

Resistance is Futile: SAS® Enterprise Guide® Assimilates PC SAS®

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ABSTRACT

You've always used PC SAS (aka Base SAS®) to do your SAS development and are quite happy with it. But now your manager is asking you to work on some SAS EBI (Enterprise Business Intelligence) projects, creating stored processes. Or maybe your company has decided to eliminate PC SAS and change everyone over to SAS Enterprise Guide. Or, you're just not sure what it means when you hear 'the grid' talked about in SAS Enterprise Guide. We'll compare PC SAS 9.1, SAS Enterprise Guide 4.1 (v9.1) and SAS Enterprise Guide 5.1 (v9.2 and v9.3), and help you make a smooth transition.

INTRODUCTION

In the Star Trek™ series there is an alien race called the Borg. Each Borg is part biological and part technological. The race grows by assimilating other races into their collective. "Resistance is futile" is the first thing they say when they encounter another race, since they almost always win. They then turn everyone into Borg by keeping the best of the person and replacing everything else with their technology. This paper will show how SAS Enterprise Guide kept the best parts of PC SAS and added a lot more capabilities to help both the beginner and advanced programmer.



BACKGROUND

PC SAS was first released in the mid-1980's and many programmers have continued developing in it ever since. With the releases of SAS 9.2 and 9.3 there were only minimal changes to it. SAS Enterprise Guide is a point-and-click interface that was first released with SAS version 6 in 2000. The SAS release from 9.1 to 9.2 (a.k.a. 4.1 to 4.2) incorporated major enhancements. And even more changes were added for SAS Grid technology. I've been presenting SAS Enterprise Guide demonstrations for the past 4 years and always get asked the same questions. This paper will answer those questions by taking a look at some of the similarities and some of the differences.

I. CAN I STILL CONNECT TO MULTIPLE SERVERS?

A common way to connect to servers via PC SAS is by using SAS/Connect®. This same code:

```
%let tfcprdr=<server> 7551;
OPTIONS comamid=tcp;
OPTIONS remote=tfcprdr;
%let tcpsec=&uid.&pw.;

SIGNON noscript;

LIBNAME pc 'C:\Program Files\SAS93\SASFoundation\9.3\core\sashelp' ;
LIBNAME r_pc '/tmp/sas' server=tfcprdr ;

RSUBMIT ;
LIBNAME r_pc2 '/tmp/sas' ;
PROC UPLOAD data=pc.zipcode (obs=5)
            out=r_pc2.zipcode ;
RUN ;
ENDRSUBMIT ;
```

can be used from both PC SAS and SAS Enterprise Guide (running locally). The macro variables &uid and &pw contain the server userid and password (see the section on prompts). In addition SAS Enterprise Guide can also connect to multiple servers set up as workspace servers on the SAS metadata. Figure 1 shows the local and remote libraries, along with the log, in PC SAS, and Figure 2 shows the same in SAS Enterprise Guide.

