



Enterprise Guide®: Tips for Programmers

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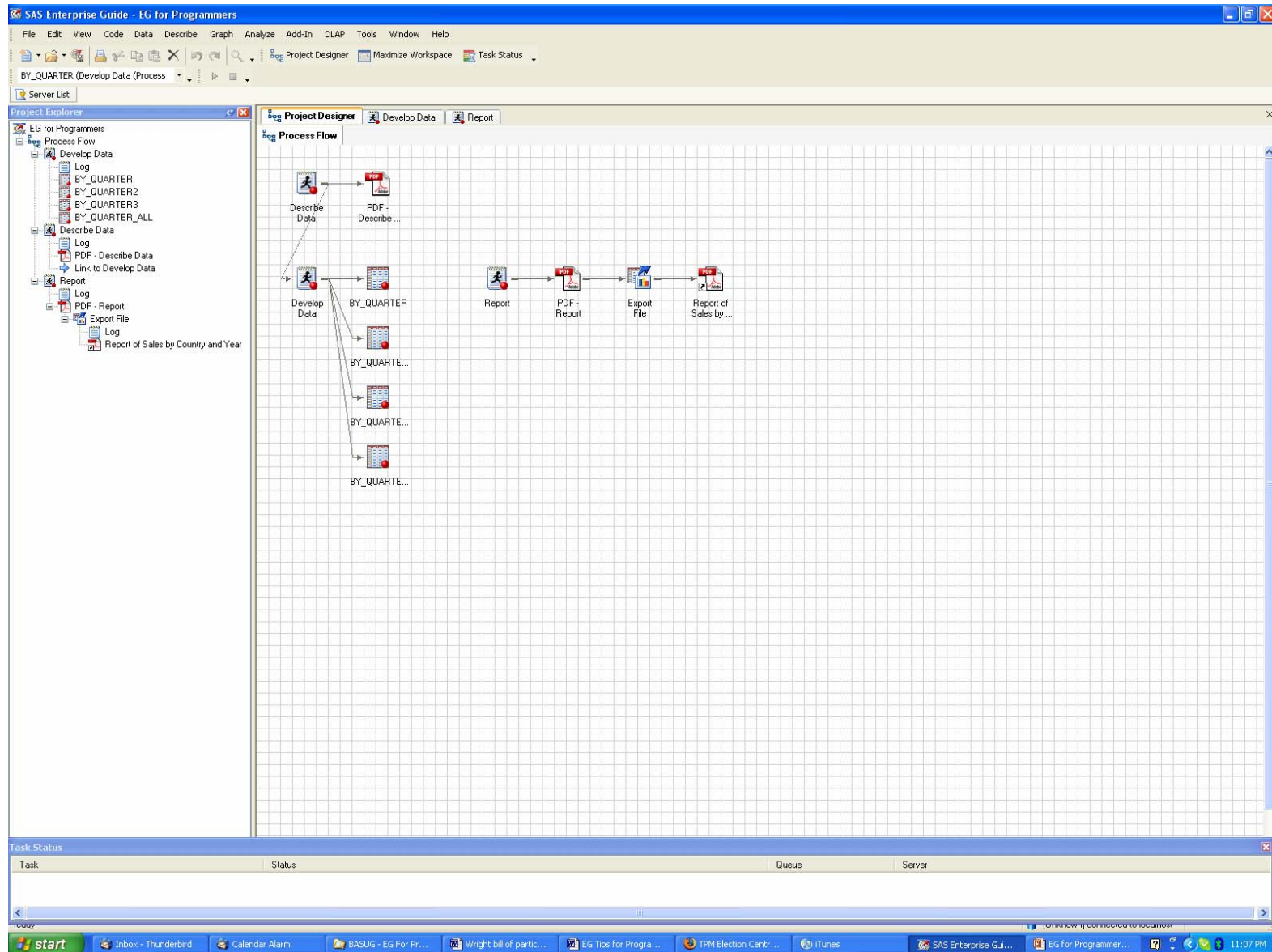
Introduction

- This presentation will show several features of SAS® Enterprise Guide® that make it an attractive alternative to the conventional Windows interface for programming.
- My primary purpose is to motivate programmers not yet using EG to give it a try,
- I hope also to provide a useful tip or two for those who have already dipped a toe into the water.
- But
 - Sorry experts...this may be old hat
 - Sorry committed wannabes... this is not a full tutorial
 - Sorry non-programming analysts... EG has much to offer you, but it'll have to wait for another day

EG Is More Than A GUI For Analysts

The screenshot displays the SAS Enterprise Guide interface. On the left, the 'Project Explorer' shows a project named 'EG for Programmers' with a 'Process Flow' diagram. The main window shows the 'Process Flow' diagram with tasks like 'Describe Data', 'Develop Data', 'Report', 'PDF - Report', 'Export File', and 'Report of Sales by...'. A 'Bar Chart' task is also visible. A dialog box titled 'Bar Chart for BY_QUARTER_ALL' is open, showing the 'Task Roles' tab. The 'Columns to assign' list includes 'COUNTRY', 'YEAR', 'QUARTER', '_TYPE_', '_FREQ_', 'PREDICT_Sum', and 'ACTUAL_Sum'. The 'Task roles' section shows 'Column to chart (Limit: 1)', 'Sum of (Limit: 1)', and 'Group charts by'. The 'Preview code' button is visible at the bottom of the dialog. The 'Task Status' window at the bottom shows a table with columns: Task, Status, Queue, and Server.

