Hide from user
 - ☒ Requires a non-blank value
 - ☐ Read-only values
 - ☒ Use prompt value throughout project

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Define Parameters

Add New Prompt

General Prompt Type and Values

Prompt type:
Text

Method for populating prompt:
User selects values from a dynamic list

Number of values:
Multiple values

Minimum value count: Maximum value count:

Minimum length: Maximum length:

Data source:
PRDSALE Browse...

Unformatted Values
Column:
PRODTYPE

Formatted (Displayed) Values
Column: Use 'Unformatted Values' column Format: Default format (\$CHAR10.) Select...

☐ Append formatted values with unformatted values

Include Special Values
☐ All possible values

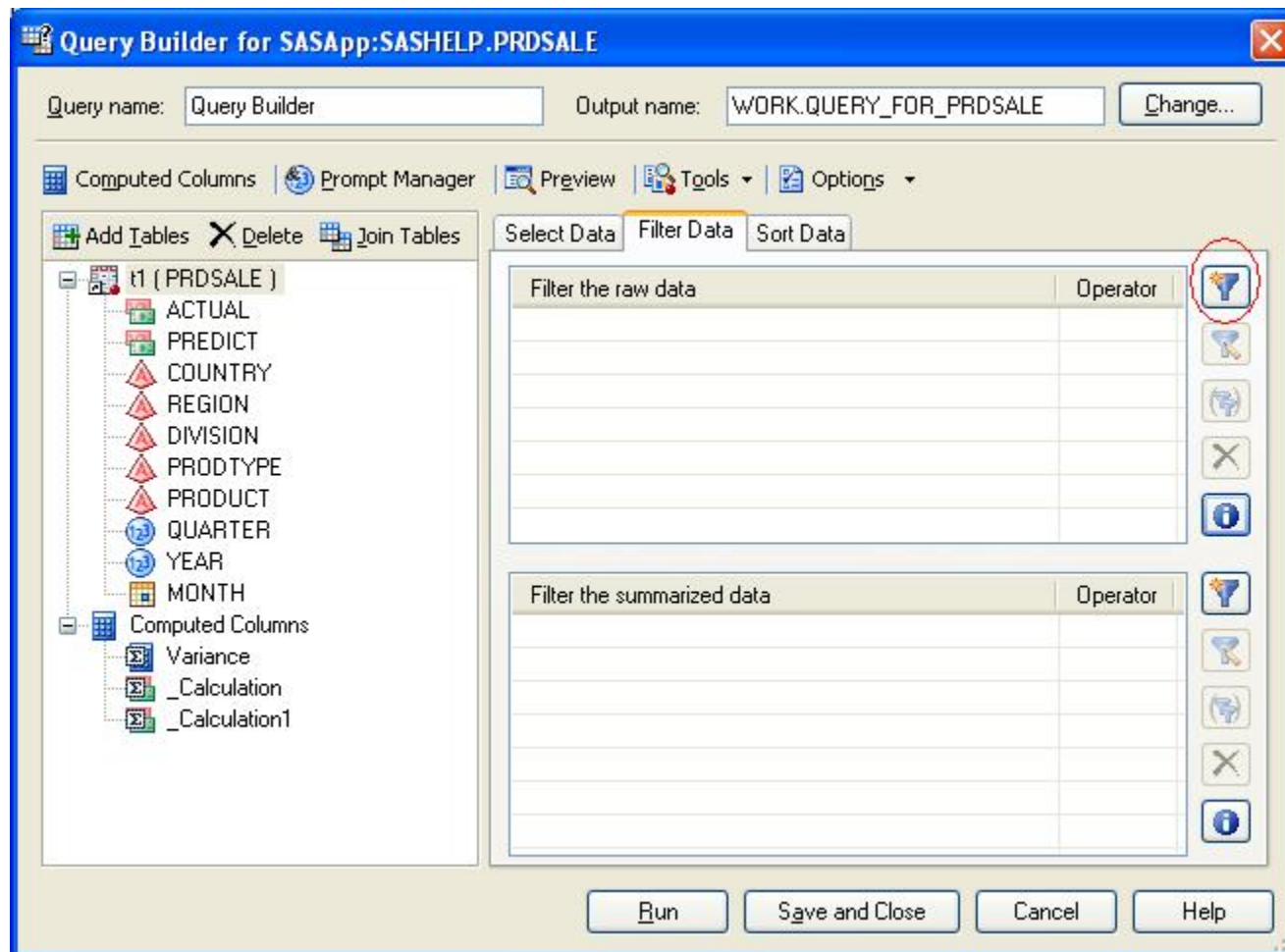
Sort order: Default values:
Default sort order (None) Select...

☐ Allow user to specify additional (unformatted) values

OK Cancel Help

- n many different prompt types
- n single, ranges, multiple
- n static, dynamic
- n optional, required

Use Parameters – 9.2



Use Parameters

New Filter ✕

3 of 4 Build a basic filter sas

Identifier:

Column Name:

Operator:

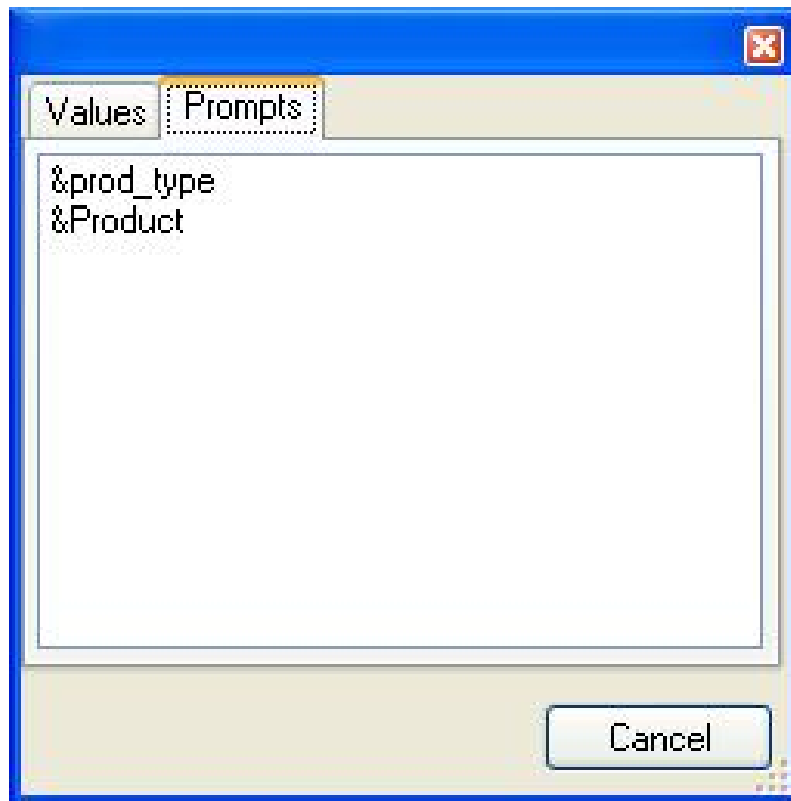
☐ Generate filter for a prompt value (only applies to prompt types)

Values:

