

Paper 69-28

SAS® Enterprise Guide® -- Getting the Job Done

Andy Ravenna, SAS Institute Inc., New York, NY

ABSTRACT

Enterprise Guide is a relatively new front-end Windows client that provides a point-and-click interface to access and analyze your data. Both longtime users of SAS as well as new users to SAS often don't know where to begin with Enterprise Guide. Longtime users are accustomed to typing all of their code into the Program Editor window and hitting the Submit key. New users are puzzled about how to get started and how to 'make something happen' such as creating a report.

This beginning tutorial introduces Enterprise Guide to both old and new users of SAS. It focuses on the key points of a typical Enterprise Guide session: creating a project, accessing your data, building a query, and producing a report. It also answers several common questions that typically come up for first-time users, such as 'Why can't I sort my data?' and 'How can I copy a task from one project to another project?' Attendees get a head start back at the office with 'getting the job done' with Enterprise Guide.

INTRODUCTION

This beginning tutorial is an introduction to Enterprise Guide. The audience for this topic typically falls into one of two very different categories:

- **New-User**, those who are unfamiliar to SAS and
- **Exp-User**, those who are experienced with SAS.

Both sets of users can follow along on their own Enterprise Guide session by performing the actions indicated in the **To-Do** sections.

This paper was created with Release 8.2 of the SAS System running behind the scenes of Enterprise Guide Version 2.0, running on top of a Microsoft Windows platform. Version 2.0 of Enterprise Guide was released in September of 2002. If you are still using Enterprise Guide 1.3, you will notice some minor differences in screenshots and functionality, but the two versions are very similar.

New-User: From the pull-down menus located at the top of the screen, select **Help** and then **About Enterprise Guide** to determine the version of Enterprise Guide.

Exp-User: If you want more details about what is different between the two versions of Enterprise Guide, please see the following reference:
www.sas.com/products/sassystem/release82/eg20new.html.
 Also, if you are familiar with Enterprise Guide and are looking for more in-depth statistical examples, you may be interested in the SUGI 28 advanced tutorial "Advanced Analytics with SAS Enterprise Guide®".

The scenario used in this paper refers to a fictitious new company and their Web site named Kitchens-R-Us that sells typical kitchen products and supplies. The data used in this paper refers to an online survey. (If you'd like to create the data to follow along, please see the **FAQ** or Figures 9 and 11.) The survey data, which is stored in two different tables, consists of a survey number, the gender of the customer who took the survey, and the answers to the following questions:

Did you find what you wanted?	Yes/No
Was your purchase a gift?	Yes/No
Would you buy from us again?	Yes/No
How did you find our prices?	Scale 1-5 (1-Lousy 3-Average 5-Great)
Was our site easy to navigate?	Scale 1-5 (1-Lousy 3-Average 5-Great)

But before you get in too deep with details of the scenario, take a quick tour of Enterprise Guide in case you've never seen it.

VISUAL INTRODUCTION TO ENTERPRISE GUIDE

To keep it simple, there are only three key 'windows' that you need to be concerned with in Enterprise Guide: the Project window, the Task List, and the Workspace area.

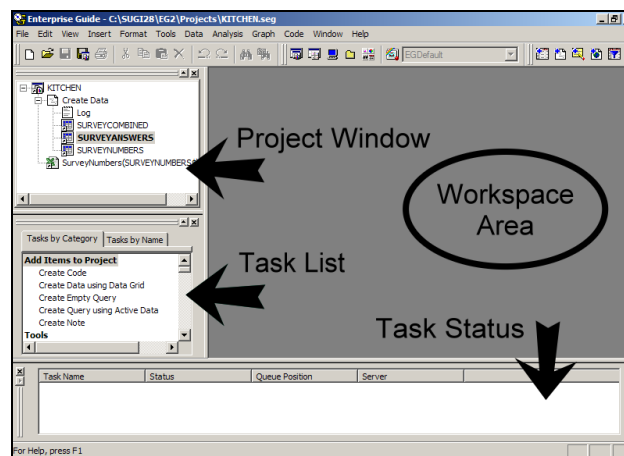


Figure 1 Typical Enterprise Guide Workspace Area

When you open Enterprise Guide for the very first time, your default workspace layout will most probably include the Task Status window. Close that by clicking on the located at the top left corner of that window. When starting with Enterprise Guide, you'll want to maximize your Workspace area and closing the Task Status window is a great way to do just that.

THE PROJECT WINDOW

As you can imagine, the Project window is the window that holds and displays your current project. But, what is a project? The next section HOW DO I OPEN A PROJECT contains details. But for starters, a project is the structure that Enterprise Guide uses to manage a related collection of data, tasks, and reports. In the Project window a plus sign indicates a branch. Right-click the plus sign to expand the branch. Double-clicking an icon typically causes the item to display. Enterprise Guide can keep only one project open and active at a time.

The name of the following project in the Project window is 'Kitchen Web Site.' You can see a series of data, tasks, and results branch off of this project. You probably even recognize some of the icons.

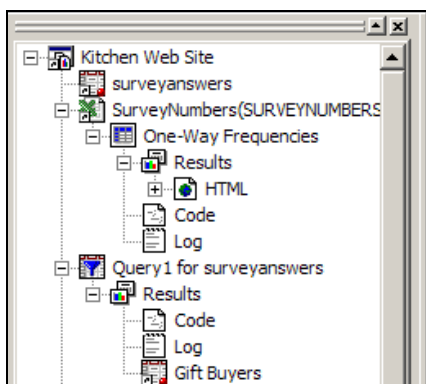


Figure 2 Typical Project Window

New-User: The icon that looks like a table with a dot is a SAS Data Table. The icon that looks like an x is an Excel spreadsheet.

