

## 20 in 20: Quick Tips for SAS® Enterprise Guide® Users

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### ABSTRACT

There are many time-saving and headache saving tips and tricks you can use to make working in SAS® Enterprise Guide® a breeze. Did you know that you can change your layout so that you can see your code and your results at the same time? You will learn 20 tips and tricks for working in SAS Enterprise Guide in 20 minutes. One tip per minute, and out of the twenty you are guaranteed to find at least one nugget that will make your life easier.

### INTRODUCTION

There is a difference between programming and programming efficiently. You might know how to get your code to run and generate results, but are you doing it as painlessly as possible? In this paper, you will learn 20 tips for working in SAS Enterprise Guide that will help you become a more efficient and happier programmer. You will learn how to make SAS Enterprise Guide feel more like “old school Base SAS,” or how to make it feel totally cutting edge. Just as there are often several ways to get the same results, there are many features to get the SAS Enterprise Guide experience and performance that meets your needs. The goal of this paper is to show you at least one feature you haven't been using but that you can't wait to implement.

### CUSTOMIZING GENERAL OPTIONS

Regardless of whether you spend a lot of time or a little bit of time using SAS Enterprise Guide, you want it to be the most user-friendly experience you can have. But since your definition of user friendly might not be the same as another users, SAS Enterprise Guide has options that you can use to customize your experience.

From the main menu, select **Tools > Options**.

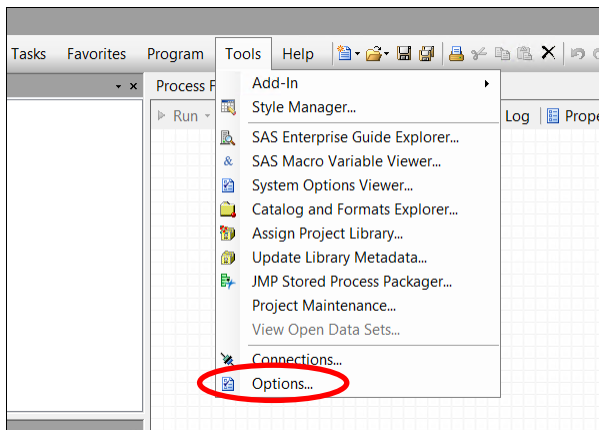


Figure 1: Options

#### 1. TURN OFF WELCOME WINDOW

The **General** panel is where you can turn general options on or off. For example, if you don't want to see the Welcome window every time you open SAS Enterprise Guide, you can turn it off by deselecting the **Show Welcome window at start-up** option.