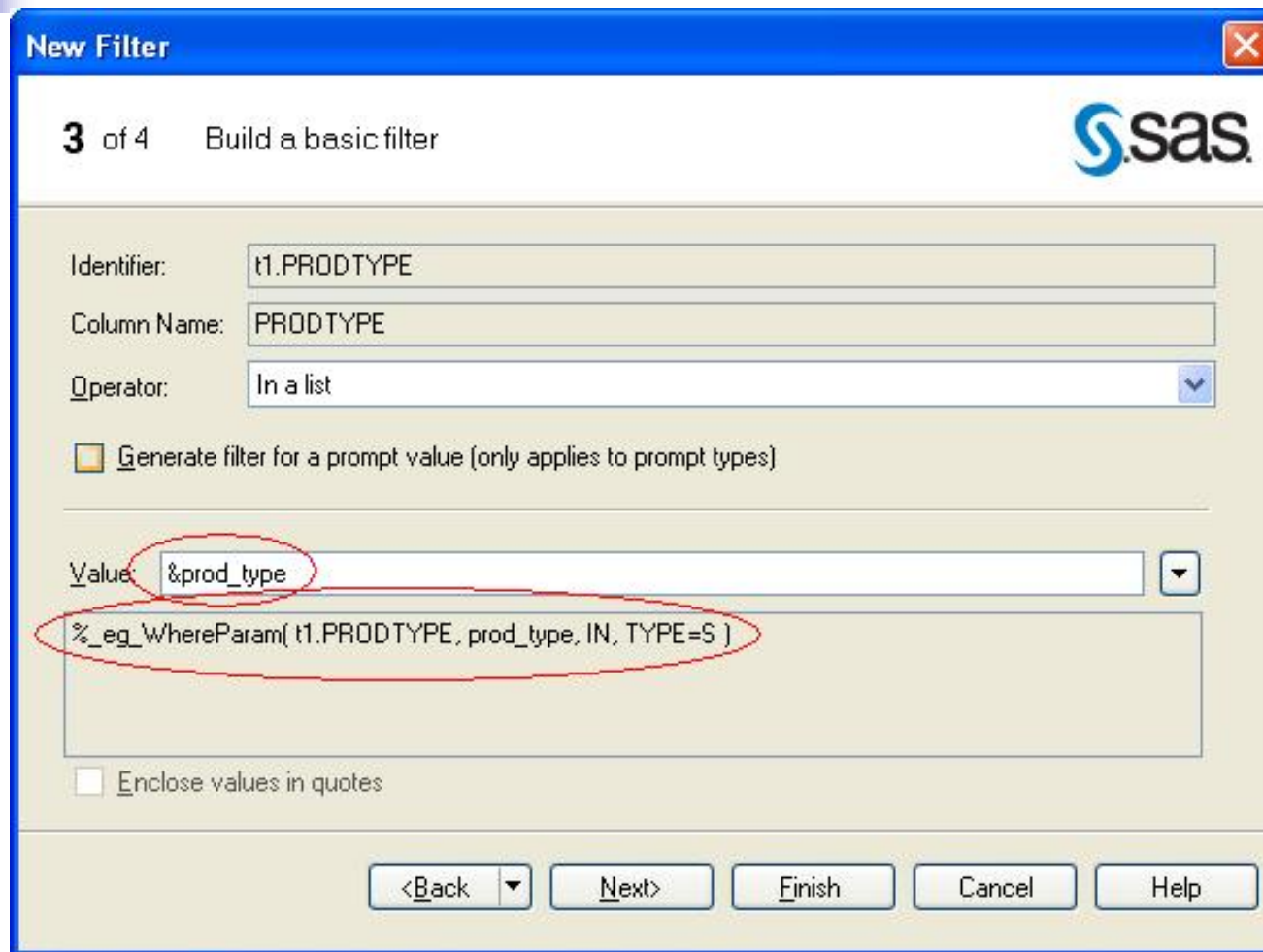
t1.PRODTYPE IN (

☐ Enclose values in quotes

Use Parameters



Use Parameters



The image shows a SAS 'New Filter' dialog box, step 3 of 4 in the 'Build a basic filter' wizard. The dialog is titled 'New Filter' and features the SAS logo. It contains several input fields: 'Identifier' with the value 't1.PRODTYPE', 'Column Name' with 'PRODTYPE', and 'Operator' with a dropdown menu set to 'In a list'. There is a checkbox for 'Generate filter for a prompt value (only applies to prompt types)' which is currently unchecked. Below these fields is a 'Value' section with a text input field containing '&prod_type' and a dropdown arrow. Below the text field is a larger text area containing the SAS macro call '%_eg_WhereParam(t1.PRODTYPE, prod_type, IN, TYPE=S)'. At the bottom of the dialog is a checkbox for 'Enclose values in quotes' which is unchecked. The bottom of the dialog has five buttons: '<Back', 'Next>', 'Finish', 'Cancel', and 'Help'.

New Filter

3 of 4 Build a basic filter

Identifier: t1.PRODTYPE

Column Name: PRODTYPE

Operator: In a list

☐ Generate filter for a prompt value (only applies to prompt types)

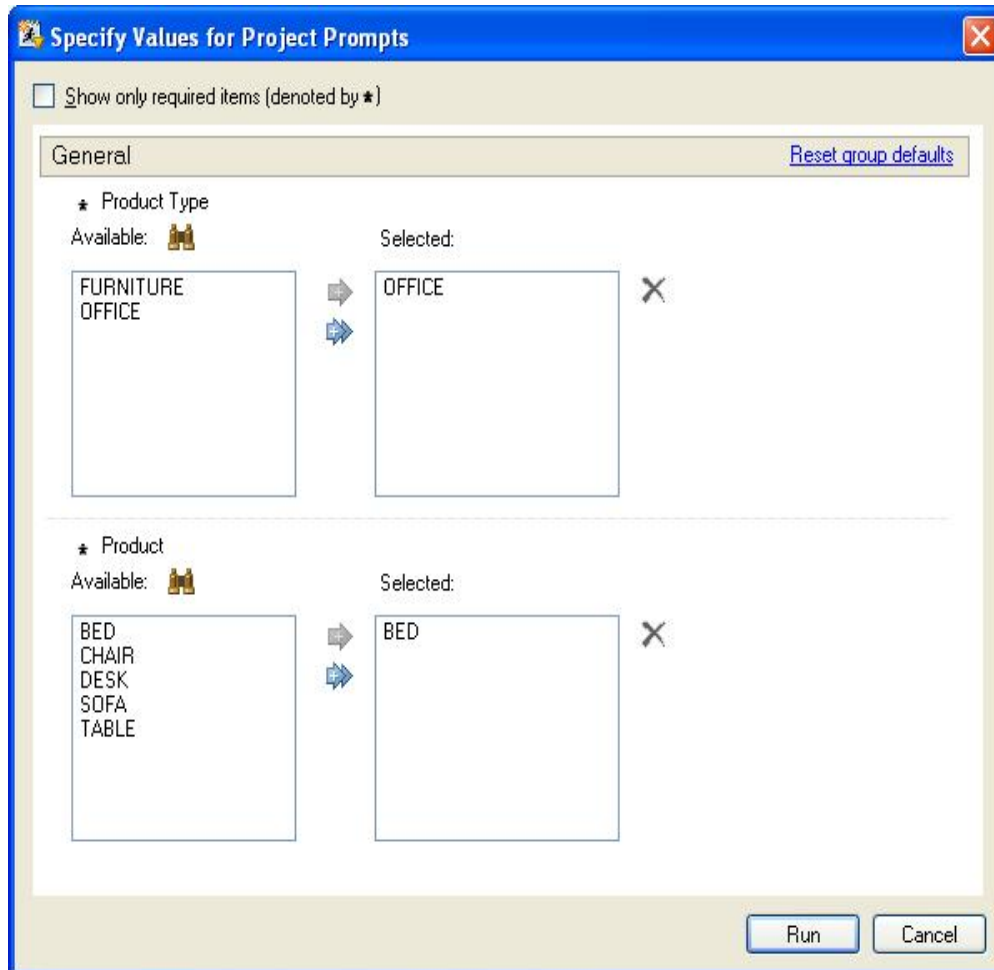
Value: &prod_type

%_eg_WhereParam(t1.PRODTYPE, prod_type, IN, TYPE=S)

☐ Enclose values in quotes

<Back Next> Finish Cancel Help

Use Parameters

The image shows a software dialog box titled "Specify Values for Project Prompts". It has a blue title bar with a close button. Below the title bar is a checkbox labeled "Show only required items (denoted by ★)". The main area is divided into two sections: "General" and "Product". Each section has an "Available:" list on the left and a "Selected:" list on the right. In the "General" section, "FURNITURE" and "OFFICE" are in the available list, and "OFFICE" is in the selected list. In the "Product" section, "BED", "CHAIR", "DESK", "SOFA", and "TABLE" are in the available list, and "BED" is in the selected list. Arrows indicate the movement of items between the lists. At the bottom right are "Run" and "Cancel" buttons.