THE TASK LIST

After you have opened a project and added some data, you will want to create some reports. The Task List allows you to select the task that you wish to run on the data. There are many tasks available to you in Enterprise Guide. Some are simple and some are more complex. For example, if you wanted to get a simple, detailed listing of some data in your project, you would select the **List Data** task.

In order to find the **List Data** task in the Task List, you have two choices. From the **Tasks by Category** tab, you will find it underneath the **Descriptive** grouping. From the **Tasks by Name** tab, you will find it listed in alphabetical order.

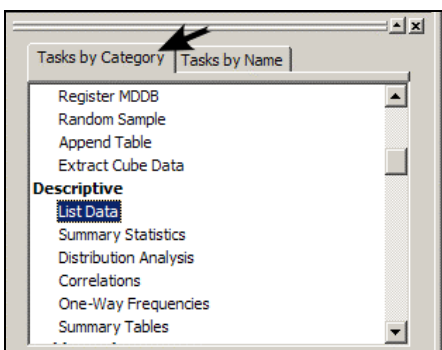


Figure 3 Tasks by Category Tab

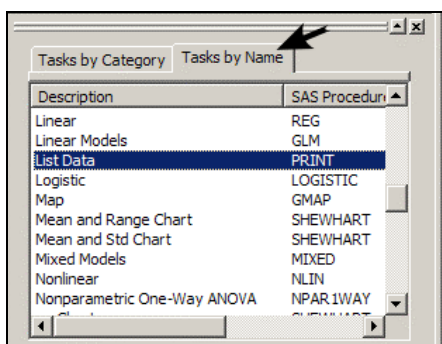


Figure 4 Tasks by Name Tab

Exp-User: The **Tasks by Name** tab also contains the SAS procedure associated with that task. If you know which 'proc' you want, it is easy to find the Enterprise Guide task name from this tab. Also if you prefer, tasks are available to you through the pull-down menus at the top of the screen.

THE WORKSPACE AREA

The Workspace area serves several purposes, but in general it allows you to display your results. For example, if you run a **List Data** task on a data source, the detailed report would show up in this area. Or if you want to investigate the values of a SAS data table that you just created, double-click on the table name inside the Project window and the table appears in a data grid inside of the Workspace area.

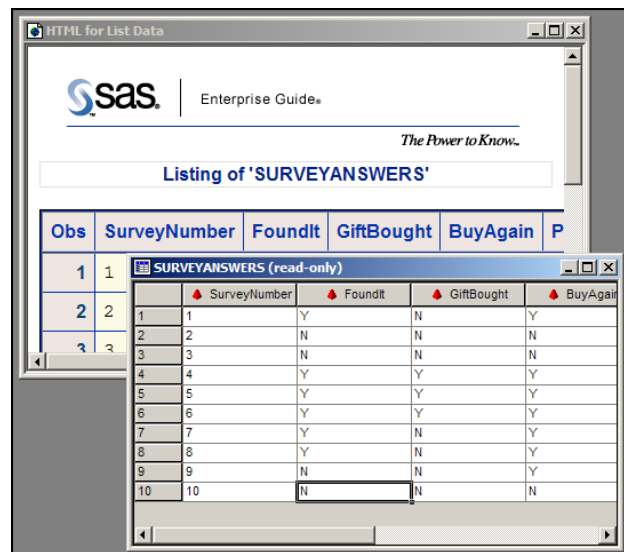


Figure 5 Typical Workspace Area

Exp-User: The entire Enterprise Guide window is considered to be the Workspace area. Items discussed so far, such as the Project window, the Task List, and the Task Status window are considered to be in the Workspace area. Because you can remove the toolbars at the top of the Enterprise Guide window, they also fall into that same category.

HOW DO I OPEN A PROJECT?

Now that you've had a brief tour of Enterprise Guide, you are ready to 'make something happen.' Not so fast! It turns out that you cannot do **anything** in Enterprise Guide until you either open an existing project or create a new project.

Exp-User: For those of you who have been coding in SAS for quite some time, you may be annoyed. The project concept is not only something new, but it is also required. The project structure is not used if you are running SAS in any of the traditional ways such as interactive Display Manager mode or batch mode. However, that is not the case with Enterprise Guide, and you cannot move on to the next step until you have a project.

Think of your project as your kitchen. This is the place where you bring together all the ingredients, perhaps combine them in a mixing bowl, place it in the oven, and create something delicious. If you do not have a kitchen, you will not be able to cook anything!

Fortunately, creating a new project or even opening up an existing project could not be easier in Enterprise Guide. Unless you have turned the Welcome to Enterprise Guide! window off, it appears each time you invoke Enterprise Guide.



Figure 6 Welcome Window

New-User: It is possible that the Welcome window might look slightly different if somebody else has invoked Enterprise Guide on your machine before you.

To-Do:

- After starting up Enterprise Guide, select the **Create New Project** button. A new project, named Project, is created for you.
- This is a terribly uncreative project name, so rename the project by right-clicking on Project in the Project window and selecting **Save Project As...**
- Navigate in the dialog box to the subdirectory C:\SUGI28\EG2\Projects (you might have to create the subdirectory if it does not already exist) and then type *Kitchen Web Site* into the **File name** box:



Figure 7 File Name Box

- Finally, select the **Save** button to save the project under your new name and location.

New-User: If someone has given you a project or you have created a project in a previous session, you can find it by selecting the **Browse for Project** button.

Exp-User: Recent projects appear automatically in the Welcome to Enterprise Guide! window, making it easy to access the most recent projects you have been working on. Of course, this list does not appear if you have never saved any projects on your computer.

HOW DO I GET TO MY DATA?

At this point, you've opened up the kitchen, but the cabinets are all empty and you need to do some shopping. The current project is available, but it is completely empty. In order to move to the next step and 'make something happen,' some data needs to be added to the project.