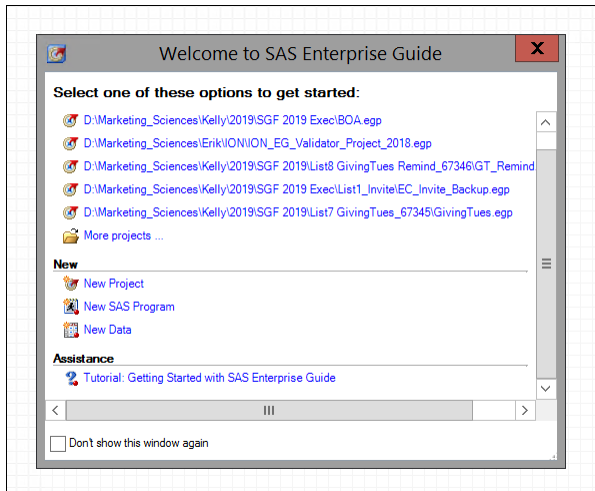


Figure 2: Welcome Window

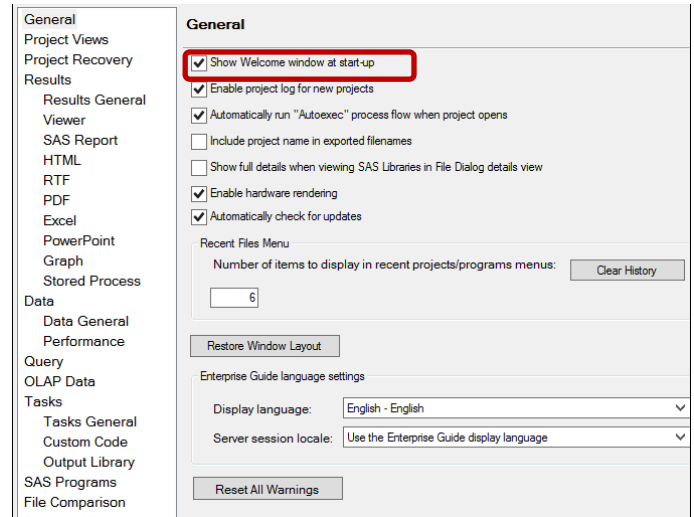


Figure 3: General Options

## 2. AUTOEXEC PROCESS FLOW

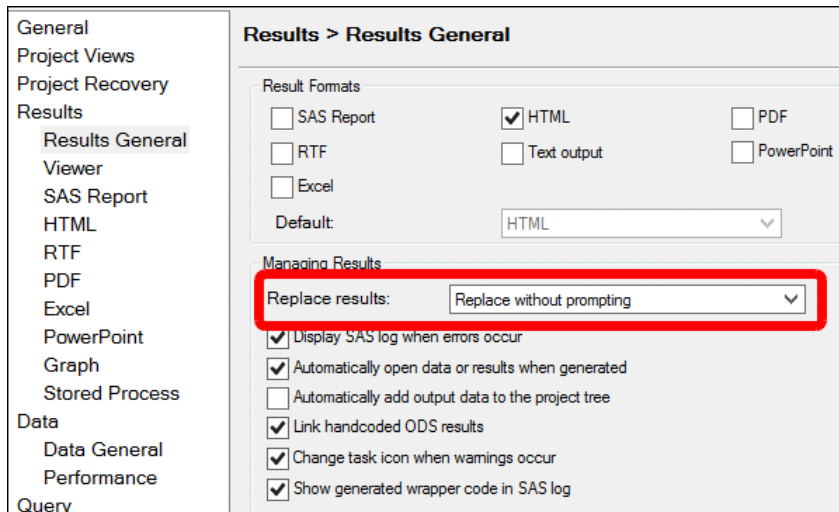
Another general option that is a time saver is the **Automatically run “Autoexec” process flow when project opens**. You can create a process flow named Autoexec that defines all your macro variables or your LIBNAME statements, for example. Every time you open that project, the Autoexec process flow automatically runs, and the macro variables or libraries will be ready to use.

## 3. RESET DEFAULT LAYOUT

Sometimes your project might seem to be misbehaving – you have lost a window, or it won't go where you want it, or your cursor is nowhere to be found. One of the first things to try is to use the **Restore Window Layout** option in the **General** panel. (Note: In SAS Enterprise Guide 8.1, this option is on the main menu under **View-> Reset to default layout**).

## 4. AUTOMATICALLY REPLACE TASK RESULTS

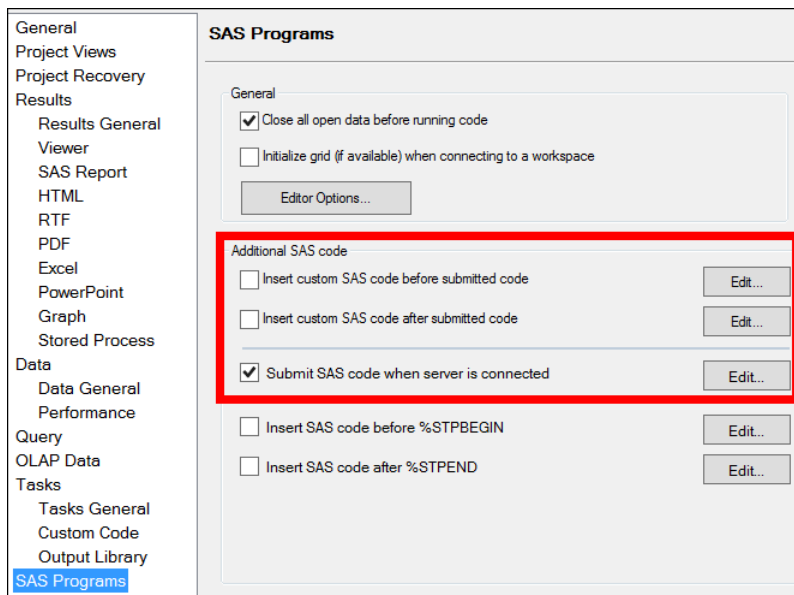
We turned off the Welcome window so that it doesn't pop up each time we open SAS Enterprise Guide, but what about being prompted to replace the results of a task every time you run it? This is the default behavior, but you can turn it off. You can do this by setting the **Replace results** option to **Replace without prompting**.