Graphical Display of Project Components



Tabbed Viewing

The screenshot displays the SAS Enterprise Guide interface. The top menu bar includes File, Edit, View, Code, Data, Describe, Graph, Analyze, Add-In, OLAP, Tools, Window, and Help. The toolbar contains icons for various functions. The main workspace is divided into two panes: the left pane shows the Project Explorer with a tree view of the project structure, and the right pane shows the Code window with a SAS program.

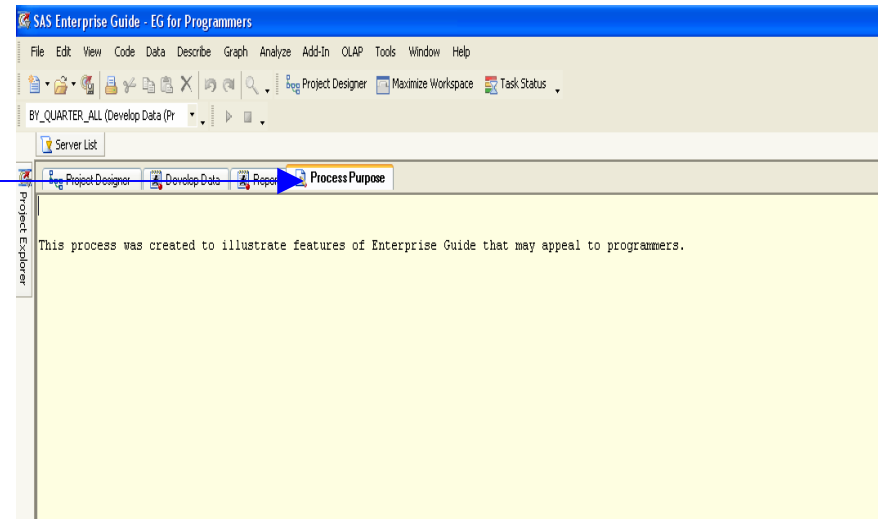
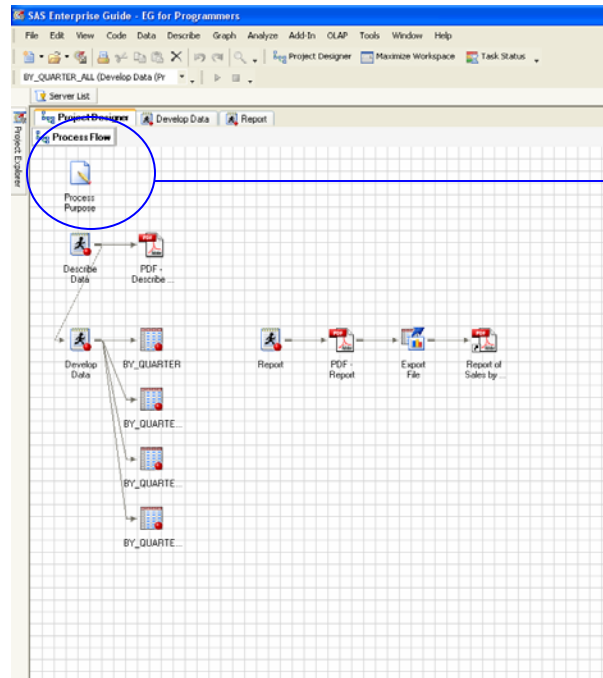
```
option nodate ;  
  
title 'Predicted and Actual Sales';  
title2 'By Country and Year';  
  
proc tabulate data = by_quarter_all ;  
  class country year ;  
  var actual_sum predict_sum ;  
  table  
    year*(predict_sum actual_sum)*sum=' '*f=comma15.,  
    country=' ' ;  
run;
```

The Results window at the bottom displays the output of the SAS program, titled "Report of Sales by Country and Year". The output is a table with columns: COUNTRY, YEAR, QUARTER, _TYPE_, _FREQ_, PREDICT_Sum, and ACTUAL_Sum. The table contains 29 rows of data, grouped by country and year.

	COUNTRY	YEAR	QUARTER	_TYPE_	_FREQ_	PREDICT_Sum	ACTUAL_Sum
1	CANADA	1993	1	7	60	\$30,690.00	\$29,004.00
2	CANADA	1993	2	7	60	\$29,475.00	\$30,815.00
3	CANADA	1993	3	7	60	\$31,122.00	\$31,046.00
4	CANADA	1993	4	7	60	\$28,042.00	\$30,155.00
5	CANADA	1994	1	7	60	\$30,002.00	\$31,300.00
6	CANADA	1994	2	7	60	\$30,227.00	\$34,574.00
7	CANADA	1994	3	7	60	\$26,663.00	\$29,853.00
8	CANADA	1994	4	7	60	\$26,798.00	\$30,243.00
9	GERMANY	1993	1	7	60	\$32,555.00	\$30,308.00
10	GERMANY	1993	2	7	60	\$25,615.00	\$34,880.00
11	GERMANY	1993	3	7	60	\$25,734.00	\$32,633.00
12	GERMANY	1993	4	7	60	\$33,225.00	\$29,583.00
13	GERMANY	1994	1	7	60	\$30,977.00	\$30,190.00
14	GERMANY	1994	2	7	60	\$26,606.00	\$29,012.00
15	GERMANY	1994	3	7	60	\$28,318.00	\$28,504.00
16	GERMANY	1994	4	7	60	\$28,534.00	\$30,888.00
17	U.S.A.	1993	1	7	60	\$30,121.00	\$29,958.00
18	U.S.A.	1993	2	7	60	\$30,236.00	\$30,108.00
19	U.S.A.	1993	3	7	60	\$33,718.00	\$29,755.00
20	U.S.A.	1993	4	7	60	\$29,688.00	\$31,232.00
21	U.S.A.	1994	1	7	60	\$31,856.00	\$28,273.00
22	U.S.A.	1994	2	7	60	\$30,031.00	\$29,773.00
23	U.S.A.	1994	3	7	60	\$28,451.00	\$30,692.00
24	U.S.A.	1994	4	7	60	\$27,621.00	\$27,558.00
25	Canada	1995	1	7	288	\$196,457.60	\$181,380.80
26	Canada	1995	2	7	288	\$183,374.40	\$172,406.40
27	Canada	1995	3	7	288	\$191,510.40	\$172,231.20
28	Canada	1995	4	7	288	\$184,443.20	\$186,422.40
29	Canada	1996	1	7	288	\$187,565.60	\$178,903.20

The bottom status bar shows the system is ready and connected to the local host. The taskbar at the very bottom displays various application icons, including the Start button, Thunderbird, Calendar Alarm, SAS Enterprise Guide, and others.