New-User: Begin by thinking about what are a couple of your favorite data sources. Enterprise Guide allows you to add SAS data sets and Microsoft Excel spreadsheets that are stored locally on your computer to your current project. By the way, a SAS table is simply another name for a SAS data set. You might even hear someone use the expression SAS data table. The terms all refer to the same thing.

Exp-User: Enterprise Guide allows you to access several data sources provided that those tables contain data in a table format (rows and columns). Here are several popular examples:

- SAS data sets (local or remote)
- Microsoft Excel spreadsheets, Microsoft Access tables, and Lotus spreadsheets (local)
- Text and HTML files (local)
- ODBC-compliant data (local)
- DB2, Oracle, and SYBASE database files (local and remote; additional SAS database engine license required)
- MDDBs (local and remote; additional SAS software may be required)


Exp-User: Enterprise Guide uses the Microsoft Jet database engine to access data sources for which there is a DAO (Data Access Objects) interface.

INSERTING A SAS TABLE

It is time to add a SAS table to your Kitchen Web Site project. The SAS table that you are going to add has been created and is stored on your local computer. (Please see the **FAQ** or Figure 9 if you need to create the table.) The name of the table that you are going to add to your project is **SurveyAnswers**, and it is located in the C:\SUGI28\EG2\Data subdirectory. The **SurveyAnswers** data table contains the results of a total of 10 surveys. If you do not remember the questions that made up the survey, review the INTRODUCTION to this paper.

New-User: SAS data sets have the extension 'sas7bdat', so the file that you are looking for is named **SurveyAnswers.sas7bdat**. Also, SAS data set names are case insensitive, so **SurveyAnswers** and **surveyanswers** are both considered the same table.

To-Do:

- Select the **Insert Data** button, , near the right end of the toolbar.
- When the **Insert Data** dialog box appears, select the **Existing** tab if it is not already selected.
- Verify that the **Files of type:** box has either **All Files (*.*)** selected or **SAS Data Files (*.sas7bdat; *.sd7; *.sd2)** selected.

- Navigate in the **Insert Data** dialog box until you have selected the file **surveyanswers.sas7bdat** located in the C:\SUGI28\EG2\Data subdirectory.
- Select the **OK** button.

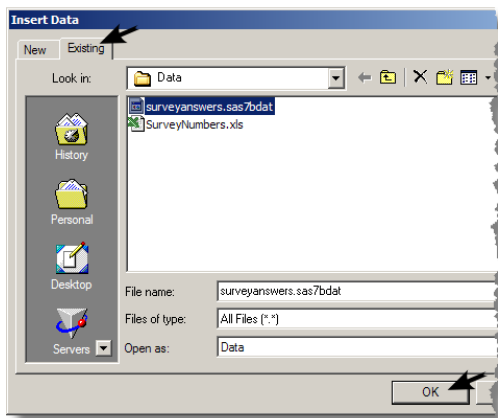


Figure 8 Insert Data Dialog Box – SAS Table

Exp-User: You can also add data to your project by selecting **Insert** and then **Data** from the pull-down menus.

New-User: It is a good practice to save your project on a regular basis. Select **File** and then **Save Kitchen Web Site** from the pull-down menu.

By default, when you add a data source to your project, it opens in a data grid automatically. This is what your table looks like.

	SurveyNumber	FoundIt	GiftBought	BuyAgain	Prices	Navigate
1	1	Y	N	Y	5	4
2	2	N	N	N	3	3
3	3	N	N	N	4	3
4	4	Y	Y	Y	5	5
5	5	Y	Y	Y	5	5
6	6	Y	Y	Y	5	5
7	7	Y	N	Y	5	5
8	8	Y	N	Y	4	4
9	9	N	N	Y	4	4
10	10	N	N	N	3	3

Figure 9 SurveyAnswers Data Table

Not very interesting is it? Well, you have some things to do before you make something more meaningful out of your data in Enterprise Guide.

But first, congratulations! Your kitchen is stocked with one ingredient. One thing you should know about what is going on behind the scenes is that Enterprise Guide did **not** make a copy of the table in your project folder. In fact, what happened when you added that table to your project was that Enterprise Guide simply added a pointer to that table in your project. You probably know that most of the icons on your computer desktop are really pointers to the actual files located somewhere else on your hard drive. When you add a table to your project, Enterprise Guide just creates a pointer to that data source wherever it is stored on your hard drive. In fact, you can delete that data table from your project and it will **not** delete the table from your hard drive.

On the one hand, you are very pleased that you have managed to add one item to your project. On the other hand, this would lead to a very bland meal. So before you really start cooking, go


ahead, add one more item to the inventory to keep things interesting.

INSERTING AN EXCEL SPREADSHEET

The other existing data source that you are going to add to the project is the **SurveyNumbers** Microsoft Excel spreadsheet. This table contains only two columns. One column specifies the survey number. The other column reveals the gender of the person who took the survey. For now, add the spreadsheet to the project. In the following section use this new **SurveyNumbers** table to determine what percentage of the survey takers were male and what percentage were female. At the end of the tutorial, you will combine this table with the **SurveyAnswers** table to analyze the results characterized by gender. But add the table first.

New-User: Microsoft Excel files have an extension of *'xls'*, so the file that you are looking for is named **SurveyNumbers.xls**. Also, typically an Excel file is a *Workbook* that contains *worksheets*. It is not uncommon for a simple *Workbook* to contain only one *worksheet*. When this occurs, you may be surprised to see two *worksheets* appear in the pop-up dialog box. One of the *worksheet* names is plain and the other contains the '\$' character attached to the end of the name. Always select the name with the '\$' character to get the entire *worksheet*, unless you know for certain that you want just a range. You see this in the following example.