Specify Values for Project Prompts

☐ Show only required items (denoted by ★)

General [Reset group defaults](#)

★ Product Type

Available:  Selected:

FURNITURE
OFFICE

OFFICE

★ Product

Available:  Selected:

BED
CHAIR
DESK
SOFA
TABLE

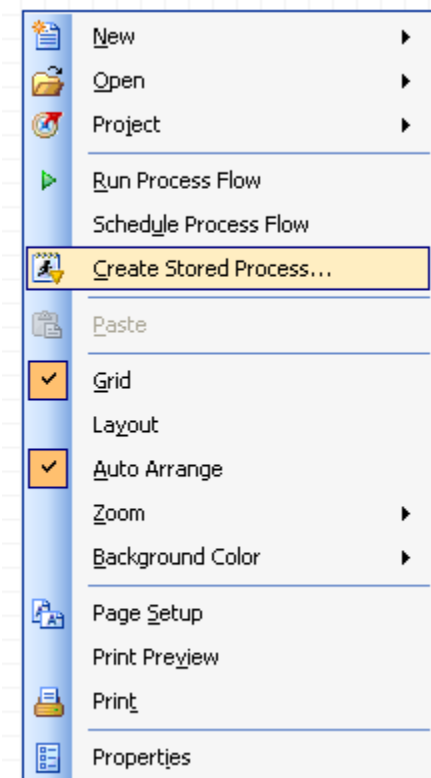
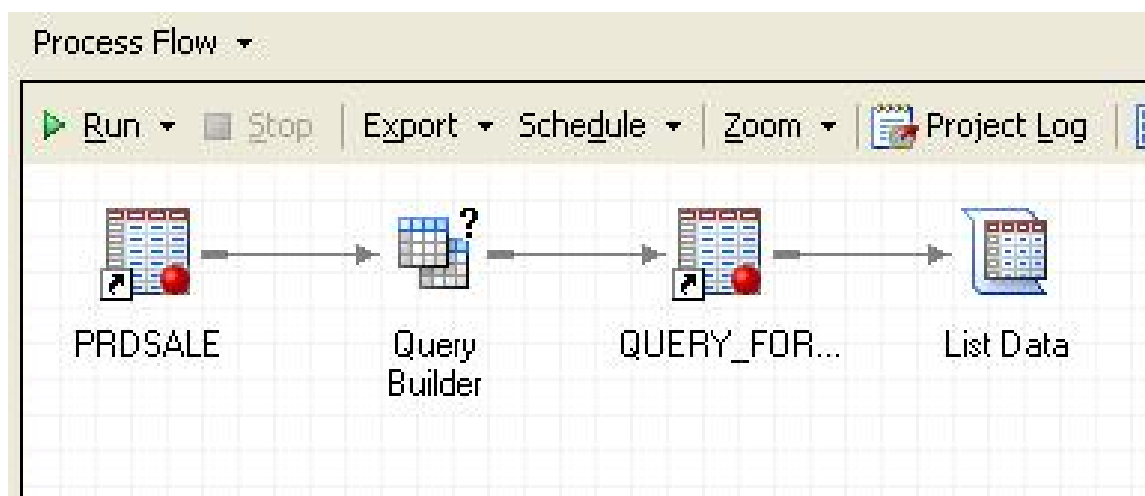
BED

Run Cancel

Cascading Prompts ?

- n EG 4.2 / 4.3
 - n allows *dynamic* prompts
 - n not *cascading* prompts
- n create a stored process

Skip



Create Stored Process



The image shows a screenshot of the 'Create New SAS Stored Process Wizard' dialog box. The window has a blue title bar with the text 'Create New SAS Stored Process Wizard' and a close button. Below the title bar, the text '1 of 7 Name and Description' is displayed on the left, and the SAS logo is on the right. The main area of the dialog is titled 'Save Stored Process as:' and contains three input fields: 'Name:', 'Location:', and 'Description:'. The 'Name:' field contains the text 'PrdSale STP'. The 'Location:' field contains the text '/Users/Harry/My Folder' and has a 'Browse...' button to its right. Below the 'Location:' field, there is a hint text '(Example: /BIP Tree/My Folder Name)'. The 'Description:' field is empty. The dialog box has a standard Windows-style border with a blue title bar and a light beige content area.

Create New SAS Stored Process Wizard

1 of 7 Name and Description

Save Stored Process as:

Name:
PrdSale STP

Location:
/Users/Harry/My Folder
(Example: /BIP Tree/My Folder Name)

Description:
|

Create Stored Process

Create New SAS Stored Process Wizard

2 of 7 SAS Code

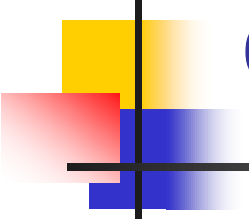


```
/* Build where clauses from stored process parameters */  
  
%macro _eg_WhereParam( COLUMN, PARM, OPERATOR, TYPE=S, MATCHALL  
  %local q1 q2;  
  %local isEmpty;  
  %local isEqual;  
  %let isEqual = ("%QUPCASE(&OPERATOR)" = "EQ" OR "%QUPCASE(&OPERATOR)" =  
  %let isNotEqual = ("%QUPCASE(&OPERATOR)" = "NE" OR "%QUPCASE(&OPERATOR)" =  
  %let isIn = ("%QUPCASE(&OPERATOR)" = "IN");  
  %let isNotIn = ("%QUPCASE(&OPERATOR)" = "NOT IN");  
  %local isString;  
  %let isString = (%QUPCASE(&TYPE) = S OR %QUPCASE(&TYPE) = s
```

Replace with code Include code for Clear code Reset code

More (F1)...

< Back Next > Finish Cancel



%_eg_WhereParam

n ranges

n *column* between *¶m_min* and *¶m_max*

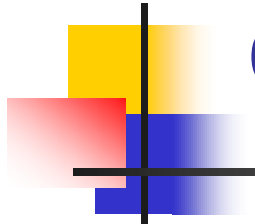
n special values

n date "&date_param"d

n datetime "&datetime_parm"dt

n in list

n *column* in (*¶m1*, *¶m2...* *¶mN*)