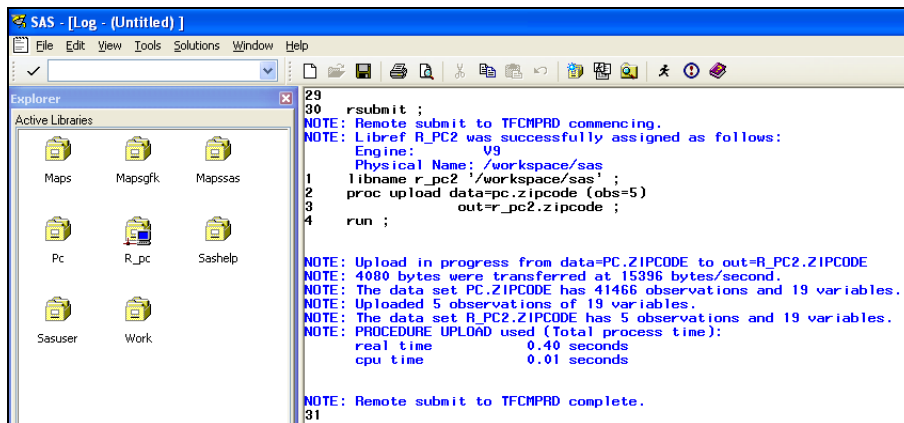


Figure 1 PC SAS

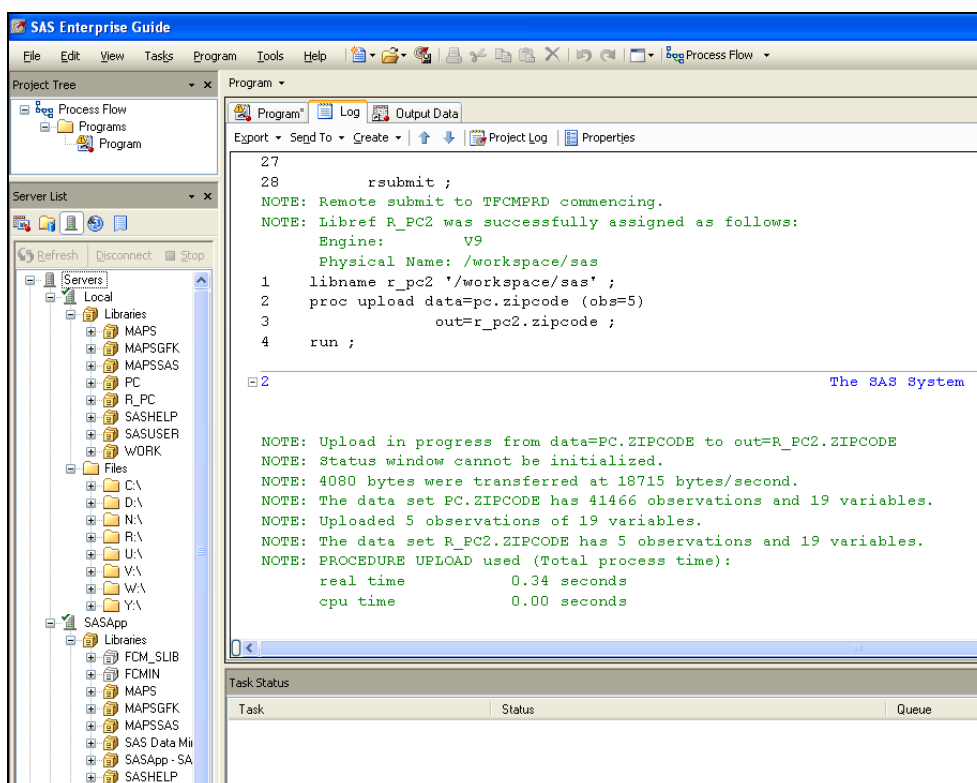


Figure 2 SAS Enterprise Guide 5.1

II. CAN I STILL USE MY AUTOEXEC?

PC SAS has an automatic interface to the autoexec.sas program, but what about when SAS Enterprise Guide connects to a server? The autoexec.sas on the server is usually just general information for all users, not specific to your team. There are several ways to do autoexec processing in SAS Enterprise Guide:

1. Use the 'not-so-secret' file name EGAuto.sas, but this can only store basic code.
2. Use the SAS Programs in Tools/Options to run SAS code at specific times, as shown in Figure 3.

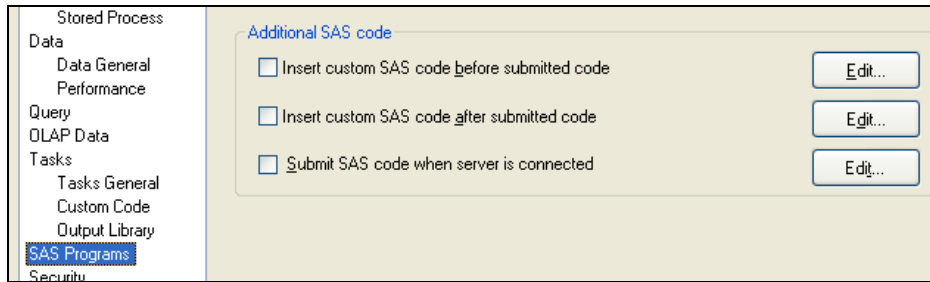


Figure 3 SAS Programs for Autoexec

3. Create a process flow named "autoexec" that can be run automatically whenever you open your project. It could include imports, programs, queries, etc. as Figure 4 shows.