To-Do:

- Select the **Insert Data** button, , near the right end of the toolbar.
- When the **Insert Data** dialog box appears, select the **Existing** tab if it is not already selected.
- Verify that the **Files of type:** box has either **All Files (*.*)** selected or **Microsoft Excel Files (*.xls)** selected.
- Navigate in the **Insert Data** dialog box until you have selected the file **SurveyNumbers.xls** located in the C:\SUGI28\EG2\Data subdirectory.
- Select the **OK** button.
- Select the **SURVEYNUMBERS\$** worksheet.
- Select the **OK** button.

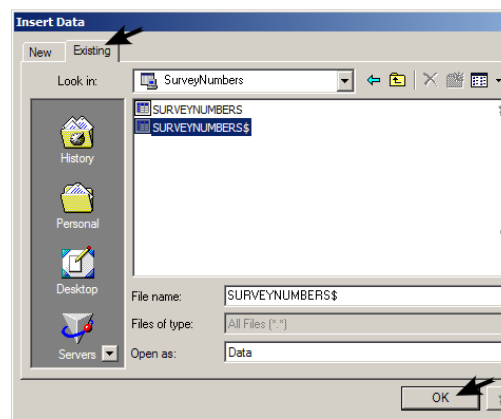


Figure 10 Insert Data Dialog Box – Excel File

As discussed a little earlier, when you add a data source to your project, it opens in a data grid automatically. This is what the new table looks like.

	SurveyNumber	Gender
1	1	M
2	2	M
3	3	M
4	4	F
5	5	F
6	6	F
7	7	F
8	8	F
9	9	F
10	10	F

Figure 11 SurveyNumbers Excel File

You'll notice that once in Enterprise Guide, the Excel file looks pretty much like a SAS data set and vice-versa. In fact, on the surface, all the data sources you pull into your project are going to be treated in the same way, regardless of whether they are Excel files, SAS data sets, or even DB2 tables. But remember, don't be fooled here. The phrase 'pull into your project' does not mean that Enterprise Guide is making a copy of the data source in your project. It is only creating a pointer to where that table is truly located.

HOW DO I CREATE A REPORT?

You are ready 'make something happen' in Enterprise Guide. Create a report that displays what percentage of the survey takers were male and what percentage were female. Continuing with the kitchen analogy, you might say you were getting ready to actually cook something!

You produce reports and analyze data in Enterprise Guide by using tasks. You might want to think of a task like a recipe--select a particular recipe when you want a particular report. As seen earlier, Enterprise Guide has made tasks available to you in the Task List (Figure 3).

The **Tasks by Category** tab conveniently groups the tasks under several different headings. If you want to count the number of males and females in the **SurveyNumbers(SURVEYNUMBERS\$)** table, you might even say that you are trying to *describe* this table. If you look under the 'Descriptive' category in the Task List, you will see the **One-Way Frequencies** task. It turns out that this task will produce not only frequency counts (how many do I have?) but also conveniently enough, percentages.

New-User: This task is called 'one-way' because it counts down a column in one direction only.

Exp-User: The **One-Way Frequencies** task uses the **FREQ** procedure behind the scenes. If you want a two-way frequency report, take a look at the **Table Analysis** task, which uses the same procedure.

Oh, one more thing. The task that you activate is going to process on the currently active data source in your project window. The currently active data source is the single data source that is currently highlighted. The data source does **not** have to be open in the data grid to be considered active; it simply has to be highlighted. It's very easy to assign a new active data source, so make sure that the

SurveyNumbers(SURVEYNUMBERS\$) table is the active data source before the task is selected.

To-Do:

- Select the **SurveyNumbers(SURVEYNUMBERS\$)** table by clicking on its icon inside of your Project window. It is now the active data source.
- Select the **Tasks by Category** tab in the Task List window. Use the scroll bar to move down and find the **Descriptive** category.
- Underneath this category, double-click the **One-Way Frequencies** task. This opens the **One-Way Frequencies** dialog box.

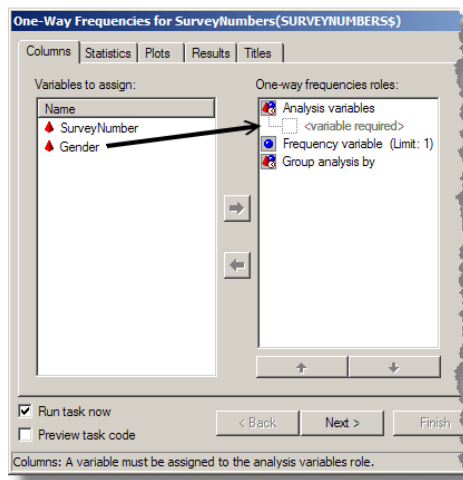


Figure 12 One-Way Frequencies Dialog Box

- This is discussed in depth later on, but for now, go ahead and drag and drop the **Gender** column from the **Variables to assign:** pane onto the **Analysis variables** role in the other window pane. A third window pane opens up; ignore it for now.
- Select the **Finish** button.

You've done it. The results from the **One-Way Frequencies** task should display automatically.

Gender				
Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
F	7	70.00	7	70.00
M	3	30.00	10	100.00


Generated by the SAS System (Local, WIN_PRO) on 28NOV2002 at 3:32 PM

Figure 13 One-Way Frequencies Results

By now you have figured out that the tables that have been added to the project are pretty small. The tables contain information from only 10 surveys, and you can see from the report you just created that 70% of the survey takers were female. The **One-Way Frequencies** task calculates four statistics by default: frequency, percent, cumulative frequency, and cumulative percent.

But perhaps you don't need all of those statistics. Maybe the last two columns of cumulative statistics are not needed. Is there an easy way to make modifications to your existing report? Sure there is! Close the report that you created and then rerun the same **One-Way Frequencies** task using a different option.