%_eg_WhereParam

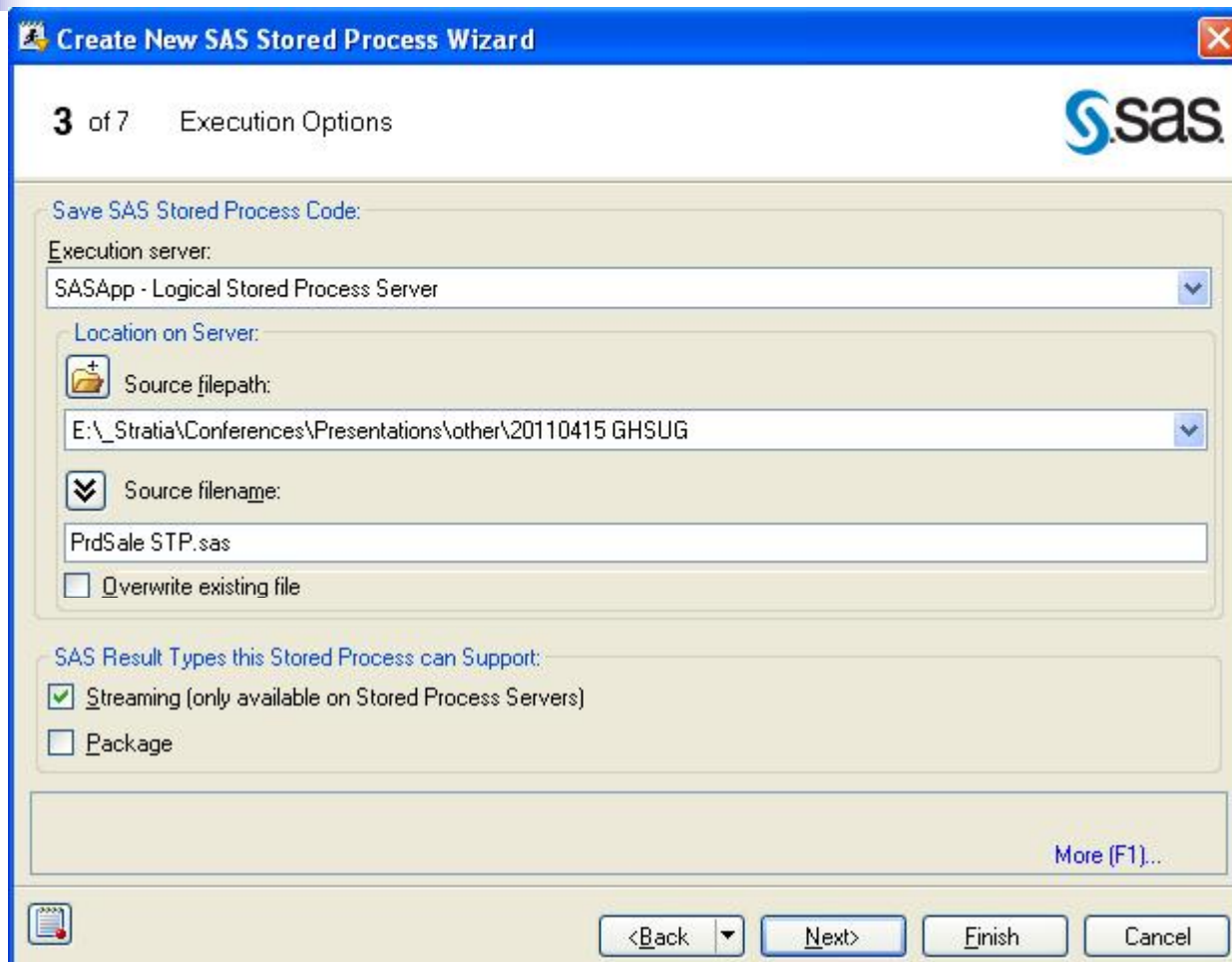
n in list

Skip

n *column* in (¶m1, ¶m2... ¶mN)

Items Selected	Macro Variables Created	Comment
0	param_count	value of zero
1	param_count, param1	param_count = 1
> 1	param_count, param0 , param1, param2 ... paramN	param_count = N param0 exists only when N > 1

Create Stored Process



The image shows a screenshot of the 'Create New SAS Stored Process Wizard' dialog box, specifically the 'Execution Options' step (3 of 7). The dialog has a blue title bar with the text 'Create New SAS Stored Process Wizard' and a close button. The main area is light beige and contains several sections. The 'Save SAS Stored Process Code:' section includes a label 'Execution server:' with a dropdown menu showing 'SASApp - Logical Stored Process Server'. Below this is a label 'Location on Server:' with a folder icon and a 'Source filepath:' dropdown menu showing 'E:_Stratia\Conferences\Presentations\other\20110415 GHSUG'. Underneath is a 'Source filename:' field with 'PrdSale STP.sas' and an 'Overwrite existing file' checkbox. The 'SAS Result Types this Stored Process can Support:' section has two checkboxes: 'Streaming (only available on Stored Process Servers)' which is checked, and 'Package' which is unchecked. At the bottom right of the main area is a 'More (F1)...' link. The bottom of the dialog features a navigation bar with a 'Back' button, a 'Next>' button, a 'Finish' button, and a 'Cancel' button.

Create New SAS Stored Process Wizard

3 of 7 Execution Options

Save SAS Stored Process Code:

Execution server:
SASApp - Logical Stored Process Server

Location on Server:

Source filepath:
E:_Stratia\Conferences\Presentations\other\20110415 GHSUG

Source filename:
PrdSale STP.sas

☐ Overwrite existing file

SAS Result Types this Stored Process can Support:

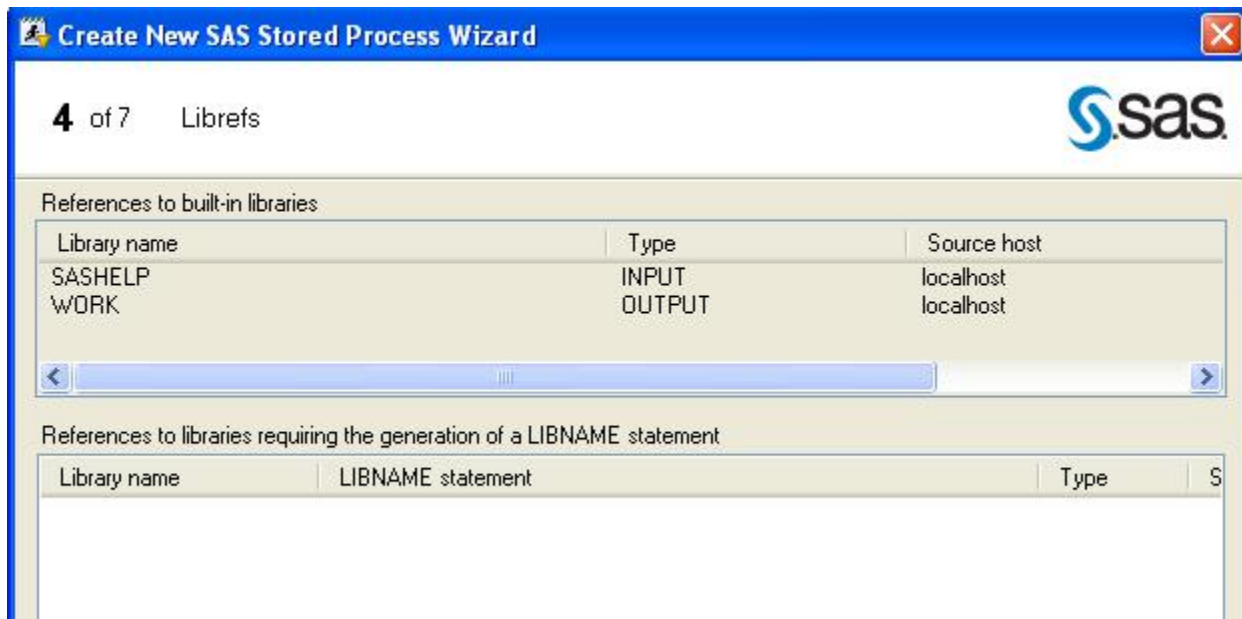
☒ Streaming (only available on Stored Process Servers)

☐ Package

More (F1)...

<Back Next> Finish Cancel

Create Stored Process



The screenshot shows the 'Create New SAS Stored Process Wizard' window, specifically the '4 of 7 Librefs' step. The window has a blue title bar and a SAS logo in the top right. The main content area is divided into two sections: 'References to built-in libraries' and 'References to libraries requiring the generation of a LIBNAME statement'. The first section contains a table with three columns: 'Library name', 'Type', and 'Source host'. It lists 'SASHELP' as an 'INPUT' type on 'localhost' and 'WORK' as an 'OUTPUT' type on 'localhost'. The second section contains a table with four columns: 'Library name', 'LIBNAME statement', 'Type', and 'S'. The 'S' column is partially visible.

Create New SAS Stored Process Wizard

4 of 7 Librefs

References to built-in libraries

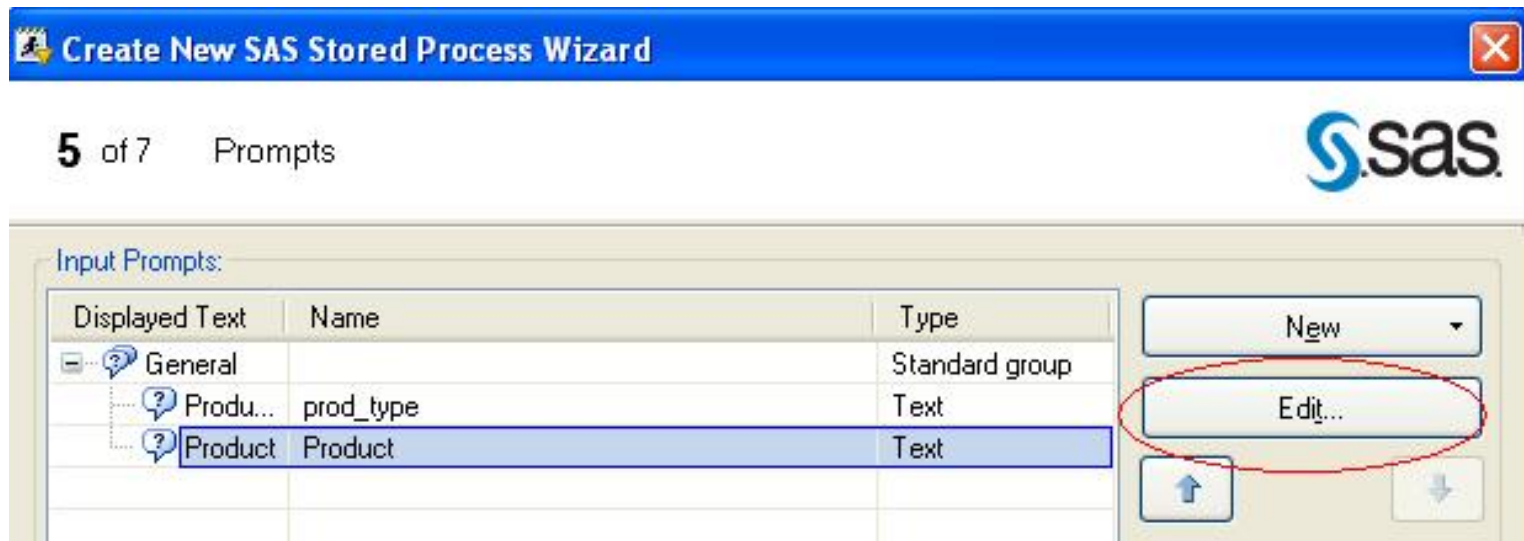
Library name	Type	Source host
SASHELP	INPUT	localhost
WORK	OUTPUT	localhost