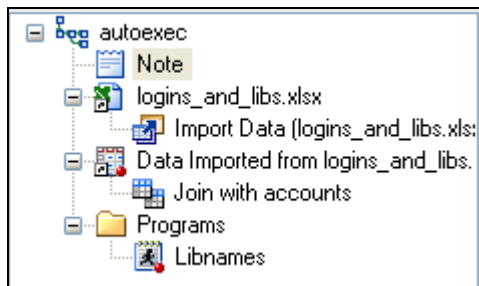


Figure 4 Autoexec Process Flow

III. HOW CAN I REPLACE THE PROMPTS FOR INFORMATION?

For example, many programmers use a version of tcpunix.scr which prompts them to enter their SAS server userid and password one time to connect from PC SAS. This procedure is replaced with prompting in SAS Enterprise Guide. Right click on the code and select Properties. Then select Prompts and follow the instructions, making sure to set them to require input. This can also be used for any other information needed at run time. For example, if you run the same code for multiple departments, then prompt for the department. Figure 5 highlights the steps.

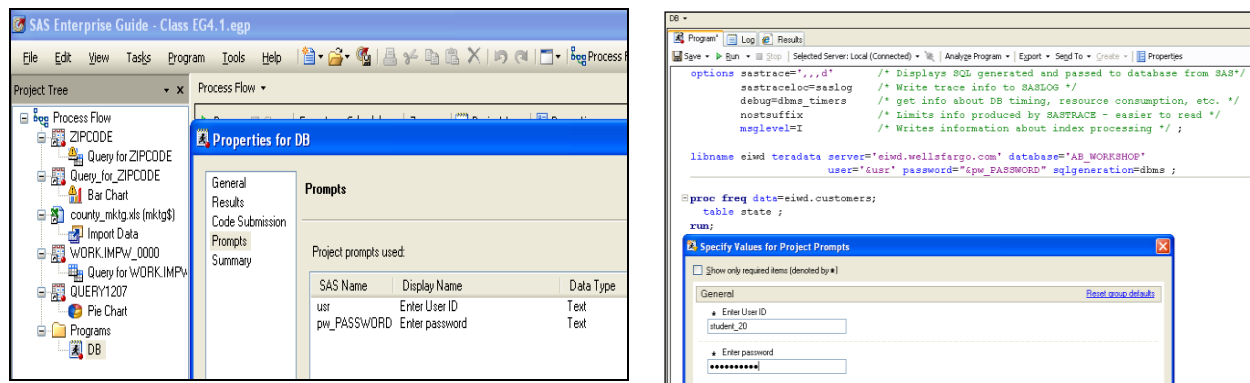


Figure 5 Steps for Adding Prompts

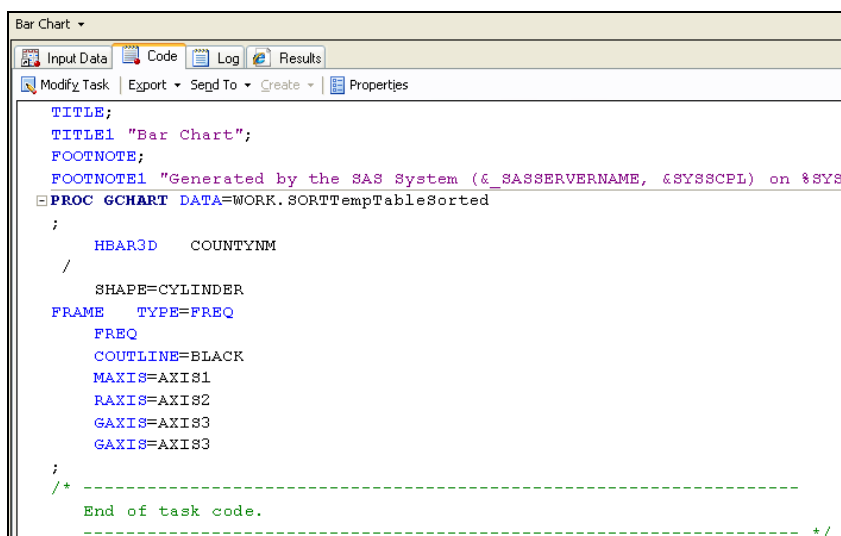
Hint: By coding the variable for the password with _PASSWORD it masks the value as you're entering it.

IV. IS SAS ENTERPRISE GUIDE SLOWER? AND I LIKE TO DO ALL MY CODING – DO I HAVE TO USE THE WIZARDS?

Since it takes a little time to transfer code, logs, and data from a SAS server to the windowing environment, this can slow it down a little. Also, since you do not have full keyboard control (the ability to create your own hot keys), you have to use the mouse more. However, I believe the following additional capabilities available only in SAS Enterprise Guide outweigh the delays.