**Figure 4: Automatically Replace Results**

## 5. AUTOMATICALLY SUBMIT CUSTOM SAS CODE

There might be code that you want to run every time you open SAS Enterprise Guide, or every time before or after you submit code from a program node. For example, you might want to create certain macro variables or work tables or assign or unassign libraries. You can include this code and set it to automatically run by selecting the SAS code options in the **SAS Programs** panel.



**Figure 5: Automatically Run Custom Code**

## WORKING WITH THE PROGRAM EDITOR

You might have moved to SAS Enterprise Guide from another programming interface and prefer coding to point-and-click. The Program Editor in SAS Enterprise Guide can be

customized to make your coding experience easy and familiar.

## 6. TURN ON LINE NUMBERS

Line numbers are not turned on by default in the Program Editor. To turn on line numbers, select **Tools->Options**. Open the **SAS Programs** panel and click **Editor Options**. In SAS Enterprise Guide 8.1, it's even easier – just right-click in the Program Editor and select **Show line numbers**.

## 7. AUTOMATICALLY FORMAT CODE

Sometimes you are so “on a roll” with writing code that you don't want to take the time to indent your code and make it readable. SAS Enterprise Guide can help! Right-click in the Program Editor and select **Format code**, and your code will transform into a more readable and structured format. You can also press Ctrl+I to format the code.

## 8. COPY A COLUMN


There are times when you want to copy lines of code and reuse them. But you might not want the whole line, just part of it. Rather than copying the lines and deleting the part you don't want, press Alt+left mouse to highlight the part you want, and then copy it.

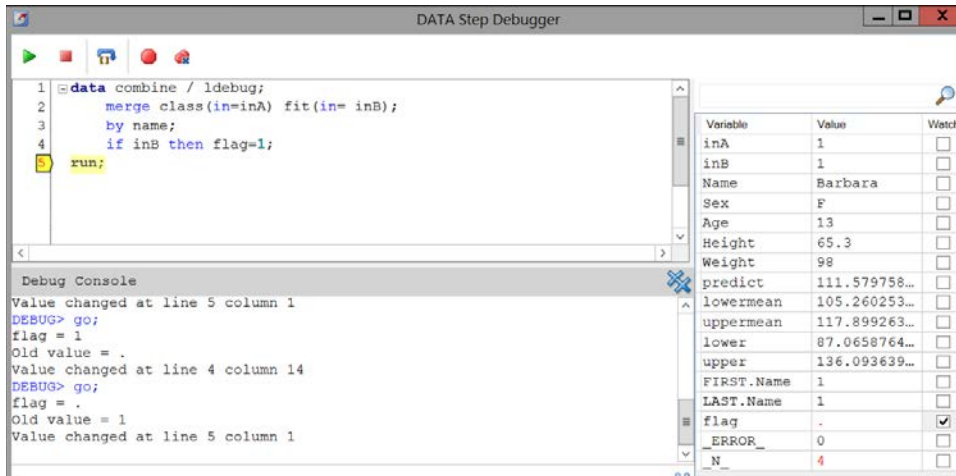
```
data score;
  set contacts;
  if contact=1 and cust=1 and USER="Y"
  if contact =1 and cust=1 and ( USER="
  if contact =1 and cust=1 then score="
  if contact =1 and cust=0 then score="
  if internal=1 and cust=1 then score="
  if internal=1 and cust=0 then score="
  else score="7: Cold";
run;
```

Figure 6: Copy a Select Area

## 9. DATA STEP DEBUGGER

You will get a syntax error in the log when you have an error in your code, but it's harder to find errors in the code logic. The code might run but it doesn't produce the results you expect. You can use the DATA Step Debugger to find the logic errors in your code.

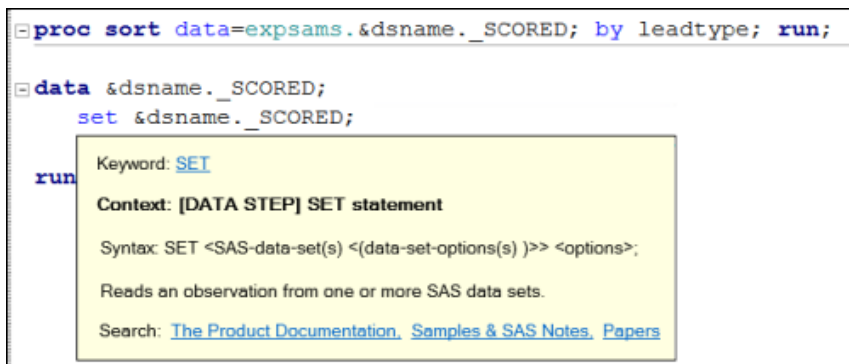
Enable the debugger by clicking on the green bug  on the toolbar in the Program Editor. Then activate the debugger by clicking on the bug to the left of your code. You can then step through your DATA step, line by line, and see the values of your variables change. You can even set a **Watch** variable to tell you specifically when the value of that variable changes.