References to libraries requiring the generation of a LIBNAME statement

Library name	LIBNAME statement	Type	S
--------------	-------------------	------	---

Create Stored Process

- n *cascading* prompts are available to stored processes



Create Stored Process

The screenshot shows the 'Edit Prompt' dialog box with the 'Dependencies' tab selected. The tab is circled in red. The dialog has three tabs: 'General', 'Prompt Type and Values', and 'Dependencies'. The 'Dependencies' tab contains a table with two columns: 'Prompt' and 'Description of Dependency'. The first row shows 'Product Type' as the prompt and 'PRDSALE.PRODTYPE Equal Value of "Product Type"' as the dependency. To the right of the table are 'Add' and 'Delete' buttons. Below the table is a 'Dependency' section with three fields: 'Column:' (set to 'PRODTYPE'), 'Operator:' (set to 'Equal'), and 'Value of:' (set to 'Product Type'). At the bottom, there is a section titled 'The following prompts depend on the value of this prompt:' with a table that currently shows 'No other prompts depend on this prompt'.

Prompt	Description of Dependency
Product Type	PRDSALE.PRODTYPE Equal Value of "Product Type"

Buttons: Add, Delete

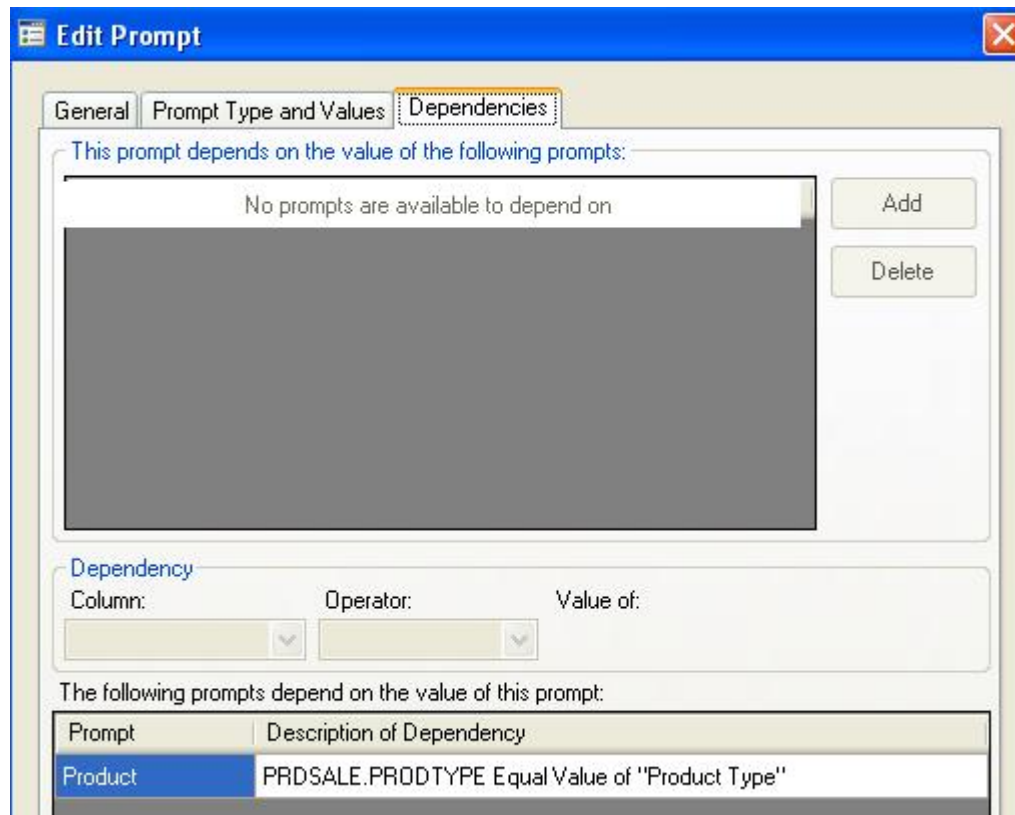
Dependency section:
Column: PRODTYPE Operator: Equal Value of: Product Type

The following prompts depend on the value of this prompt:

Prompt	Description of Dependency
No other prompts depend on this prompt	

- n additional tab
- n Product *depends on* Product Type

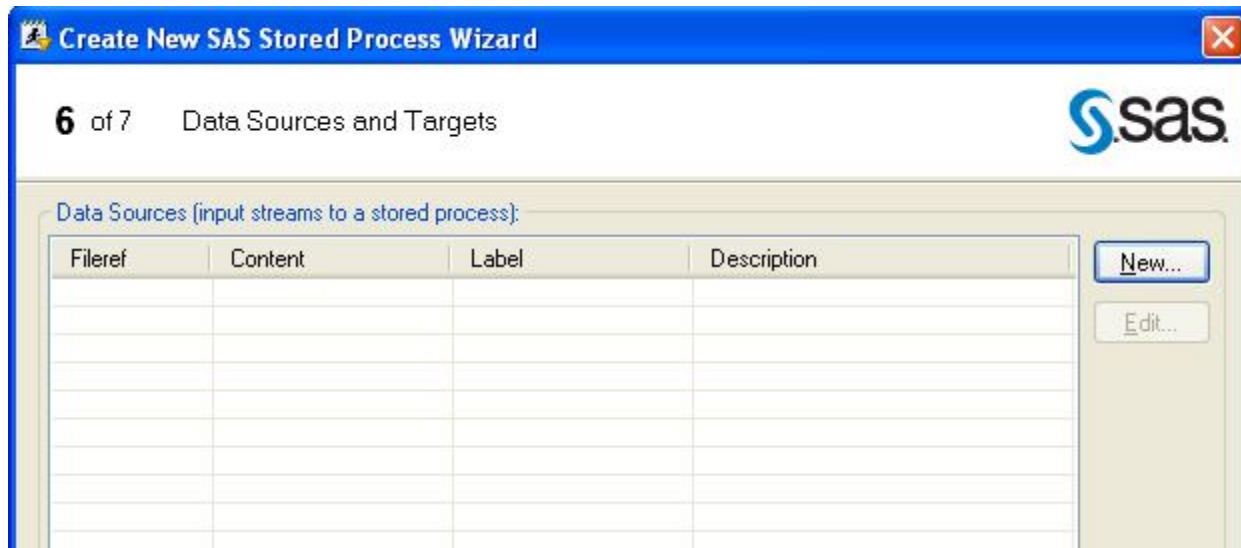
Create Stored Process



The screenshot shows the 'Edit Prompt' dialog box with the 'Dependencies' tab selected. The main area displays 'No prompts are available to depend on' with 'Add' and 'Delete' buttons. Below this, the 'Dependency' section has fields for 'Column:', 'Operator:', and 'Value of:'. At the bottom, a table lists prompts that depend on this prompt.

Prompt	Description of Dependency
Product	PRDSALE.PRODTYPE Equal Value of "Product Type"

n Product Type now shows a dependency



Create Stored Process

The screenshot shows the 'Create New SAS Stored Process Wizard' dialog box, specifically the 'Summary' step (7 of 7). The window has a blue title bar and a SAS logo in the top right corner. The main content area is divided into two sections: 'Descriptive information' and 'SAS code'.