CODE GENERATION

Whether you are importing a data set, joining tables, or creating a graph, if you use the built-in wizards SAS returns not only the results but also the code it generated for the task. This is great for complex procedures such as PROC GCHART, or for procedures you don't code often. Otherwise, you can always code everything yourself, but it's nice to have an option. Figure 6 shows some sample generated code.



```
TITLE;
TITLE1 "Bar Chart";
FOOTNOTE;
FOOTNOTE1 "Generated by the SAS System (&_SASSERVERNAME, &SYSSCP) on %SYS%";
PROC GCHART DATA=WORK.SORTTempTableSorted
;
    HBAR3D    COUNTYNM
/
    SHAPE=CYLINDER
FRAME    TYPE=FREQ
FREQ
COUTLINE=BLACK
MAXIS=AXIS1
RAXIS=AXIS2
GAXIS=AXIS3
GAXIS=AXIS3
;
/* -----
End of task code.
*/
```

Figure 6 Generate SAS Code

AUTOCOMPLETE

When you enter the first two characters of a SAS keyword (for example, a PROC statement or option), you are presented with a list of possible keywords that you can use to complete the word, the options for a function, the members in a SAS library, or the macro variables available (see Figure 7). To complete a keyword using one of the suggestions, simply highlight the desired keyword in the list and press the spacebar or the next valid punctuation (such as the period key, equals sign key, or semicolon key).

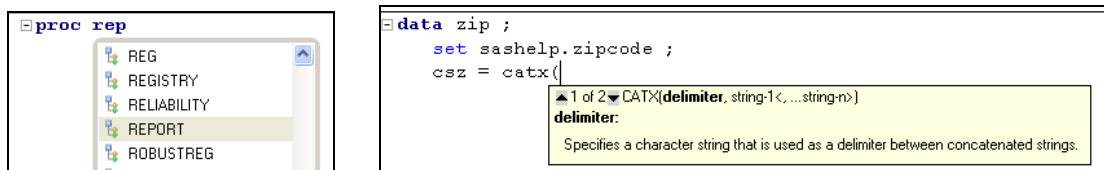


Figure 7 SAS Autofill

INTEGRATED SYNTAX HELP AND PARENTHESIS MATCHING

When you hover over any valid SAS keyword. It includes syntax and a description of the keyword. It also includes links to the SAS website for product documentation, coding samples, and papers about the code.

Also, when you're typing a parenthesis SAS uses a slight gray background to indicate the closing parenthesis to which it matches.

Examples of both are in Figure 8.

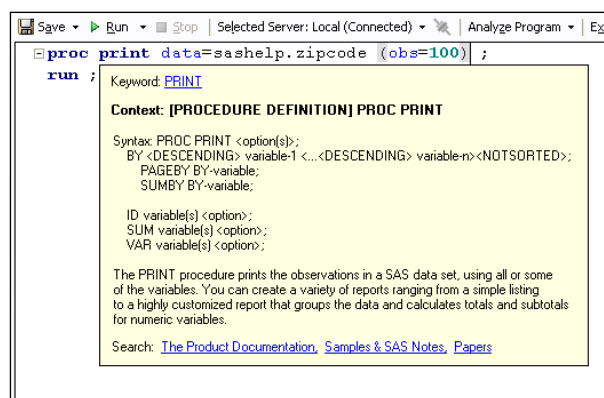


Figure 8 SAS Integrated Syntax and Parenthesis Matching

LOGGING ARROWS

When viewing the log you no longer need to use the Find menu option to look for warnings and/or errors. SAS introduced the up and down arrow buttons (see Figure 9) to find the previous and next warning or error line. As a keyboard shortcut, you can use Ctrl+E (to move to the next error) and Ctrl+Shift+E (for previous error).