To-Do:

- Close the report that just opened in the work area by clicking on the  in the upper-right corner of the report.
- Take a look in the Project window and see that the **SurveyNumbers(SURVEYNUMBERS\$)** table has a **One-Way Frequencies** task underneath it (among other things). Double-click on the **One-Way Frequencies** that is located in the Project window. (Do not double-click on the **One-Way Frequencies** that is located in the Task List. If you double-click in the Task List, you will be starting up a brand new task instead of making changes to the one you already created.)

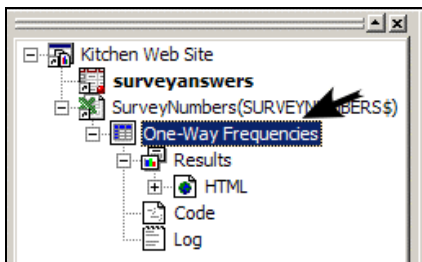


Figure 14 Reopen One-Way Frequencies Results

- The **One-Way Frequencies** dialog box is displayed. Observe that the task has saved the selections that were made before; the **Gender** column is still listed under **Analysis Variables**.
- The Columns tab has not been discussed in depth yet, but it is covered in the next section. For now, go ahead and select the **Statistics** tab.

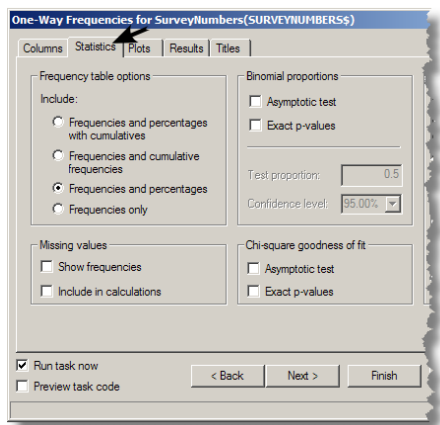


Figure 15 One-Way Frequencies Dialog – Statistics Tab

- In the **Frequency table options** pane, select the **Frequencies and percentages** option.
- Select the **Finish** button.
- Enterprise Guide asks you if you would like to **replace the results from the previous run?** Select **Yes** to overwrite the last report you created. That's okay because both reports are not needed. (If you were to select **No**, Enterprise Guide would save both sets of tasks and results.)

Exp-User: At this time, you might be ready to head off and explore on your own. If you wish, invoke the **One-Way Frequencies** task again and check out the different tabs. Have fun and discover all that Enterprise Guide has to offer. If you stay for the rest of the paper, there are more tips just for you.

WHAT ELSE SHOULD I KNOW ABOUT TASKS?

The report you just created is the result of selecting the appropriate task from the Task List. It turns out that just about any time you want to produce a report, create a graph, or even do a statistical analysis, you will need to use a task.

Exp-User: There are tasks available for the most popular SAS procedures and software features. Inherent to any point-and-click software product is that it cannot contain every single possible feature. At some point you might discover that Enterprise Guide has not yet implemented one of your favorite procedures or options. If this has already happened to you, see the FAQ at the end of this paper for a possible solution.

After you have invoked your favorite task from the Task List, you find that a lot of tasks have the following tabs: Columns, Results, and Titles. When you start up a new task, the Columns tab is usually preselected because this is the best starting place for each task.

New-User: The number of tabs that appear for each task depends completely on the task itself.

COLUMNS TAB

The Columns tab enables you to select which columns from your table are going to be included in this task. Technically, this is called 'assigning a variable to a role.' The layout of this tab is also dependent on the task you select. Take a look at the task that you have been working with, **One-Way Frequencies**.

As you can see in Figure 12, the variables or columns are listed under the **Variables to assign:** pane and the roles are listed under the **One-way frequencies roles:** pane. You can either drag and drop variables one at a time, or use the arrow keys between the two window panes to move variables and assign them to specific roles. As is common to many applications, use the CTRL key to select more than one variable at a time. Numeric variables are identified with a blue dot icon and character variables are identified with a red pyramid.

RESULTS TAB

In general, the Results tab enables you to save calculated statistics produced by a task into a permanent data set. For example, the **One-Way Frequencies** Results tab allows you to save the frequency count and percentages of gender to a SAS table that you can use in another task. The new data set that is created will be attached underneath that task in the Project window along with other reports.

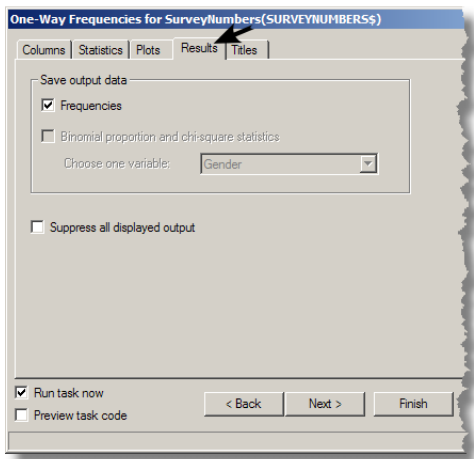


Figure 16 One-Way Frequencies Dialog Box – Results Tab

TITLES TAB

The Titles tab enables you to add custom titles and footnotes to your reports. There are default titles and footnotes for most tasks. If you want to have no titles and/or no footnotes, you need to delete the defaults in this tab.

New-User: You can see the default title of *One-Way Frequencies Results* and the default footnote of *Generated by the SAS System...* in the report you created (Figure 13).

Exp-User: You are limited to a total of 10 titles and 10 footnotes each. You can use macro variable references in these titles and footnotes.