Descriptive information

- Name: PrdSale STP
- Location: /Users/Harry/My Folder/
- Description: None
- Keywords: None
- Responsible parties: None

SAS code

```
* Begin EG generated code (do not edit this line);  
*  
* Stored process registered by  
* Enterprise Guide Stored Process Manager V4.3  
*  
=====
```

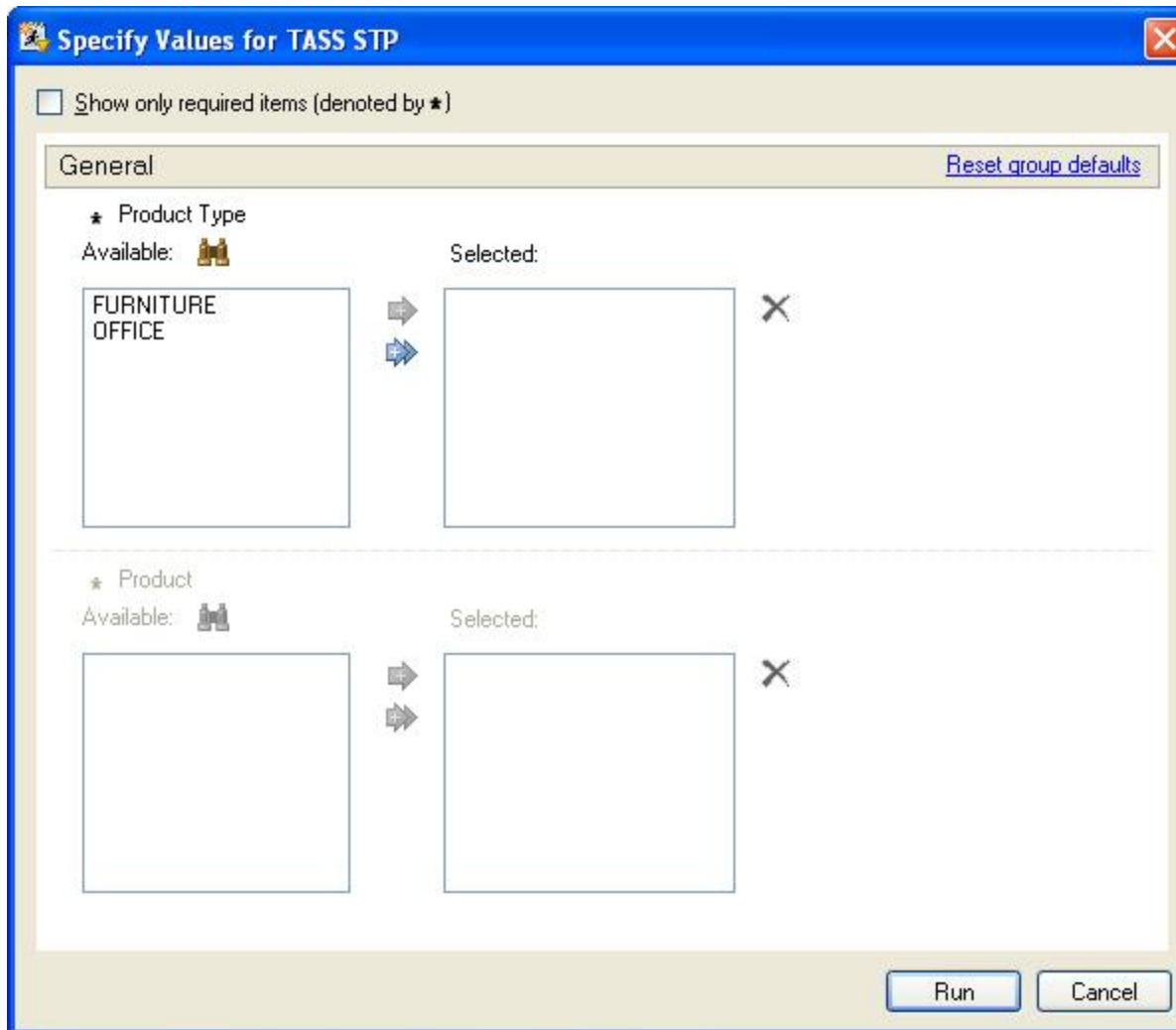
Below the SAS code, there are icons for document, list, and print, followed by a checkbox labeled 'Show full SAS code' and a 'Copy to clipboard' button.

☒ Run stored process when finished

More (F1)...

At the bottom, there are navigation buttons: '<Back', 'Next>', 'Finish', and 'Cancel'.

Execute Stored Process



The image shows a Windows-style dialog box titled "Specify Values for TASS STP". It has a blue title bar with a close button (X) in the top right corner. Below the title bar, there is a checkbox labeled "Show only required items (denoted by ★)". The main content area is divided into two sections: "General" and "Product". Each section has an "Available:" list on the left and a "Selected:" list on the right. In the "General" section, the "Available:" list contains "FURNITURE" and "OFFICE". The "Selected:" list is empty. In the "Product" section, both the "Available:" and "Selected:" lists are empty. There are "Add" (right arrow) and "Remove" (left arrow) buttons between the lists. A "Reset group defaults" link is in the top right of the "General" section. At the bottom right, there are "Run" and "Cancel" buttons.

Specify Values for TASS STP

☐ Show only required items (denoted by ★)

General [Reset group defaults](#)

★ Product Type

Available:  

Selected:

FURNITURE
OFFICE

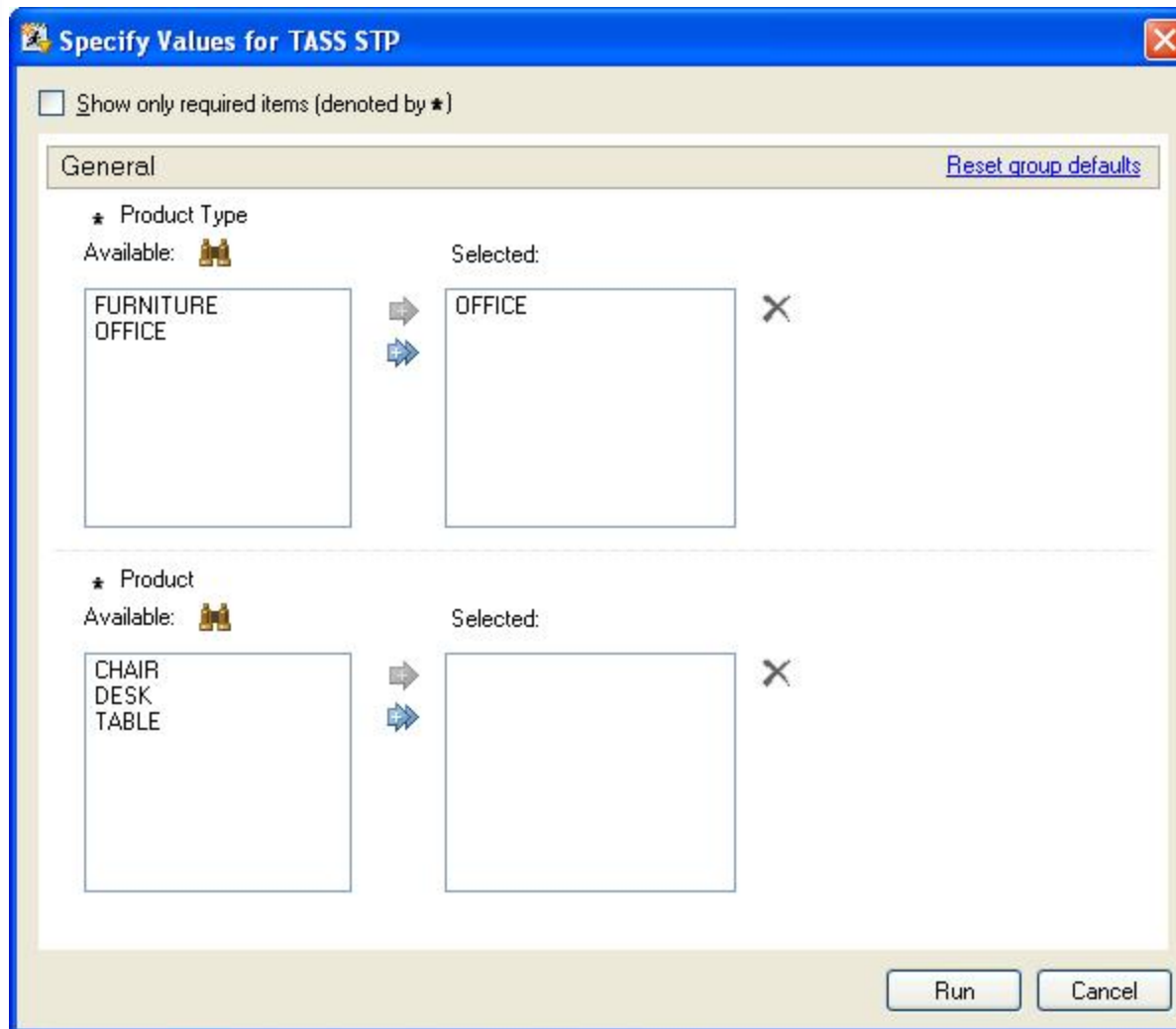
Product

Available: 