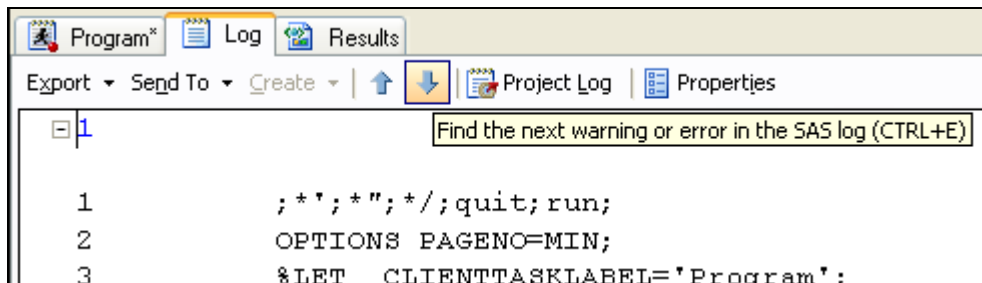


Figure 9 Logging Arrows

FORMAT THE CODE

You no longer need to spend time formatting your program. Just type your code and when you're done let SAS format it.

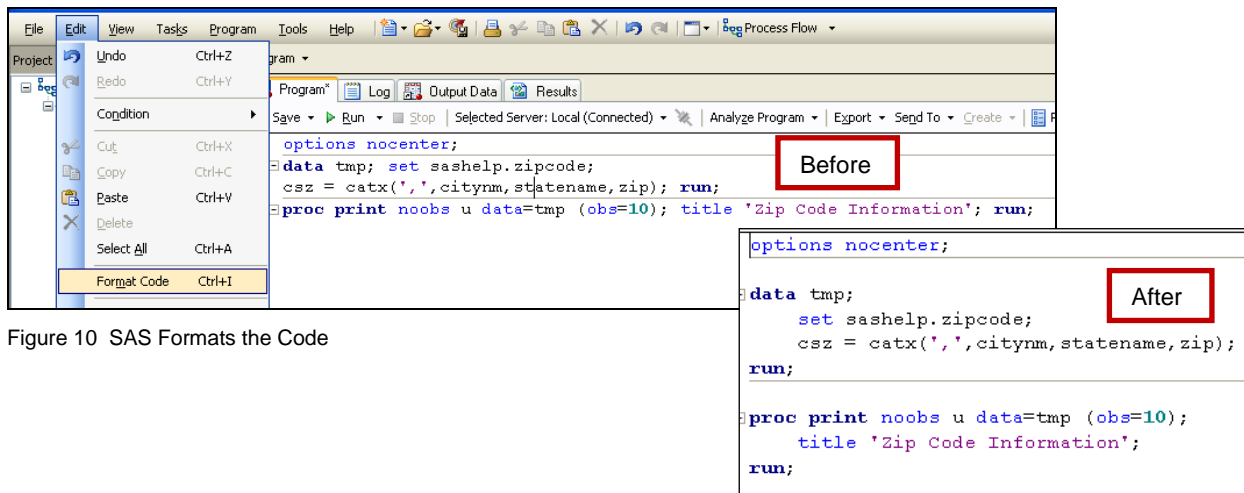


Figure 10 SAS Formats the Code

ANALYZE THE CODE

Using SAS Enterprise Guide, you can analyze the results of a program via a drop-down program as show in Figure 11.

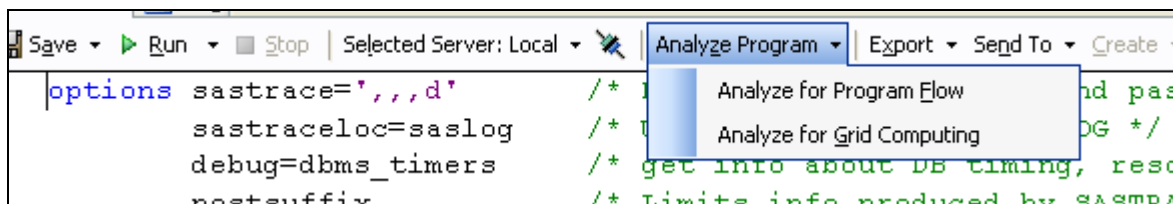


Figure 11 SAS Code Analyzer

The SAS Code Analyzer actually uses the SCAPROC procedure. It executes an existing SAS program and, while the program runs, it collects and analyzes information related to the SAS steps, input and output data, and any dependencies. It records information that can be used to enhance the manageability and efficiency of the program. This is especially helpful when you inherit large programs. As shown above, it can run against grid and non-grid programs. There is always one results file of code with comments detailing the information gathered such as data

sets read and written, dependencies, and so forth. If you are using the GRID option, then a second results file is created that includes statements to grid enable the program and to remote submit the SAS code in separate blocks to run in parallel.