**Figure 7: DATA Step Debugger with “flag” Set as Watch Variable**

## 10. SYNTAX HELP WINDOW

Sometimes you might not remember the exact syntax for a function or a statement, and you need quick help. You can hover over the keyword and the syntax help window will appear.



**Figure 8: Syntax Help Window**

In addition to the at-a-glance information provided, you can also access product documentation, samples and SAS notes, and papers.

Bonus tip: Keyboard shortcuts are available to make it even easier!

Search the online syntax help for the selected keyword.	Ctrl+Shift+H
Search SAS Technical Papers for the selected keyword.	Ctrl+Shift+P
Search SAS Product Documentation for the selected keyword.	Ctrl+Shift+D
Search SAS Samples and Notes for the selected keyword.	Ctrl+Shift+N


Open the syntax help for the appropriate argument in a SAS function when the cursor is positioned in the function argument list.

Ctrl+Shift+spacebar

**Table 1: Syntax Help Keyboard Shortcuts**

## 11. SPLIT VIEW INTO MULTIPLE WINDOWS

By default, SAS Enterprise Guide displays only one item at a time. But you can easily change this and show two items at a time using the **Workspace Layout** option. You might want to have your Program Editor open, and see the input data set you're working with. Or the log and Program Editor. Or the output data set and the result – the combinations are endless!

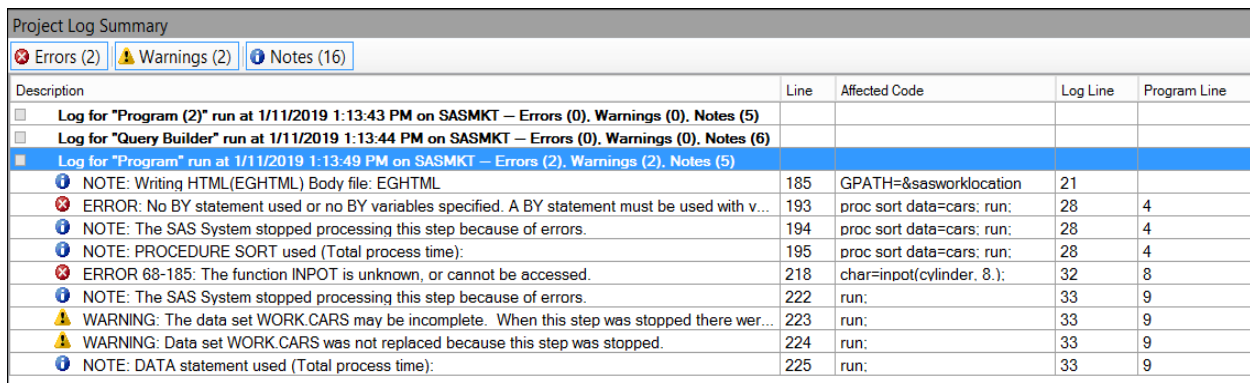
To view two windows at once, select **View** → **Workspace Layout** and then select **Stacked** or **Side-by-Side**. To specify the window you want something to open in, click  in the upper right corner of the workspace.

In SAS Enterprise Guide 8.1, the workspace is extremely customizable, and you are not limited to two workspaces.

## WORKING WITH LOGS

### 12. PROJECT LOG

The project log is turned off by default in SAS Enterprise Guide. To turn on the project log, select **Tools** → **Options**. In the **General** panel, select **Enable project log for new project**. Now that the project log is on, it will track all the tasks and code run in the entire project and enable you to view the logs for each in one place. In addition, you can use the Log Summary window to quickly see the specific log that has an error.