Notes



Generate Code Using Tasks and Wizards

The screenshot displays the SAS Enterprise Guide interface for the 'BY_QUARTER_ALL' process flow. The 'Process Flow' pane on the left shows a sequence of steps: 'Describe Data', 'PDF - Describe...', 'Develop Data', 'BY_QUARTER', 'BY_QUARTE...', 'BY_QUARTE...', 'BY_QUARTE...', and 'Bar Chart'. The 'Bar Chart for BY_QUARTER_ALL' dialog box is open, showing the 'Task Roles' tab. The 'Columns to assign' list includes COUNTRY, YEAR, QUARTER, _TYPE_, _FREQ_, PREDICT_Sum, and ACTUAL_Sum. The 'Task roles' list includes 'Column to chart (Limit: 1)', 'Sum of (Limit: 1)', 'ACTUAL_Sum', and 'Group charts by'. The 'YEAR sort order' is set to 'Ascending'. The 'Code Preview for Task' dialog box shows the generated SAS code for the 'Bar Chart' task. The 'User Code' dialog box is also open, showing the positions where user code can be inserted.

Great for:

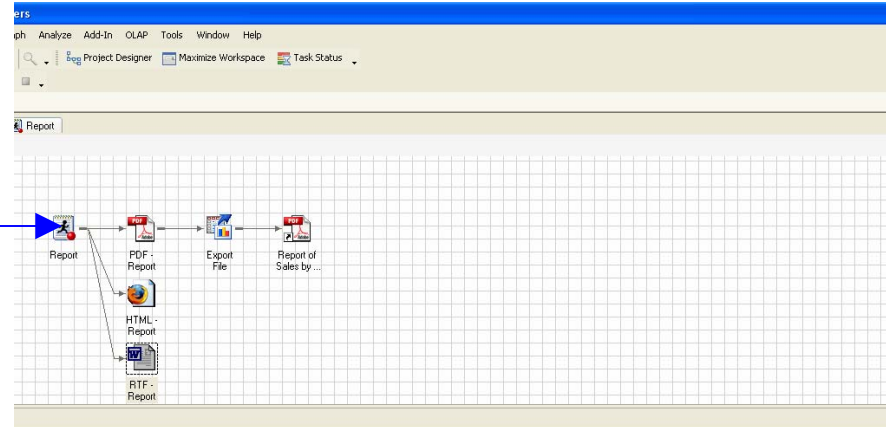
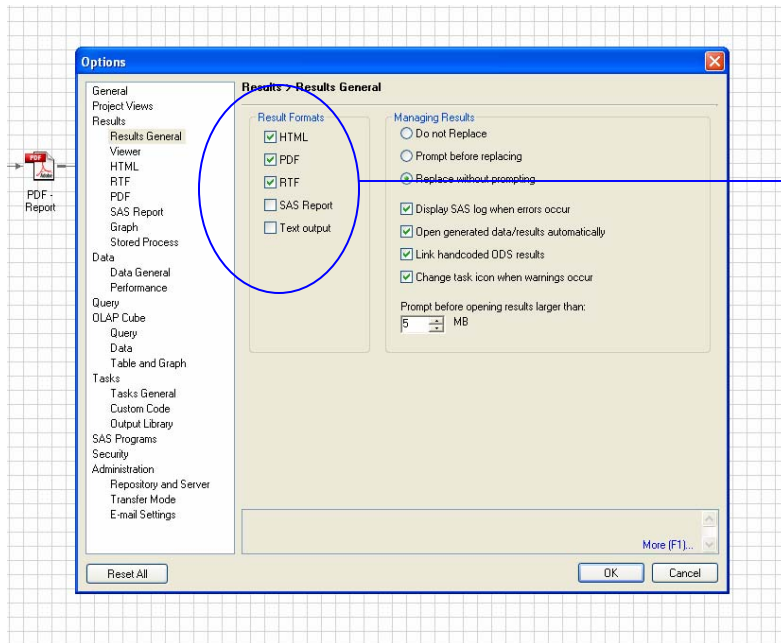
- Learning new Procs
- Laziness

```
;  
TITLE;  
TITLE1 "Bar Chart";  
FOOTNOTE;  
FOOTNOTE1 "Generated on %SYSFUNC(DATE()), EURDFDE9.) at %SYSFUNC(TIME()), TIME%";  
PROC GCHART DATA=WORK.SORTTempTableSorted  
;  
  VBAR3D COUNTRY  
  /  
  SUMVAR=ACTUAL_Sum  
  SHAPE=BLOCK  
  FRAME TYPE=SUM  
  COUTLINE=BLACK  
  RAXIS=AXIS1  
  MAXIS=AXIS2  
  GAXIS=AXIS3  
  GAXIS=AXIS3  
;  
  BY YEAR;  
/*  
End of task code.  
;
```