ORGANIZE THE PROCESSES

A picture is worth a thousand words. As Figure 12 shows, all the notes, imports, queries, and SAS processes are all shown in the process flow.

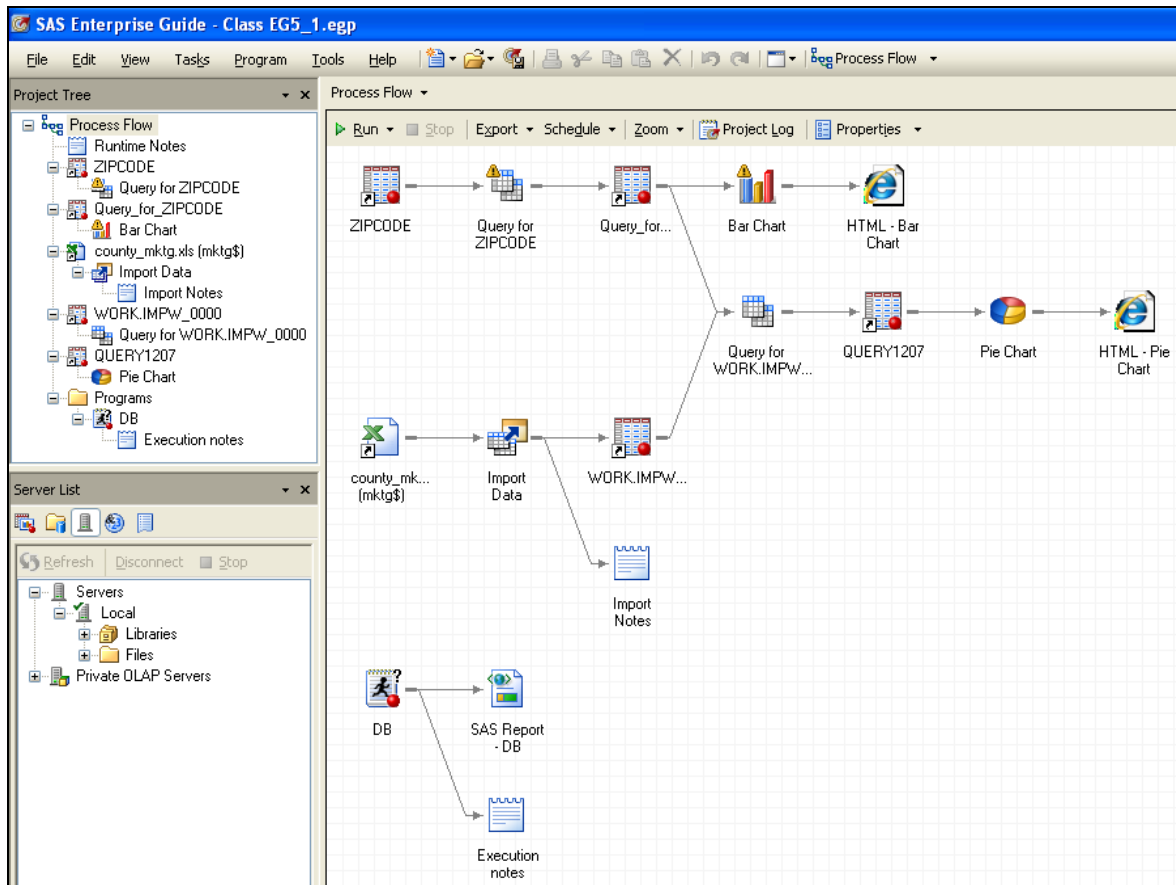


Figure 12 Process Flow Diagram

SAVING THE CODE/PROCESSES

With PC SAS you are working with one program. SAS Enterprise Guide offers you various options:

- The entire project can be saved, complete with embedded and external code, imports, queries, etc.
- Individual SAS programs can be saved on an external server and still remain part of the project.
- Finally, you can export the entire SAS Enterprise Guide project as one SAS program and, if all the necessary feeds/processes are available, run it as a batch process. According to Figure 13 you have quite a few options regarding the export.