Selected:

Run Cancel

Execute Stored Process



The image shows a Windows-style dialog box titled "Specify Values for TASS STP". It has a blue title bar with a close button (X) in the top right corner. Below the title bar, there is a checkbox labeled "Show only required items (denoted by ★)". The main content area is divided into two sections: "General" and "Product". Each section has an "Available:" list on the left and a "Selected:" list on the right. In the "General" section, the "Available:" list contains "FURNITURE" and "OFFICE", and the "Selected:" list contains "OFFICE". In the "Product" section, the "Available:" list contains "CHAIR", "DESK", and "TABLE", and the "Selected:" list is empty. There are two arrows between the lists in each section: a grey arrow pointing right and a blue arrow pointing right. At the bottom right of the dialog box, there are two buttons: "Run" and "Cancel".

Specify Values for TASS STP

☐ Show only required items (denoted by ★)

General [Reset group defaults](#)

★ Product Type

Available: 

Selected:

FURNITURE
OFFICE

→

OFFICE

→

★ Product

Available: 

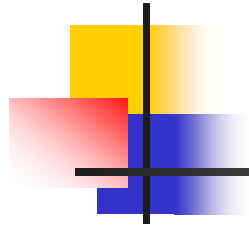
Selected:

CHAIR
DESK
TABLE

→

→

Run Cancel



Execute Stored Process

Report Listing

Row number	Year	Product type	Product	SUM_of_ACTUAL	SUM_of_PREDICT	SUM_of_Variance
1	1993	OFFICE	DESK	\$76,167.00	\$68,827.00	\$7,340
2	1994	OFFICE	DESK	\$73,065.00	\$77,368.00	\$-4,303

Execute Stored Process - Excel

Microsoft Excel - Book1

File Edit View Insert Format Tools Data SAS Window Help

Page Setup... 100% Arial 10 B I U

Analyze Data Reports SAS Favorites

TASS STP

☐ Show only required items (denoted by *)

General [Reset group defaults](#)

★ Product Type

Available: 

Selected:

FURNITURE
OFFICE

Product

Available: 

Selected:

Execute Stored Process - Excel

The screenshot shows a Windows-style dialog box titled "TASS STP". It has a blue title bar with a close button (X) in the top right corner. Below the title bar is a checkbox labeled "Show only required items (denoted by *)" which is currently unchecked. The main area of the dialog is divided into two sections by a dashed line. The top section is labeled "General" and has a "Reset group defaults" link in the top right corner. It contains two sub-sections: "Product Type" and "Product". Each sub-section has an "Available:" list on the left and a "Selected:" list on the right. Between the lists are two arrows: a grey arrow pointing right and a blue arrow pointing right. In the "Product Type" section, the "Available:" list contains "FURNITURE" and "OFFICE", and the "Selected:" list also contains "FURNITURE" and "OFFICE". In the "Product" section, the "Available:" list contains "BED", "CHAIR", "DESK", "SOFA", and "TABLE", and the "Selected:" list is empty. At the bottom right of the dialog are two buttons: "Run" and "Cancel".

TASS STP

☐ Show only required items (denoted by *)

General [Reset group defaults](#)

★ Product Type

Available:  Selected:

FURNITURE
OFFICE

→

FURNITURE
OFFICE

×

★ Product

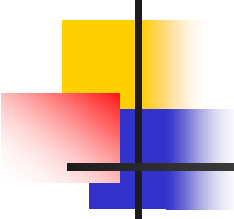
Available:  Selected:

BED
CHAIR
DESK
SOFA
TABLE

→

×

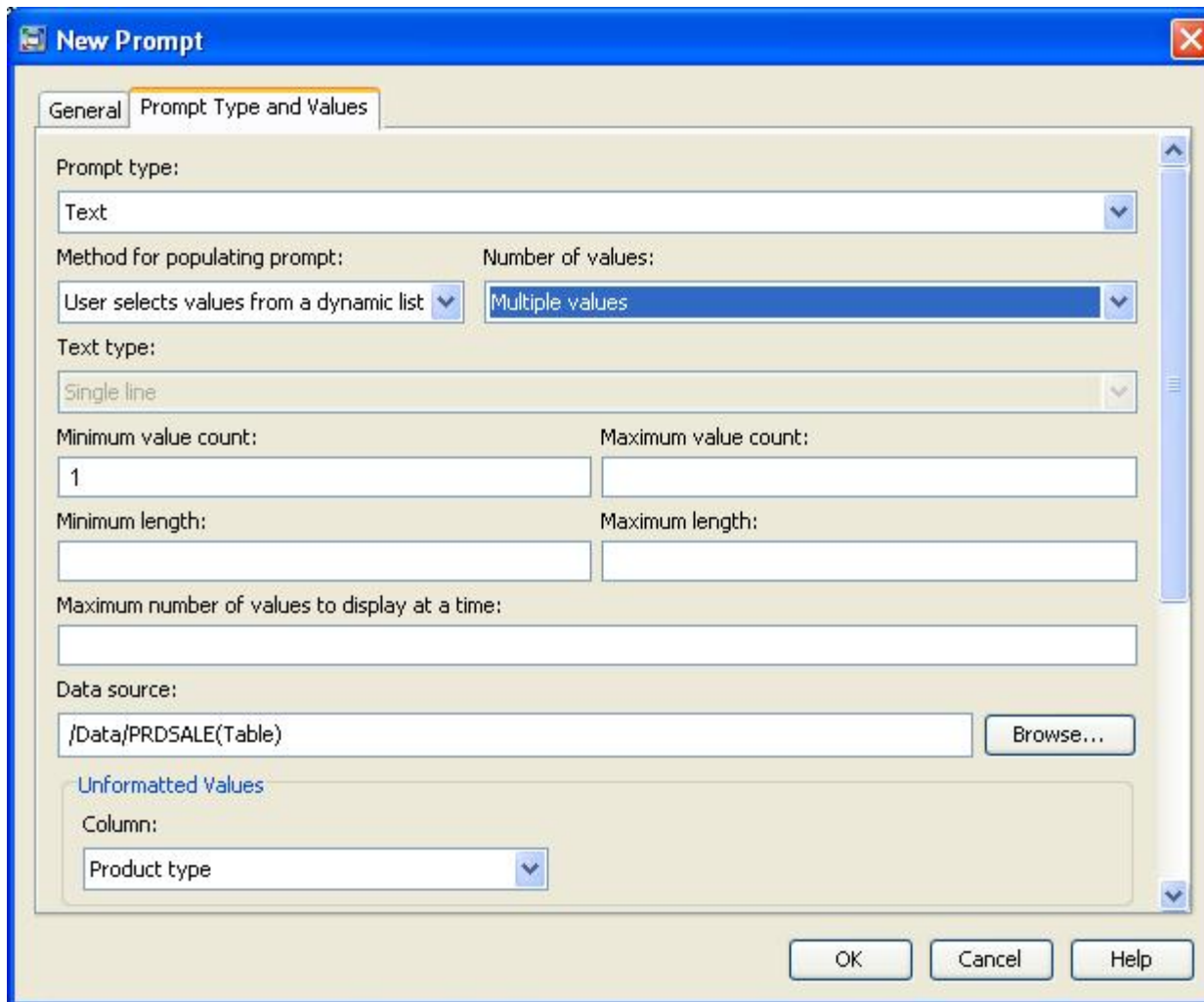
Run Cancel



Execute Stored Process - Excel

	A	B	C	D	E	F	G
1	Report Listing						
2							
3	Row number	Year	Product type	Product	SUM of ACTUAL	SUM of PREDICT	SUM of Variance
4	1	1993	FURNITURE	BED	\$69,463.00	\$70,923.00	(\$1,460)
5	2	1993	OFFICE	DESK	\$76,167.00	\$68,827.00	\$7,340
6	3	1994	FURNITURE	BED	\$72,574.00	\$66,944.00	\$5,630
7	4	1994	OFFICE	DESK	\$73,065.00	\$77,368.00	(\$4,303)