Bar Chart
Year=1994

Country

Create Multiple Output Types Without Writing ODS



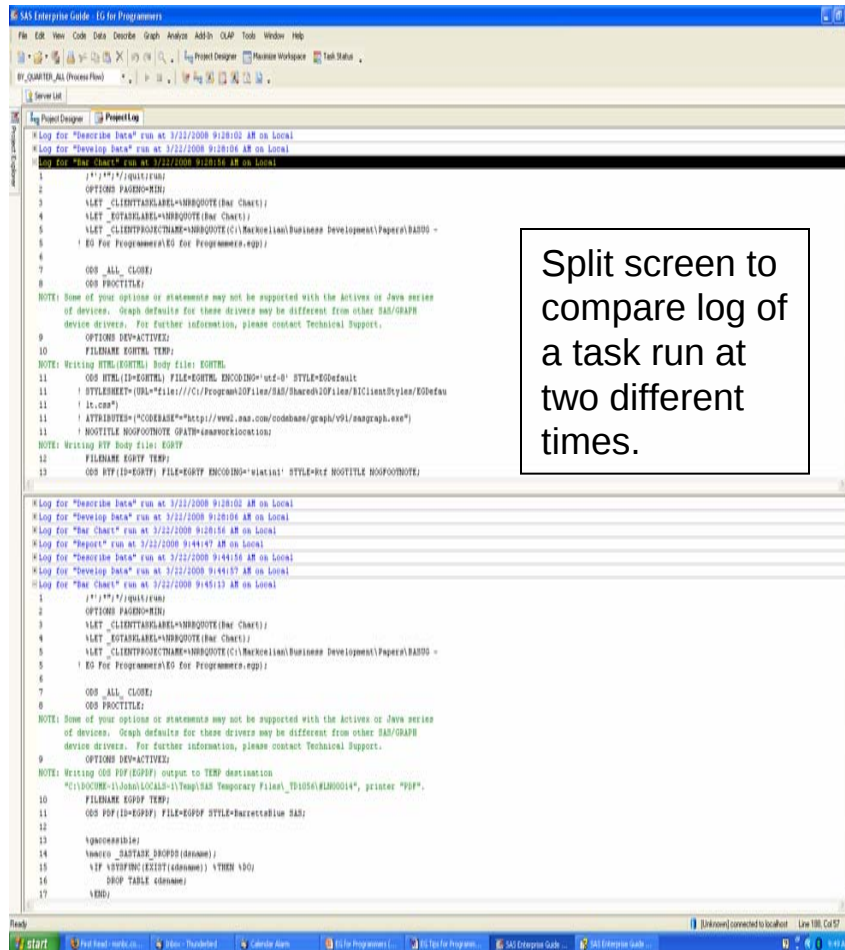
*Predicted and Actual Sales
By Country and Year*

		CANADA	Canada	GERMANY	Mexico	U.S.A.
Year						
1993	Predicted Sales	119,329	.	117,119	.	123,763
	Actual Sales	121,020	.	127,404	.	121,053
1994	Predicted Sales	113,690	.	114,435	.	117,959
	Actual Sales	125,970	.	118,594	.	116,296
1995	Predicted Sales	.	755,786	.	518,104	2,240,967

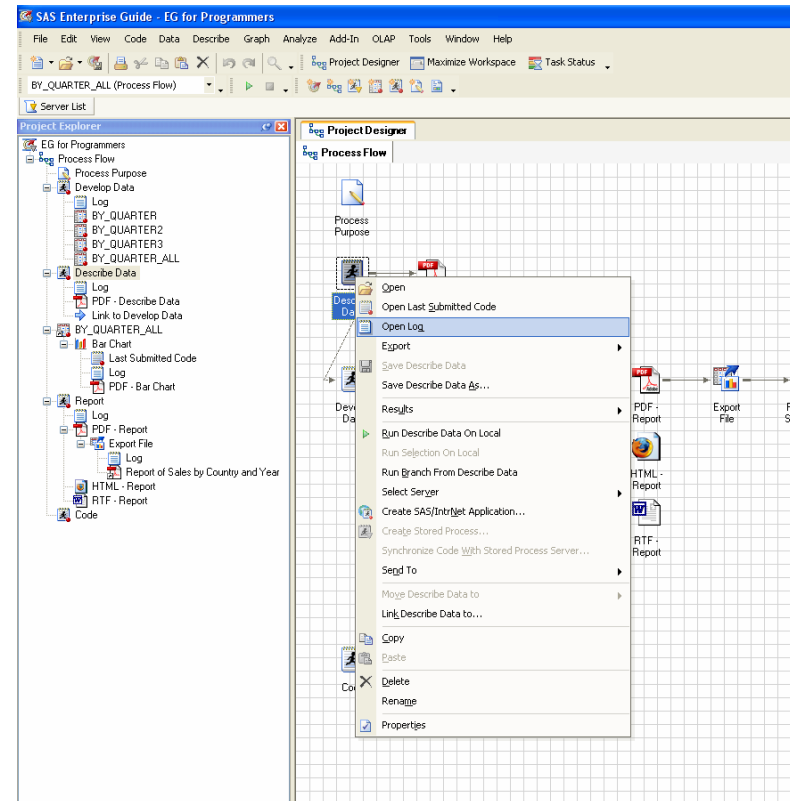
		CANADA	Canada	GERMANY	Mexico	U.S.A.
Year						
1993	Predicted Sales	119,329	.	117,119	.	123,763
	Actual Sales	121,020	.	127,404	.	121,053
1994	Predicted Sales	113,690	.	114,435	.	117,959
	Actual Sales	125,970	.	118,594	.	116,296
1995	Predicted Sales	.	755,786	.	518,104	2,240,967
	Actual Sales	.	712,441	.	465,915	2,112,784
1996	Predicted Sales	.	769,110	.	528,722	2,264,191
	Actual Sales	.	708,818	.	472,193	2,198,152