You have now seen the most common tabs found in tasks. The tabs that appear are dependent on which task you have currently selected. Unfortunately, looking at every tab or task is beyond the scope of this paper. How can you learn more about tasks and their tabs? Here are a couple of suggestions. First, look at the bottom-right corner of any task dialog box (after you have invoked the task) and notice the **Help** button. Each task has customized help instructions. This is a great way to learn as you go. Second, here are some recommended tasks for you to explore:

New-User:

CATEGORY	TASK
Descriptive	List Data
Graph	Bar or Pie
Descriptive	Correlations

Exp-User:

CATEGORY	TASK	PROC
Tools	Create Format	FORMAT
Descriptive	Summary Tables	TABULATE
Regression	Linear	REG

HOW DO I MODIFY MY DATA?

The best way to make modifications to your data is to create a query from this data. A query is simply a way of extracting data from one or more tables while specifying particular conditions to be met. For example, suppose you want to determine which of the survey takers purchased a gift as part of their order. The **SurveyAnswers** table contains a column **GiftBought**, which reveals that information. The values of that column are **Y** or **N**. Your goal is to create a brand new table that contains only the rows from the table where the value of **GiftBought** is equal to **Y**. This is done by creating a simple query.

New-User: The concept of a query might be new to you. *Structured Query Language (SQL)* is a popular language that allows you to retrieve data (and perform other actions) from tables of data. The *Query Builder* constructs SQL code behind the scenes while you point and click and build the query. Another way to think of a query is to think of it as asking your data a question. For example, "Can you tell me who bought gifts?"

SELECTING CERTAIN ROWS

Whenever you want to see certain rows of a particular table, you can create a query that subsets or filters the rows of that table. In *Enterprise Guide*, the default result of a query is a SAS table. You start with a table and the result of the query is another table that contains only the rows you want.

To-Do:

- Select the **SurveyAnswers** table by clicking on its icon inside of the Project window. It is now the active data source.
- Select the **Tasks by Category** tab in the Task List window. Use the scroll bar to move up and find the **Add Items to Project** category.
- Underneath this category, double-click the **Create Query using Active Data** task. This causes the **Query Builder** to display.

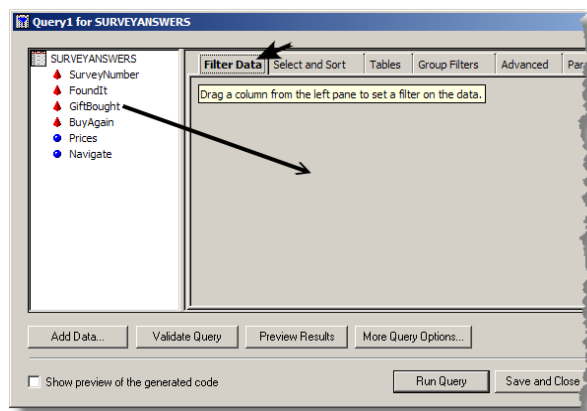


Figure 17 Query Builder – Filter Data Tab

- There is an enormous amount of functionality built into the Query Builder, but for now, keep it simple. The **GiftBought** column needs a subset or filter applied. Drag and drop that column from the left pane onto the **Filter Data** tab.

- The **Edit Filter Condition** dialog box displays. It is populated with most of the needed information. Select the **Column Values** button in the **Filter constants** pane and the 'Y' and 'N' values appear in the **List of Column Value constants**. Select the 'Y' value. Select **OK**.

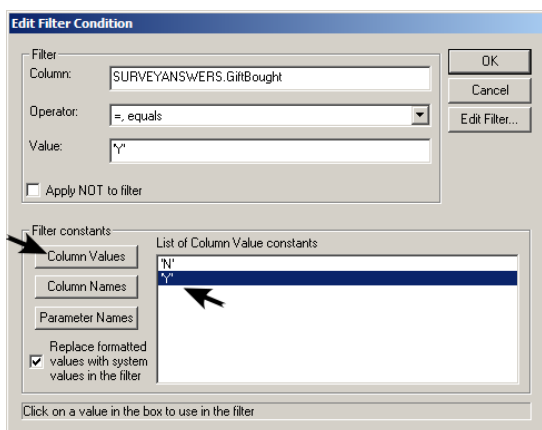


Figure 18 Edit Filter Condition Dialogue

Exp-User: Select the **Show preview of the generated code** check box to review the SQL code generated by Enterprise Guide.

- Select **Run Query** (Figure 17).
- The new result table automatically displays and reveals that the gift buyers are surveys numbered 4, 5, and 6. The name of the new table is **Results of Query1 for surveyanswers**. That is too cryptic, so change the name.
- Right-click the **Results of Query1 for surveyanswers** table inside of the Project window. (It is located under the branch of the new query you just created, **Query1 for surveyanswers**. Try not to get the two different items confused.) Select the **Rename** option. Change the name of the table to **Gift Buyers**.

SELECTING CERTAIN COLUMNS

Another popular way of querying data is to select only particular columns. Whenever you want to see certain columns of a particular table, you can create a query that subsets or filters the columns of that table. While the **Filter Data** tab is used to filter on rows, use the **Select and Sort** tab to filter or select the columns you want to keep. Modify the previous query that selects the gift buyers and keep only the following columns: **SurveyNumber**, **GiftBought**, and **Prices**. The result of this query is a small SAS table of three rows and three columns. It allows you to see how the gift buyers rate the prices they saw on the Web site.

To-Do:

- To modify the previous query, reopen the **Query1 for surveyanswers** query by double-clicking on the blue funnel icon inside the Project window. (Do **not** double-click on the **Create Query using Active Data** that is located in the Task List. If you double-click in the Task List, you start up a new task instead of making changes to the one you already created.)

- Observe that the **Query Builder** has saved the previous selections; the filter on the **GiftBought** column is still on the **Filter Data** tab. Select the **Select and Sort** tab in the **Query Builder**. While there is a lot of functionality to discover on this one tab of the Query Builder, keep it simple.
- Notice how all of the columns have check marks beside them by default. To suppress a column from appearing in the output table, clear the check box beside that column. Clear the check boxes for the following columns: **FoundIt**, **BuyAgain**, and **Navigate**.