Define Stored Process in SMC

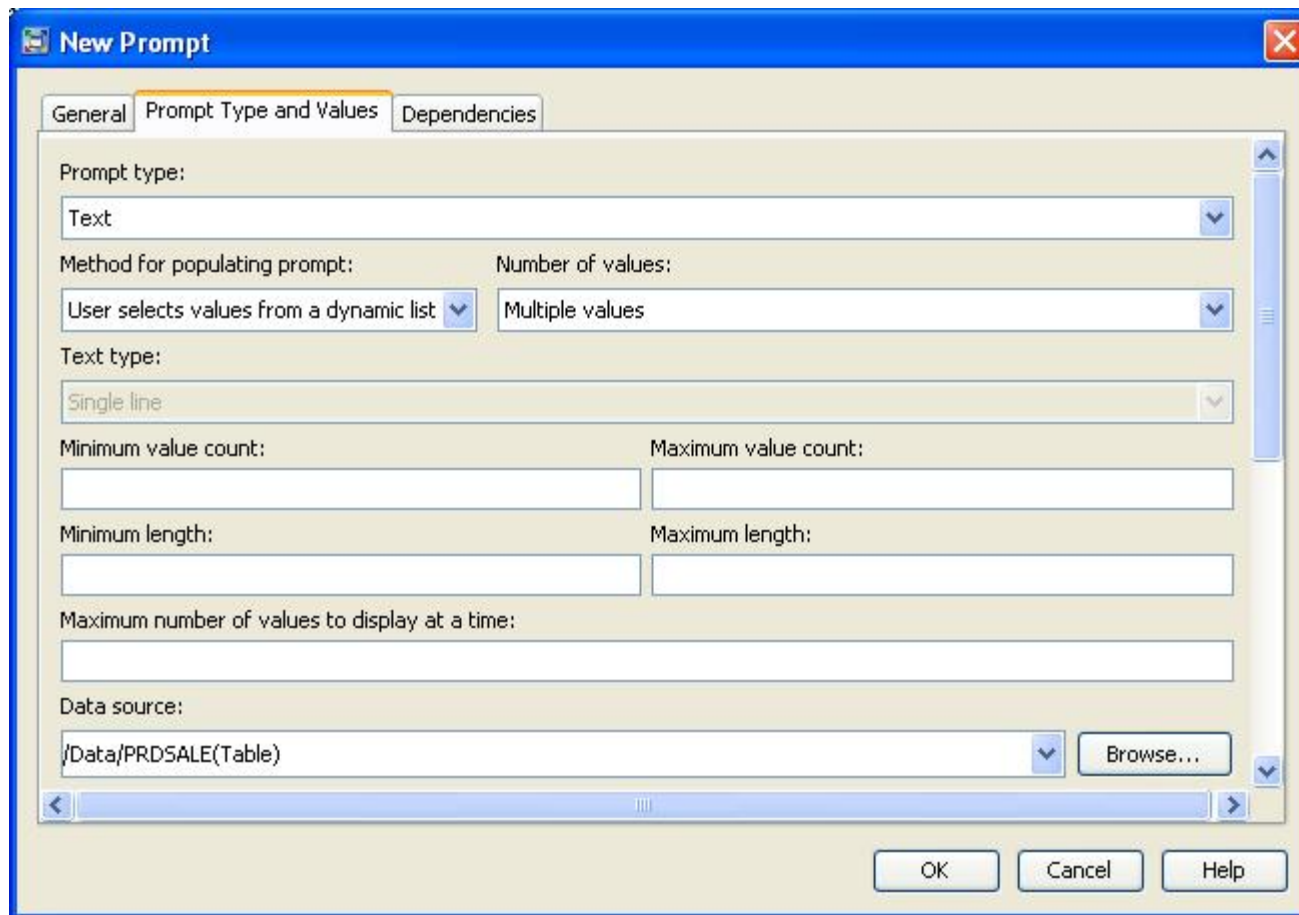


The image shows a 'New Prompt' dialog box with a blue title bar and a close button. It has two tabs: 'General' and 'Prompt Type and Values'. The 'Prompt Type and Values' tab is active. The dialog contains several configuration options for a prompt:

- Prompt type:** A dropdown menu set to 'Text'.
- Method for populating prompt:** A dropdown menu set to 'User selects values from a dynamic list'.
- Number of values:** A dropdown menu set to 'Multiple values'.
- Text type:** A dropdown menu set to 'Single line'.
- Minimum value count:** A text input field containing '1'.
- Maximum value count:** An empty text input field.
- Minimum length:** An empty text input field.
- Maximum length:** An empty text input field.
- Maximum number of values to display at a time:** An empty text input field.
- Data source:** A text input field containing '/Data/PRDSALE(Table)' and a 'Browse...' button.
- Unformatted Values:** A section with a 'Column:' label and a dropdown menu set to 'Product type'.

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

Define Stored Process in SMC



The image shows a 'New Prompt' dialog box with three tabs: 'General', 'Prompt Type and Values', and 'Dependencies'. The 'Prompt Type and Values' tab is active. It contains the following fields:

- Prompt type:** A dropdown menu with 'Text' selected.
- Method for populating prompt:** A dropdown menu with 'User selects values from a dynamic list' selected.
- Number of values:** A dropdown menu with 'Multiple values' selected.
- Text type:** A dropdown menu with 'Single line' selected.
- Minimum value count:** An empty text input field.
- Maximum value count:** An empty text input field.
- Minimum length:** An empty text input field.
- Maximum length:** An empty text input field.
- Maximum number of values to display at a time:** An empty text input field.
- Data source:** A dropdown menu with '/Data/PRDSALE(Table)' selected, and a 'Browse...' button to its right.

At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

Define Stored Process in SMC

The screenshot shows the 'New Prompt' dialog box with the 'Dependencies' tab selected. The dialog is titled 'New Prompt' and has three tabs: 'General', 'Prompt Type and Values', and 'Dependencies'. The 'Dependencies' tab contains the following information:

This prompt depends on the value of each of the following prompts:

Prompt	Description of Dependency
Product Type	PRDSALE.Product type Equal Value of "Product Type"

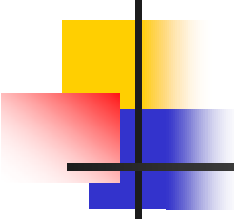
Buttons: Add, Delete

Dependency

Column: Product type Operator: Equal Value of prompt: Product Type

The following prompts depend on the value of this prompt:

Buttons: OK, Cancel, Help



Web Interface to Excel

```
%global _odsdest _odsoptions _odsstyle ;
```

```
%macro check_web;
```

```
    %if %upcase(%scan(%bquote(&_client),1)) = STOREDPROCESSSERVICE %then %do;
```

```
        data _null_;
```

```
            rc = stpsrv_header('Content-type','application/vnd.ms-excel');
```

```
            rc = stpsrv_header('Content-disposition',"attachment;  
                                filename=detail_extract_&sysdate9._&stime.xls");
```

```
        run;
```

```
    %let _ODSDEST      = tagsets.excelXP;
```

```
    %let _ODSOPTIONS   = options (autofilter='all' frozen_headers='yes' );
```

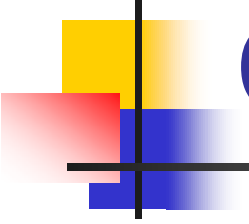
```
    %let _ODSSTYLE     = seaside;
```

```
%end;
```

```
%mend check_web;
```

```
%check_web
```

```
%stpbegin;
```



Conclusion

- n parameters

- n provide customized results

- n dynamic = data driven

- n cascading = data relationships

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