Logs

Project Log

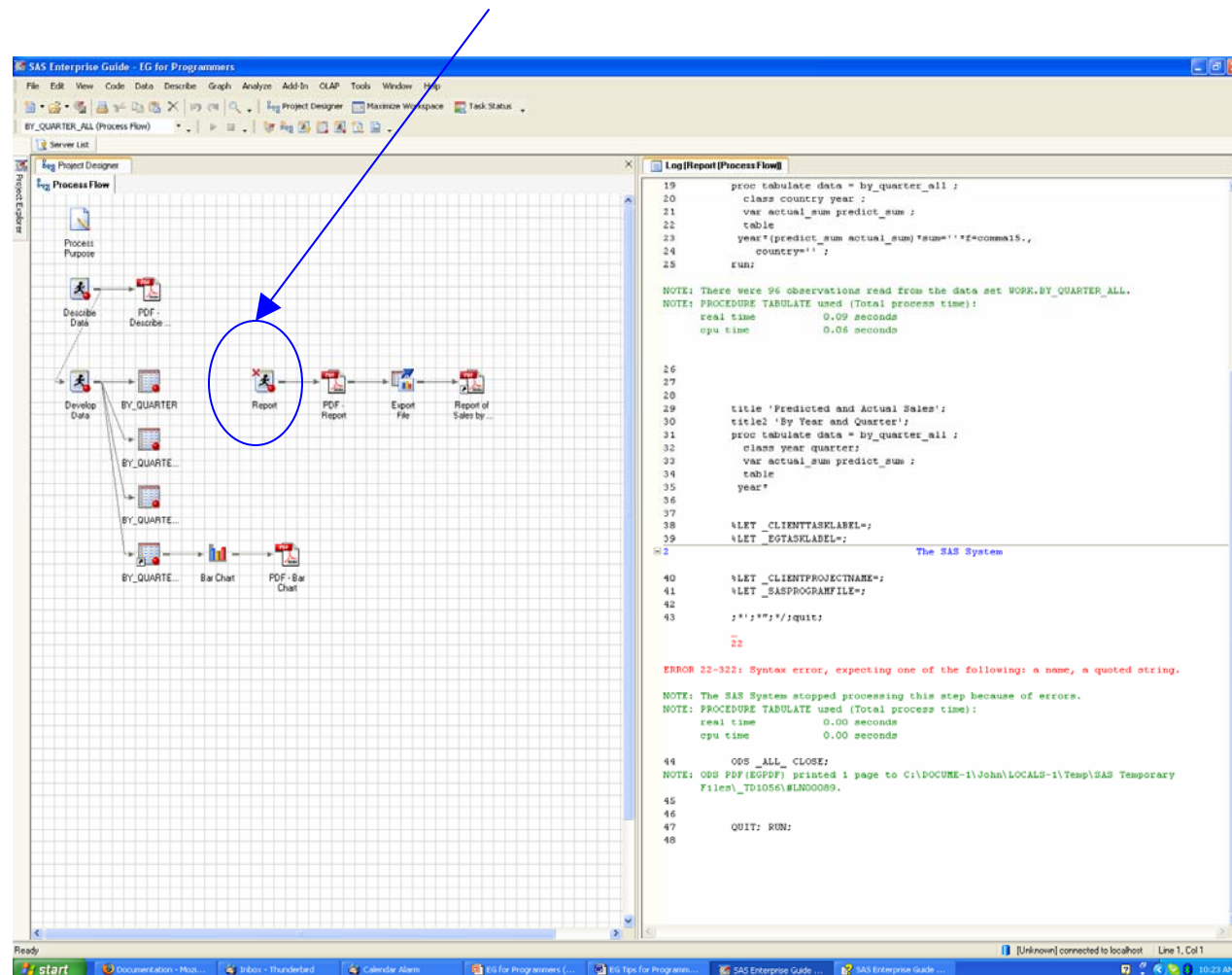


Task Log



Both project and task logs are saved with the project

Task Icon May Indicate Error



Monitor Task Status While Working In Project

The screenshot displays the SAS Enterprise Guide interface. The main window shows a project workflow in the 'Process Flow' tab. The workflow starts with 'Describe Data', followed by 'Develop Data', and then a series of 'BY_QUARTER' steps. These steps lead to 'Report', 'PDF - Report', 'Export File', and 'Report of Sales by ...'. A 'Bar Chart' step is also shown, leading to 'PDF - Bar Chart'. A text box with the text 'Follow progress of tasks that are executing...' is overlaid on the workflow.

The 'Report' window on the right shows the following SAS code:

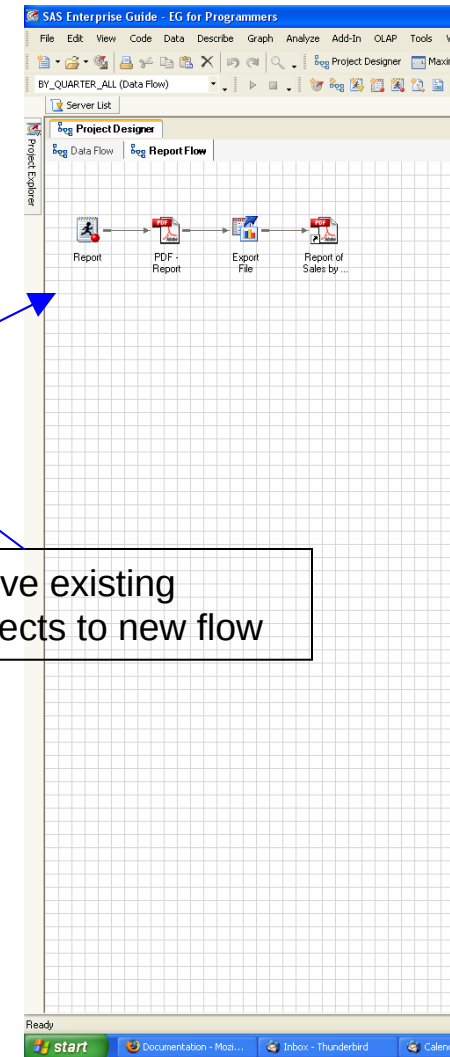
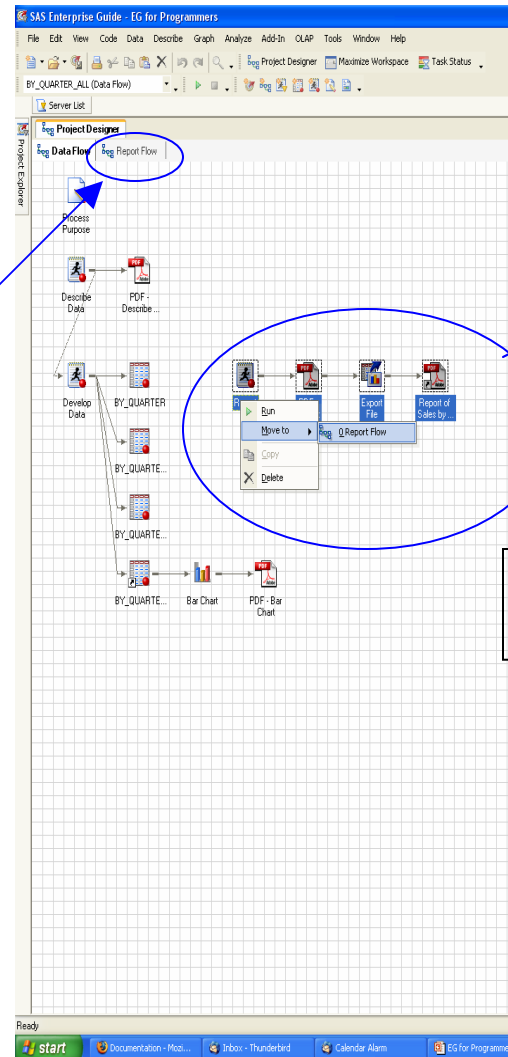
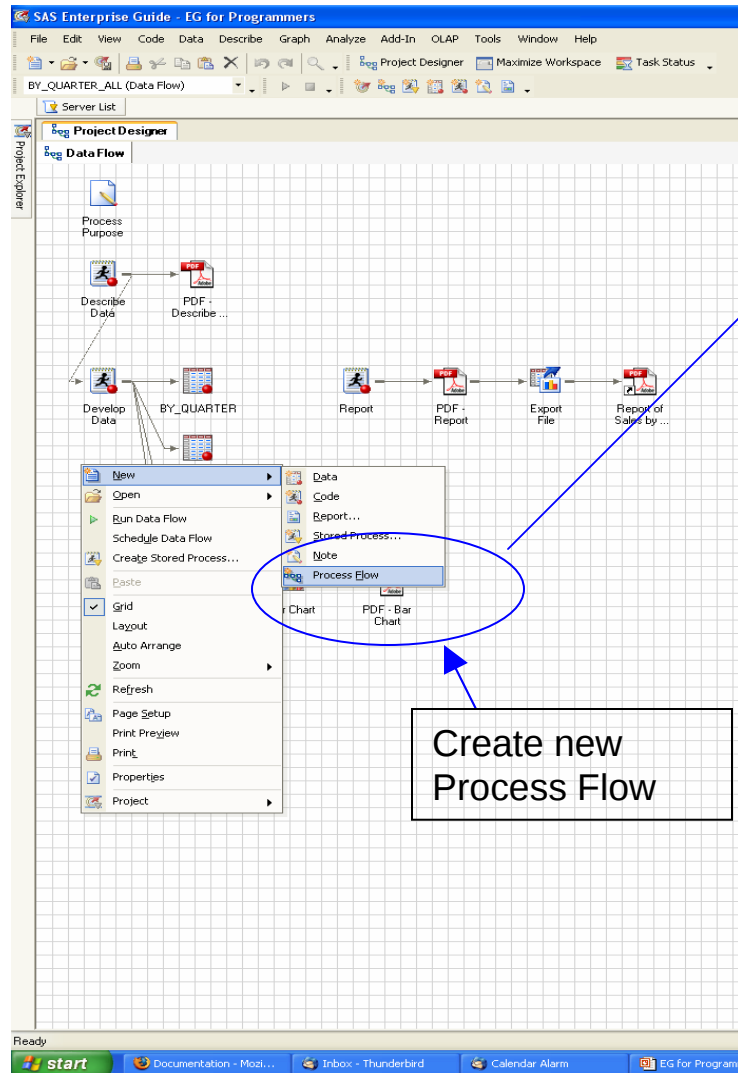
```
option nodate ;  
  
title 'Predicted and Actual Sales';  
title2 'By Country and Year';  
proc tabulate data = by_quarter_all ;  
  class country year ;  
  var actual_sum predict_sum ;  
  table  
    year*(predict_sum actual_sum)*sum=' '*f=comma15.,  
    country=' ' ;  
run;  
  
title 'Predicted and Actual Sales';  
title2 'By Year and Quarter';  
proc tabulate data = by_quarter_all ;  
  class year quarter ;  
  var actual_sum predict_sum ;  
  table  
    year*
```