Project Log Summary				
<input type="checkbox"/> Errors (2) <input type="checkbox"/> Warnings (2) <input type="checkbox"/> Notes (16)				
Description	Line	Affected Code	Log Line	Program Line
<input type="checkbox"/> Log for "Program (2)" run at 1/11/2019 1:13:43 PM on SASMKT – Errors (0), Warnings (0), Notes (5)				
<input type="checkbox"/> Log for "Query Builder" run at 1/11/2019 1:13:44 PM on SASMKT – Errors (0), Warnings (0), Notes (6)				
<input checked="" type="checkbox"/> Log for "Program" run at 1/11/2019 1:13:49 PM on SASMKT – Errors (2), Warnings (2), Notes (5)				
<input type="checkbox"/> NOTE: Writing HTML(EGHTML) Body file: EGHTML	185	GPATH=&sasworklocation	21	
<input checked="" type="checkbox"/> ERROR: No BY statement used or no BY variables specified. A BY statement must be used with v...	193	proc sort data=cars; run;	28	4
<input type="checkbox"/> NOTE: The SAS System stopped processing this step because of errors.	194	proc sort data=cars; run;	28	4
<input type="checkbox"/> NOTE: PROCEDURE SORT used (Total process time):	195	proc sort data=cars; run;	28	4
<input checked="" type="checkbox"/> ERROR 68-185: The function INPOT is unknown, or cannot be accessed.	218	char=inpota(cylinder, 8.);	32	8
<input type="checkbox"/> NOTE: The SAS System stopped processing this step because of errors.	222	run;	33	9
<input checked="" type="checkbox"/> WARNING: The data set WORK.CARS may be incomplete. When this step was stopped there wer...	223	run;	33	9
<input checked="" type="checkbox"/> WARNING: Data set WORK.CARS was not replaced because this step was stopped.	224	run;	33	9
<input type="checkbox"/> NOTE: DATA statement used (Total process time):	225	run;	33	9

**Figure 9: Log Summary Window**

### 13. FINDING ERRORS

Now you know your project has an error, so how do you find it?! You can use the Log Summary Window as shown in Figure 9. Click on the line with the error (or warning, or note), and that will highlight the corresponding line that contains that error in the log. Note that if you don't want to see the notes (or the warnings), you can click on the corresponding tab, and they are removed from the log summary.

Project Log

Turn On Turn Off Clear Log Log Summary Export Send To Properties

```

198 system cpu time 0.00 seconds
199 memory 72.28k
200 OS Memory 51680.00k
201 Timestamp 01/11/2019 01:13:48 PM
202 Page Faults 0
203 Page Reclaims 0
204 Page Swaps 0
205 Voluntary Context Switches 3
206 Involuntary Context Switches 2
207 Block Input Operations 0
208 Block Output Operations 0
209
210 29
211
212
213 30 data cars;
214 31 set sashelp.cars;
215 32 char=input(cylinder, 8.);
216
217 68
218 ERROR 68-185: The function INPOT is unknown, or cannot be accessed.
219

```

Project Log Summary

Errors (2) Warnings (2) Notes (16)

Description	Line	Affected Code	Log Line	Program Line
Log for "Program (2)" run at 1/11/2019 1:13:43 PM on SASMKT – Errors (0), Warnings (0), Notes (5)				
Log for "Query Builder" run at 1/11/2019 1:13:44 PM on SASMKT – Errors (0), Warnings (0), Notes (6)				
Log for "Program" run at 1/11/2019 1:13:49 PM on SASMKT – Errors (2), Warnings (2), Notes (5)				
ERROR: No BY statement used or no BY variables specified. A BY statement must be used with variable names to s...	193	proc sort data=cars; run;	28	4
ERROR 68-185: The function INPOT is unknown, or cannot be accessed.	218	char=input(cylinder, 8.);	32	8

Figure 10: Using Log Summary to Find Errors

Another way you can jump to errors or warnings in the log is to press Ctrl+E.

## 14. DECLUTTERING LOGS

You might have noticed a lot of code in the log that you didn't write in your program – like %LET or ODS – and wonder where the heck it came from. This code is automatically generated by SAS Enterprise Guide when you run a program or task. If you don't want this code written to the log, select **Tools** → **Options**. Under the **Results** heading, select **Results General**. De-select **Show generated wrapper code in SAS log**. The verbose code is replaced by:

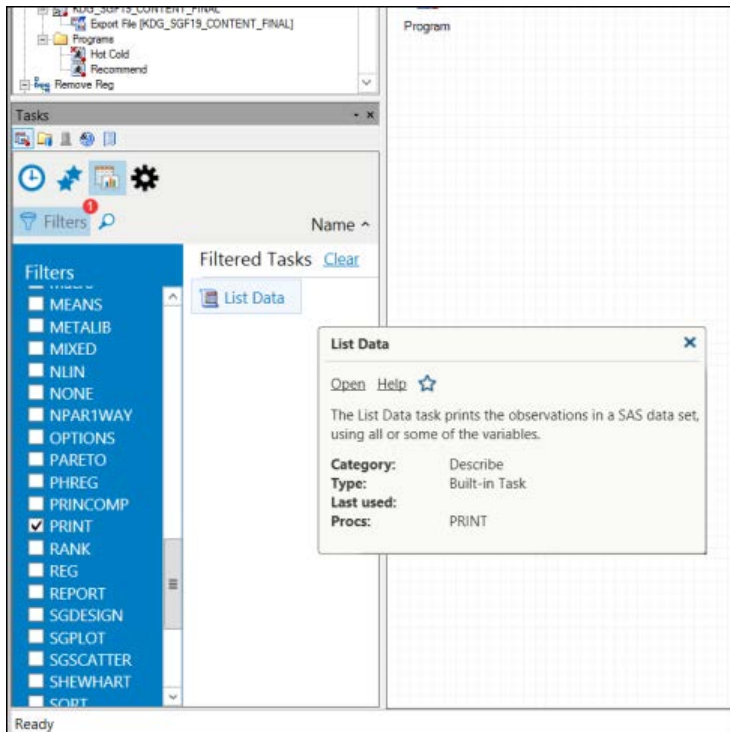
```
1 %_eg_hidenotesandsource;
```

## TASKS AND QUERIES

### 15. FINDING THE RIGHT TASK

SAS Enterprise Guide has built-in tasks that you can use to harness the power of SAS procedures in a GUI format. Now, you don't have to know the syntax for a procedure to be able to use one! However, it can be puzzling if you DO know the name of the procedure you want to use, but you don't know the name of the corresponding SAS Enterprise Guide task. One way to find this task is to use the **Tasks** pane.

Select the **Filters** option to see a list of all the available procedures. Select the procedure you want, and you will see the task or tasks that use that procedure. You can also search on the procedure name.



**Figure 11: Task Window**

Here we see that PROC PRINT corresponds to the List Data task. And if you hover over the task, you will get an info window that gives further detail. Click the star to add this task to your list of favorites for fast access in future uses.

## 16. FILTERING AND SORTING

The Sort Data task can be used to sort your data. There is also a **Filter and Sort** option in the data grid. What's the difference?

The **Filter and Sort** option enables you to select what columns you want, and subset the data – for example, if you want to see only sedans with a City MPG greater than 25 – and then sort the data. If you sort the data by Make, you might get rows that repeat, so the results aren't quite what you had in mind. What you REALLY wanted is a list of all the Makes that met the criteria with no duplicate records.

In that case, you want to use the Sort Data task. In this task, you have all the same options as in Filter and Sort, but you ALSO have the option to **Keep only the first record for each "Sort by" group**, which removes any duplicate records.



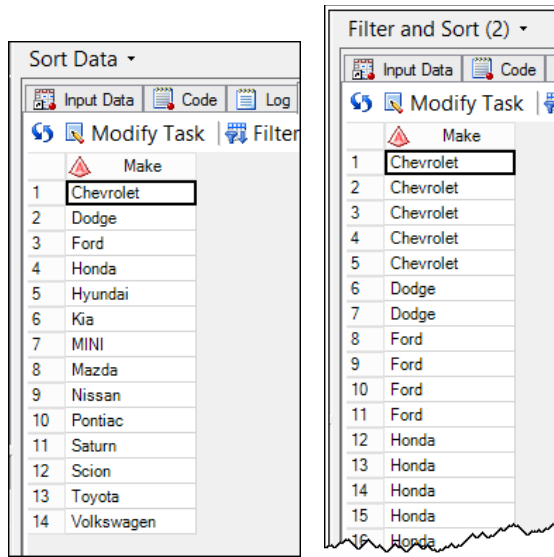


Figure 12: Sort Data Task Results Versus Filter and Sort

## 17. CREATING DYNAMIC QUERIES

The Query Builder is a powerful tool that generates SQL behind the scenes enabling you to join and manipulate data. You can use prompts (or macro variables) to make your queries dynamic.

You might want to query a data set by gender and calculate the average height. Instead of using the same value for gender in the filter each time, you want to select the gender when you run the query. Use the Prompt Manager to create a variable that lets you choose the value when you run the query.