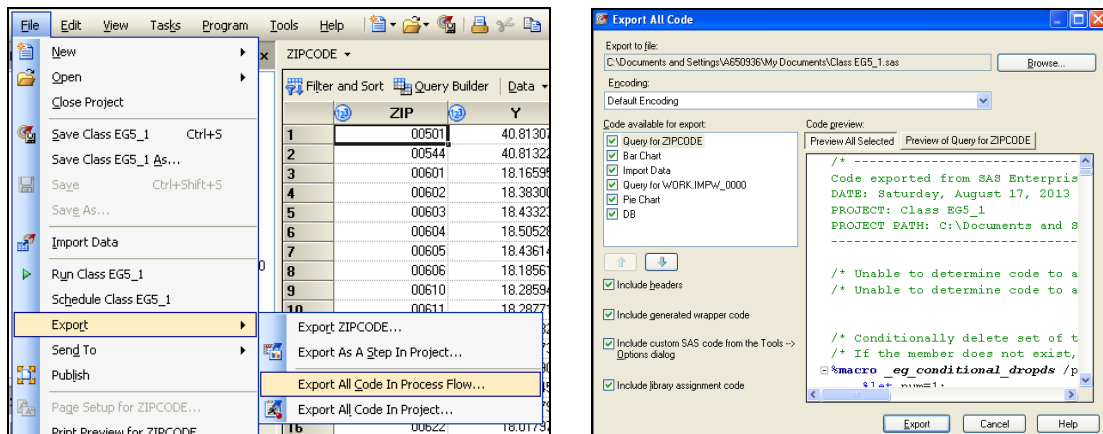


Figure 13 Export SAS Code

GRAPHICS

Although PC SAS has some graphics capabilities, most of the graphing is controlled simply by the program. With SAS Enterprise Guide you have wizards to help you build over 14 different types of graphs, with each type having various formats. See Figure 14 for the various examples.

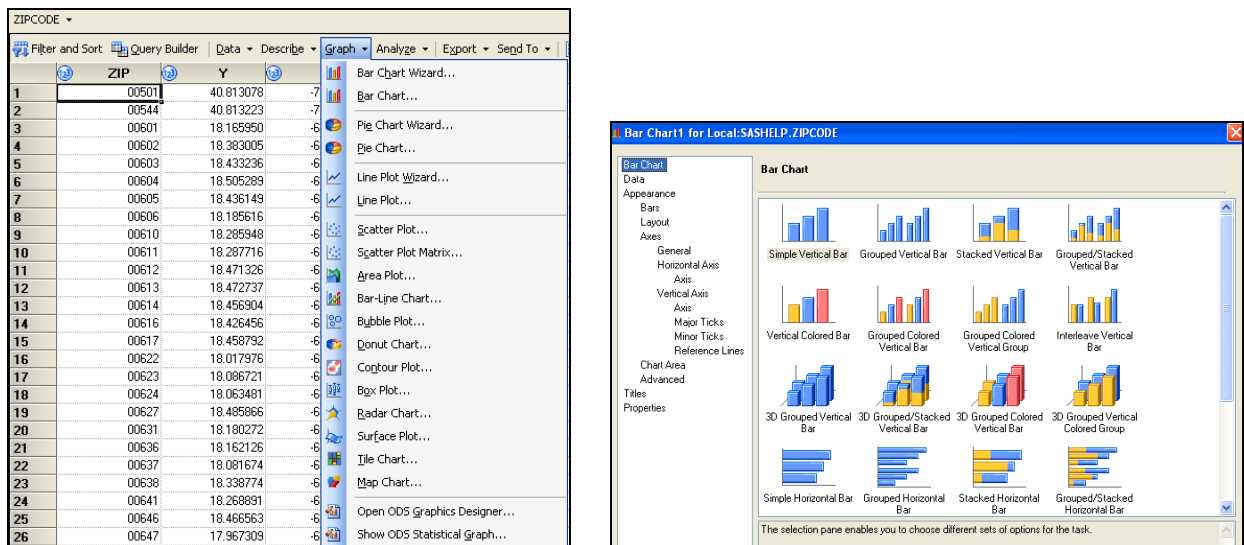


Figure 14 SAS Graphics

SCHEDULER

Use the scheduling process built into SAS Enterprise Guide (see Figure 15), and leave your computer running. Then go eat lunch while it does the work.