The 'Task Status' window at the bottom shows the following table:

Task	Status	Queue	Server
Describe Data	Running DATA step...		Local
Develop Data	Waiting on (Describe Data)...		Local
Bar Chart	Waiting on (Develop Data)...		Local
Report	Waiting on (Bar Chart)...		Local
Export File	Waiting on (Report)...		Local

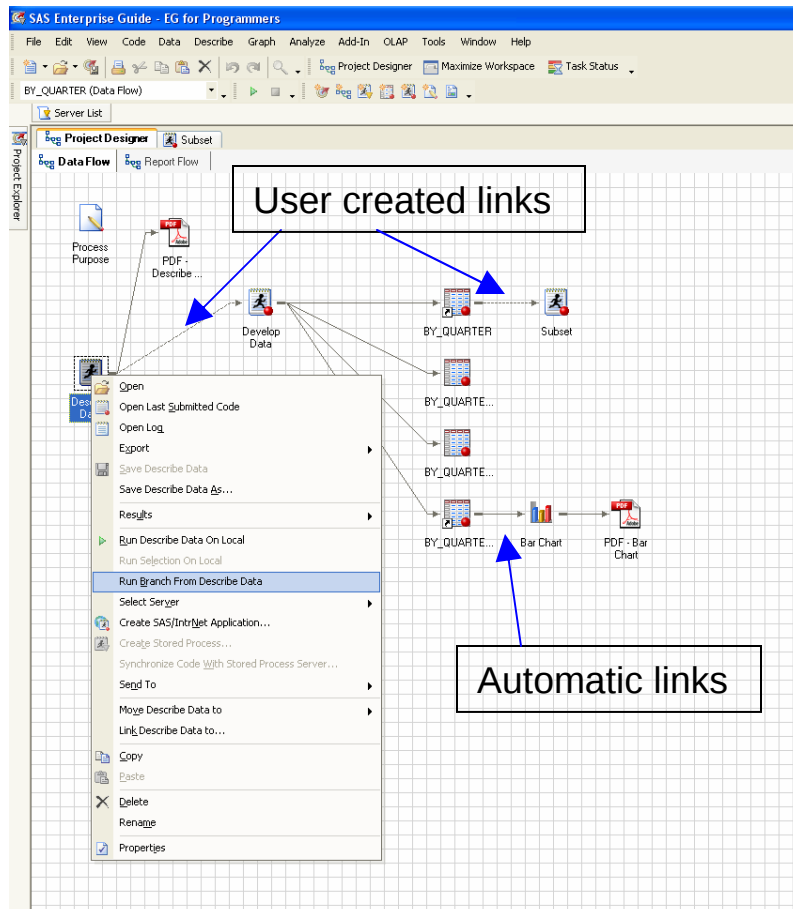
The Windows taskbar at the bottom shows the system clock at 10:04 AM and the status 'Ready'.

Additional Process Flows Keep Things Organized



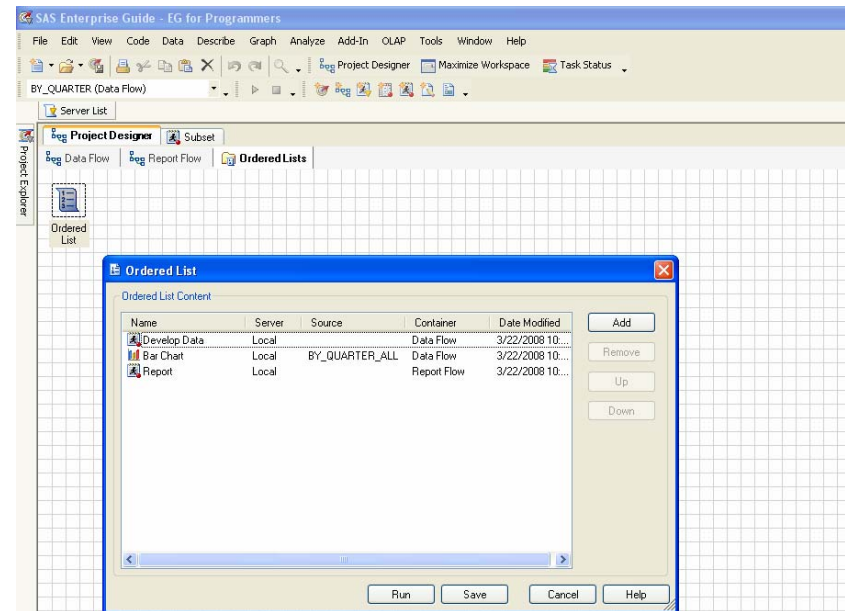
Control Sequence of Execution

Links and Branches



A branch is a sequence of links.

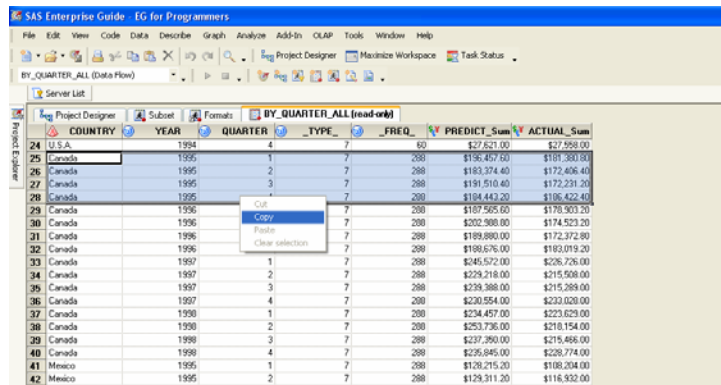
Ordered Lists



An ordered list is a set of code notes and tasks to be run in sequence. They need not be linked or in the same branch.