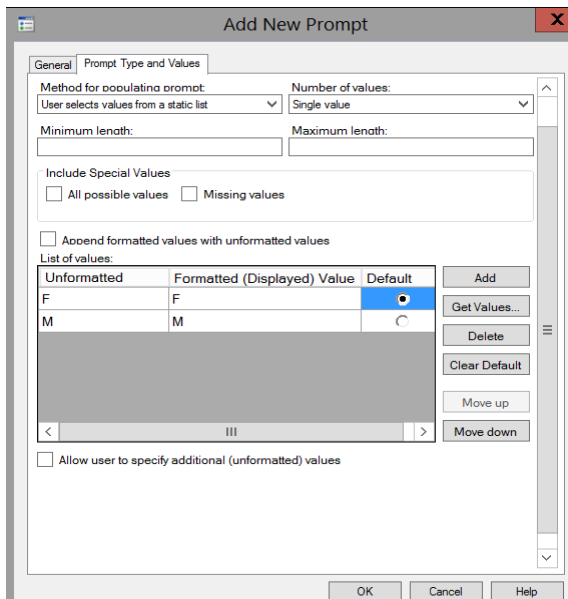


Figure 13: Creating a Prompt

You can now use this prompt in the filter of your query. When you run the query, you will be “prompted” to select the gender you want.

## 18. CREATING TASK TEMPLATES AND SUBQUERIES

You can take this a step further and use your query to create a subquery. You created a prompted query that returns the average height for a gender. You can create a task template from this query. Task templates are handy for when you regularly run the same query, and you don’t want to have to re-create it each time.

Right-click the query and select **Create Task Template**. You can now reuse the template on other data with the same columns, OR you can use it in a subquery. For example, you can create a template that calculates the average weight for a gender using the SASHELP.Class data set. That template can be used as a sub-query to filter the values to include only observations with heights greater than or equal to the selected gender’s average from the SASHELP.Classfit data set.

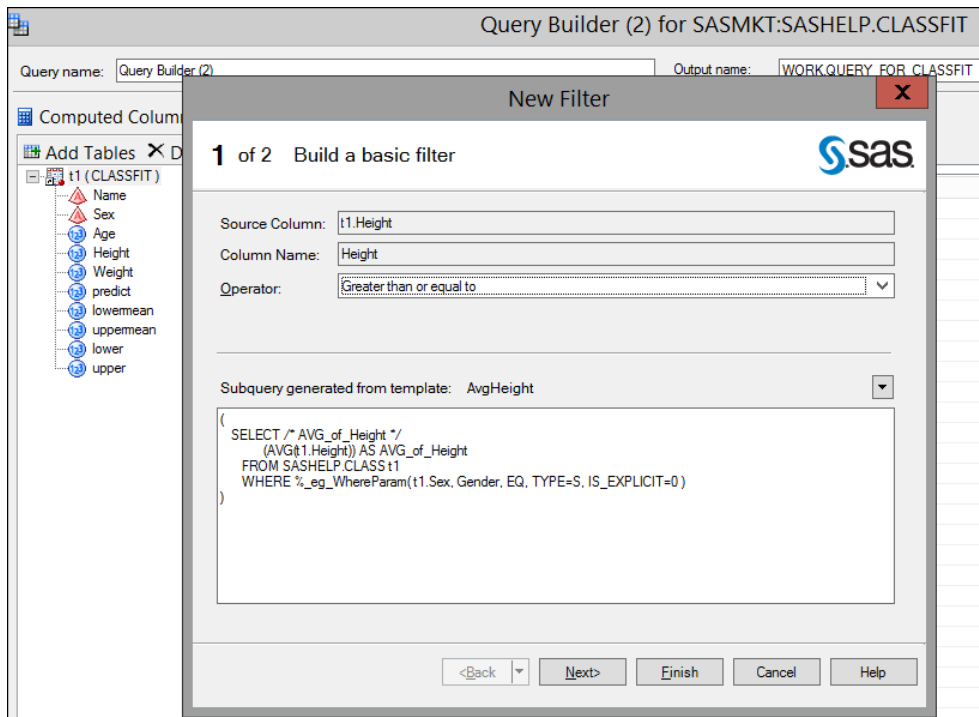


Figure 14: Creating a Subquery Using a Template

## PROCESS FLOW AND PROJECTS

You now have dynamic queries and subqueries that you’d like to reuse without having to re-create them. This is the perfect time to create a stored process!