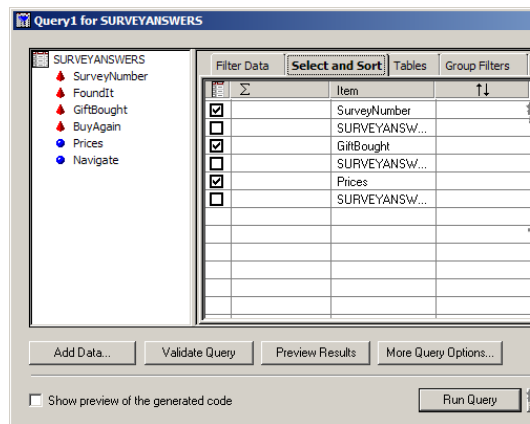


Figure 19 Query Builder – Select and Sort Tab

Exp-User: When you clear the check box for a column, Enterprise Guide replaces the single column name with the two-level qualifying name of tablename.columnname that is standard to SQL.

- Select **Run Query**.
- Enterprise Guide asks you if you would like to replace the results from the previous run? Select **No** to create a second query. The new table displays automatically and reveals that all the gift buyers are pleased with the prices. The responses rate the prices with the top category of 5.

	SurveyNumber	GiftBought	Prices
1	4	Y	5
2	5	Y	5
3	6	Y	5

Figure 20 Result Table from Second Query

- The name of the query just created is **Query1 for surveyanswers**. The name of the table just created is **Results of Query1 for surveyanswers**. Change both names to avoid any confusion later.
- Right-click the **second** instance of **Query1 for surveyanswers** query inside of the Project window. (It is the **second** blue funnel icon. It is located below the other query you created and has the same name.) Select the **Rename** option. Change the name of the query to **Query2 for surveyanswers**.

- Right-click the **Results of Query1** for **surveyanswers** table inside of the Project window. (It is located under the branch of the new query you just renamed, **Query2 for surveyanswers**.) Select the **Rename** option. Change the name of the table to **Gift Buyers and Prices**.

Exp-User: You probably know that creating this type of query does not actually modify the data. You should also know that it is possible to make real edit changes to a local SAS table. It is not recommended because all changes are permanent; there is no 'undo' button using this other method. For example, if you delete a column, you cannot get it back. To edit a table, first double-click on the table to open it in the data grid. From the pull-down menu, select **Data** and then **Protected**. This unprotects the data so you can make changes or sort the table. Repeat the process to reprotect the data table.

HOW DO I COMBINE MY DATA?

You have data in two separate tables. You need information from both tables to create a report. How do you combine the two separate sources of data into a single data source? There are several methods of combining tables. One of the common techniques is joining. Joining brings together two or more tables in a side-by-side fashion. Most of the time when tables are joined, both of the tables have a key column in common. This variable that exists in both tables is used to match up the tables on a row-by-row basis. When the result yields only matches from both tables, this is called an *inner* join.

The **SurveyNumbers(SURVEYNUMBERS\$)** spreadsheet (Figure 11) contains only two variables: **SurveyNumber** and **Gender**. The **Gift Buyers and Prices** data set (Figure 20) contains only three variables: **SurveyNumber**, **GiftBought**, and **Prices**. Joining these two tables (by their common variable, **SurveyNumber**) reveals the gender of these three gift buyers who were so pleased with the prices on the Web site. But can you do that? Can you join a SAS data table with an Excel spreadsheet?

Not only can you do that in Enterprise Guide, but also the software is intelligent enough to determine automatically what column is in common to both of those tables. On the surface, Enterprise Guide is going to treat all of the data tables the same regardless of where the tables are coming from. This is one of the powerful features of Enterprise Guide, Version 8 of the SAS System, and the SQL code that is written behind the scenes. You could even join an Oracle table with an Excel spreadsheet if you so desired.

To-Do:

- Select the **Tasks by Category** tab in the Task List window. Use the scroll bar to move up and find the **Add Items to Project** category.
- Underneath this category, double-click the **Create Empty Query** task. This causes the **Query Builder** to display and look very similar to Figure 17, except there is no data in an empty query until you add it!
- Select the **Add Data...** button and then select the **Project** tab. Use the CTRL key to select just the **SurveyNumbers(SURVEYNUMBERS\$)** and **Gift Buyers and Prices** tables. Select **OK**.

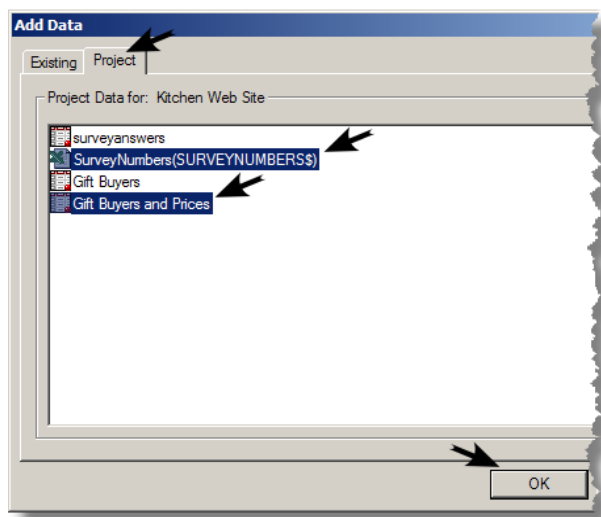


Figure 21 Query Builder – Add Data Dialog Box

- Observe that the **Query Builder** is populated with the two tables. Select the **Tables** tab. Enterprise Guide joins the two tables automatically on the correct column, **SurveyNumber**. A join could not be easier!