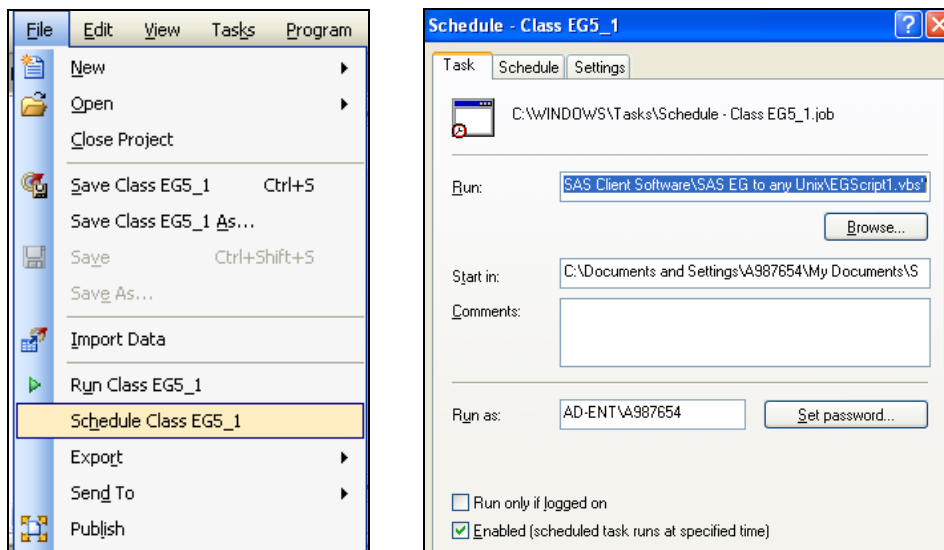


Figure 15 Scheduling a SAS Enterprise Guide Project

RECOVERY

Set up your SAS Enterprise Guide options to create recovery projects at certain intervals (see Figure 16). If your system crashes, just open up an empty project and it will bring up the backups for you to open or delete.

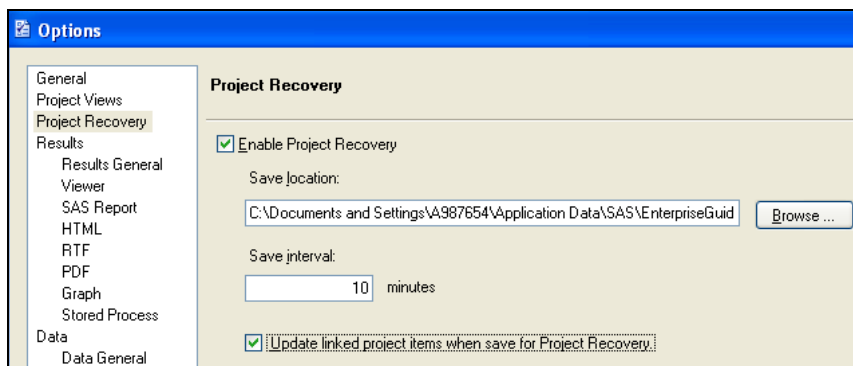


Figure 16 SAS Enterprise Guide Project Recovery

CONCLUSION

SAS continues to add features to SAS Enterprise Guide to appeal to SAS customers who work with established libraries of SAS code or who prefer to create SAS programs “from scratch”, and to help these programmers to be more productive. There are more enhancements with 4.3 and 5.1 that I haven’t even mentioned. Also, because of the SAS metadata interface, there are quite a few capabilities regarding SAS Stored Processes, OLAP cubes, Information Maps, etc. I’ve been a SAS developer since 1988, starting with PC SAS and moving to SAS Enterprise Guide in 1997. I cannot imagine ever coding in PC SAS again!

REFERENCES

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- Becoming a Better Programmer with SAS® Enterprise Guide® 4.3
 - Presented at SAS Global Forum 2011 by Andy Ravenna
- New Goodies in SAS® Enterprise Guide® 4.3

- Presented at SAS Global Forum 2010 by Audimar Bangi, Chris Hemedinger, and Stephen Slocum
- What you get and what you lose when you switch to SAS Enterprise Guide®
 - Presented at PhUSE 2009 by Andreas Mangold
- Top Ten Reasons to Switch to SAS® Enterprise Guide® (Say Goodbye to PC SAS®)
 - Presented at NESUG 2008 by Heather Y. Seeno
- Tips for Moving to SAS® Enterprise Guide® on Unix
 - Presented at SESUG 2009 by Patricia Hettinger

RECOMMENDED READING

- The Little SAS Book for Enterprise Guide 4.2 – information is applicable for versions 4.2-5.1.

CONTACT INFORMATION

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