Easily Move Data to Other Applications and Formats

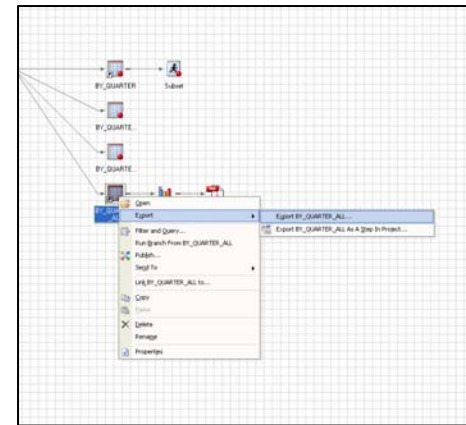
Copy and paste



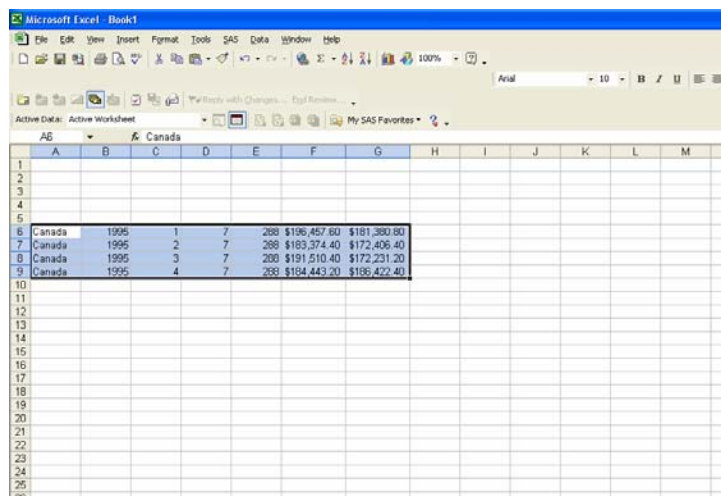
The screenshot shows the SAS Enterprise Guide interface. A data table is displayed with columns: COUNTRY, YEAR, QUARTER, _TYPE_, _FREQ_, PREDICT_Sum, and ACTUAL_Sum. A context menu is open over the row for Canada in 1995, Quarter 4, showing options like Cut, Copy, Paste, and Clear selection.

COUNTRY	YEAR	QUARTER	_TYPE_	_FREQ_	PREDICT_Sum	ACTUAL_Sum
U.S.A.	1994	4	7	80	\$27,621.00	\$27,598.00
Canada	1995	1	7	288	\$198,457.60	\$181,380.80
Canada	1995	2	7	288	\$183,374.40	\$172,406.40
Canada	1995	3	7	288	\$191,510.40	\$172,231.20
Canada	1995	4	7	288	\$184,443.20	\$186,422.40
Canada	1996	1	7	288	\$187,565.60	\$178,503.20
Canada	1996	2	7	288	\$202,988.00	\$174,523.20
Canada	1996	3	7	288	\$189,880.00	\$172,372.80
Canada	1996	4	7	288	\$188,676.00	\$182,019.20
Canada	1997	1	7	288	\$245,522.00	\$226,728.00
Canada	1997	2	7	288	\$229,218.00	\$215,508.00
Canada	1997	3	7	288	\$239,388.00	\$215,289.00
Canada	1997	4	7	288	\$230,554.00	\$232,028.00
Canada	1998	1	7	288	\$234,457.00	\$223,620.00
Canada	1998	2	7	288	\$253,736.00	\$218,154.00
Canada	1998	3	7	288	\$237,390.00	\$215,466.00
Canada	1998	4	7	288	\$236,845.00	\$228,774.00
Mexico	1995	1	7	288	\$128,215.20	\$108,204.00
Mexico	1995	2	7	288	\$129,311.20	\$116,932.00

Export

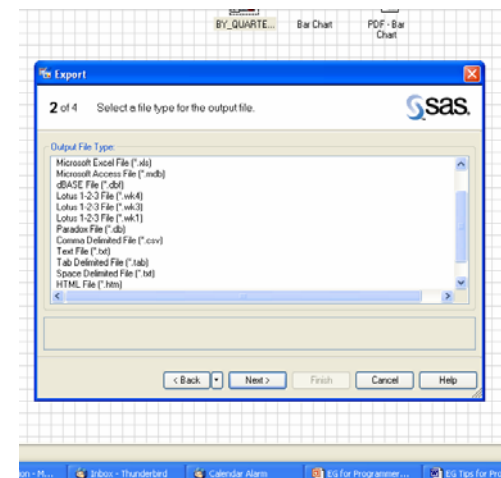


Ad hoc or as step in project



The screenshot shows the Microsoft Excel interface with the data copied from the SAS table pasted into the worksheet. The data is organized into columns A through M, with rows 1 through 26.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3													
4													
5													
6	Canada	1995	1	7	288	\$198,457.60	\$181,380.80						
7	Canada	1995	2	7	288	\$183,374.40	\$172,406.40						
8	Canada	1995	3	7	288	\$191,510.40	\$172,231.20						
9	Canada	1995	4	7	288	\$184,443.20	\$186,422.40						
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Multiple format options

Requires SAS/Access for PC File Formats ®

New Fields for Programming

- Stored Processes – Method for dissemination of SAS code for (controlled) reuse by non-programming users.
- Custom Tasks – Component Object Model (COM) add-ins.
- OLAP – Integrated viewer/MDX editor

References

Getting Started with SAS Enterprise Guide – free learning tutorial available from
http://www.sas.com/apps/elearning/elearning_details.jsp?pubcode=59271

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