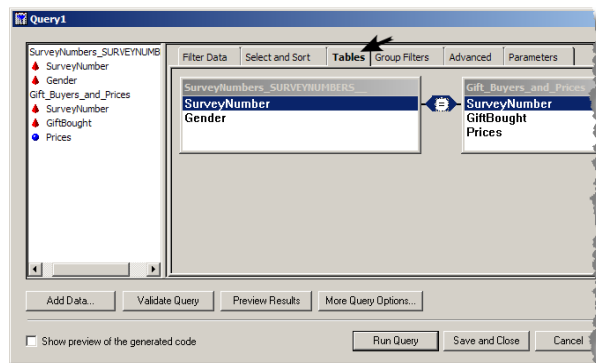


Figure 22 Query Builder – Tables Tab

Exp-User: By default, Enterprise Guide performs an *inner* join. If you want to select a different join, right-click the join symbol between the two tables and select **Modify Join...**

- Select the **Run Query** button.
- The new table that now contains data from both input tables displays automatically. You can see that the gift buyers who liked the prices were all female. (Time to call the marketing department with this useful information!) One problem you can see is that the **SurveyNumber** column appears twice, once as itself and once as **SurveyNumber2**.

Exp-User: This column appears twice because one of the input tables is an Excel spreadsheet, which is accessed through the Microsoft Jet database engine. When columns match exactly in name, length, and type during a join, the key column is not repeated in the result table.

- Before you ‘close the kitchen,’ try one more recipe. Create a report that displays the new joined table without that extra column. Select the **Tasks by Category** tab in the Task List window. Use the scroll bar to move down and find the **Descriptive** category.
- Underneath this category, double-click the **List Data** task. This causes the **List Data** dialog box to display.
- In the **Columns** tab, drag and drop the following variables from the **Variables to assign:** pane onto the **List Variables** role in the other window pane: **SurveyNumber**, **Gender**, **Giftbought**, and **Prices**.
- Select the **Finish** button and examine the report that you can now print or publish to the company intranet.

New-User: *This may be the time that you are ready to head off and explore on your own. If you wish, invoke the **List Data** task again and customize your report by using the different options available on the other two tabs. Be daring and don't worry; you cannot make a mess in this kitchen!*

CONCLUSION

You now have a ‘taste’ for what you can accomplish with Enterprise Guide. Of course, you have just scratched the surface in terms of functionality. From base SAS software to SAS/STAT® to SAS/ETS® to SAS/QC® to SAS/GRAPH®, Enterprise Guide provides a powerful user interface to access the depth and breadth of capabilities in SAS as well as a friendly environment in which to develop or embed existing SAS code. Enterprise Guide was built with your favorite SAS features. But keep in mind that Enterprise Guide is also designed to allow you to customize all of your reports and output easily.

Enterprise Guide is the preferred user interface to SAS for statisticians, programmers, and business analysts as of Release 9.0 of SAS and 2.0 of Enterprise Guide. It is the foundation application for the SAS Business Intelligence suite of applications available in SAS 9.1: Enterprise Guide, Office Integration, Report Studio, and Web Report Studio. Enterprise Guide is truly a great point-and-click interface that allows you to access the power of SAS and get the job done!

FREQUENTLY ASKED QUESTIONS (FAQ)

- How can I get a copy of the data sources used in this paper?
 - Send e-mail to Andy.Ravenna@sas.com with SUGI 28 EG PAPER as the subject line. Also, the two data sources are small enough to recreate by hand. See Figures 9 and 11.
- Can I have more than one project open at a time in a single Enterprise Guide session?
 - No.
- How can I copy a task from one project to another project?
 - Make the task active and select **Edit** and then **Copy** from the pull-down menus. Close the project. Open the other project. Select **Edit** and then **Paste**.
- Why can't I edit my Excel spreadsheet?
 - You cannot edit a spreadsheet that is added to a project with **Insert Data**. Instead, use the **Import Data** tool to import the spreadsheet and edit that table.
- Why can't I sort my data?
 - To edit or sort a local SAS table, first double-click on the table to open it in the data grid. From the pull-down menu, select **Data** and then **Protected**. This unprotects the data so you can make changes or sort the table. Repeat the process to reprotect the data

table. Any changes made are permanent. You can also sort your data by creating a query a specifying a sort order on the **Select and Sort** tab.

- How can I assign a libref?
 - From the pull-down menus, select **Insert** and then **Code**. Type the LIBNAME statement into the new code window. Select **Code** and then **Run on Local**.
- Can I just write my own code like I used to?
 - From the pull-down menus, select **Insert** and then **Code**. Type into the new code window. Select **Code** and then **Run on Local**.
- Can I modify the code that Enterprise Guide wrote and/or add my favorite option?
 - You can insert your own code into the code that is generated by Enterprise Guide. From the display of any task window select the **Preview Task Code** check box. In the **Code Preview** window, select the **Insert Code** button.
- Can I create my own task?
 - Using Microsoft Visual Basic, C++, or .NET development environments, you can create your own custom tasks and share those add-in tasks with other Enterprise Guide users. The SUGI 28 advanced tutorial “*Developing Custom Analytic Tasks for Enterprise Guide®*” provides information about creating custom applications and tasks.
- Where can I get further information?
 - <http://www.sas.com/eguide>

REFERENCES

Getting Started with Enterprise Guide®, Second Edition
Enterprise Guide Help
SAS OnlineDoc®, Version 8

ACKNOWLEDGMENTS

Special thanks to Susan Willard, Jemshaid Cheema, Trish Farley, and Stephen McDaniel for their help with this paper.

CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Andy Ravenna
SAS Institute Inc.
787 Seventh Avenue, 47th Floor
New York, NY
Work Phone: 212-757-3826 ext. 8618
Fax: 212-757-4086
E-mail: Andy.Ravenna@sas.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are trademarks of their respective companies.