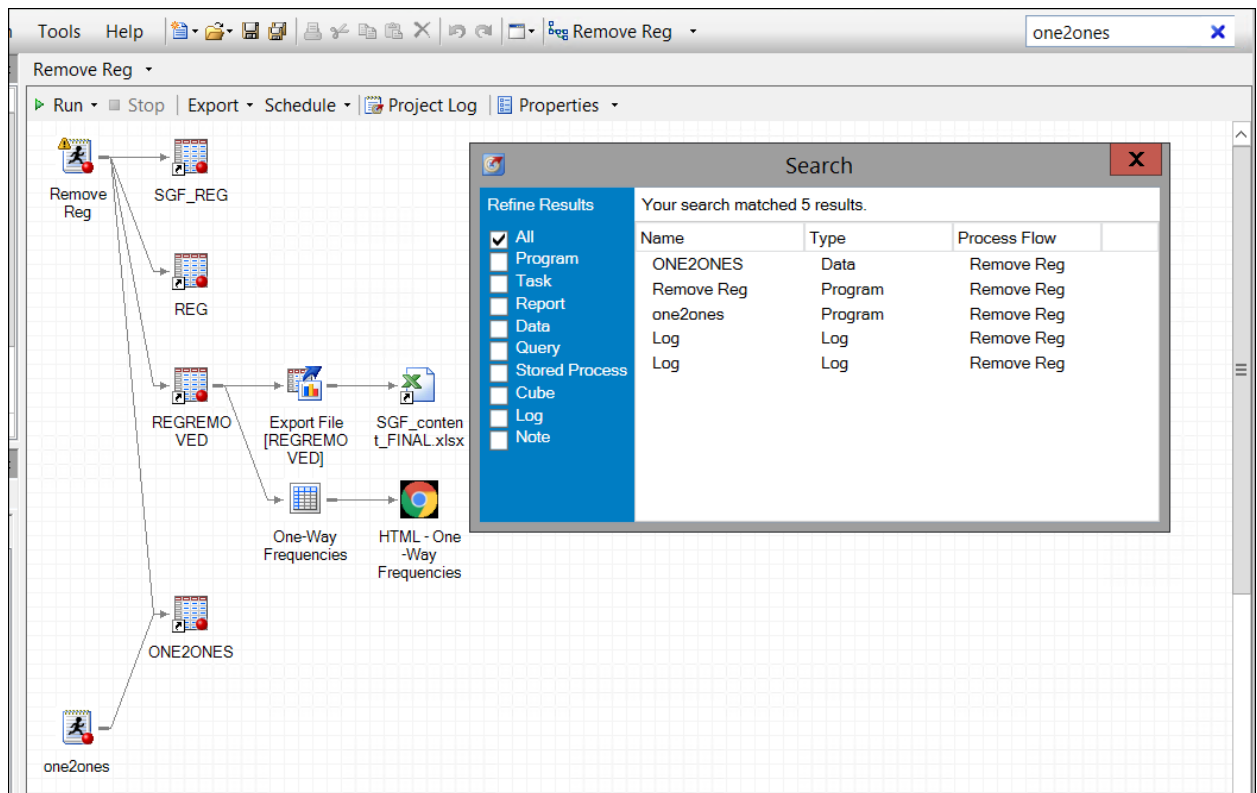
## 19. CREATE A STORED PROCESS FROM A PROJECT

You can create a stored process from your project. A stored process puts all the code from the project into a neat bundle and stores it in a central location where it can be accessed by remote clients.

To create a stored process, right-click in the process flow and select **Create Stored Process**. The Create New Stored Process wizard walks you through creating the stored process. After you create the stored process, you can use it in other SAS applications, such as SAS Add-In for Microsoft Office, or other people who have access to the stored process can use it.

## 20. SEARCH PROJECT

You might be working on a project and need change out a data set with another one. This can be a big pain if you have a large project where you used the data set multiple places. But never fear, you can search for all the places the data set could be hiding using the project search. Enter the text string that you want to search for – in our case, the data set name. A results box will appear that contains all the places where the text string was found.



**Figure 15: Project Search Results**

You can search the whole project, or if you want to refine your results to just programs that contain the string, you can just select **Program**. To open the results, double click the search result you want to open.

## CONCLUSION

SAS Enterprise Guide is a powerful tool designed to make data access, analysis, and sharing easy. Whether you are a seasoned programmer or a novice, you can use SAS Enterprise Guide to harness the power of SAS. We have only scratched the surface of some of the tips you can use when working with SAS Enterprise Guide, but hopefully you found at least one new tip that you can start using next time you log on.

## RECOMMENDED READING

For ongoing tips, see Chris Hemedinger's blog "The SAS Dummy" <https://blogs.sas.com/content/sasdummy/>, as well as visiting the SAS Enterprise Guide Communities site: [https://communities.sas.com/t5/SAS-Enterprise-Guide/bd-p/sas\\_eg](https://communities.sas.com/t5/SAS-Enterprise-Guide/bd-p/sas_eg).

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