

## Starting SAS

To start SAS

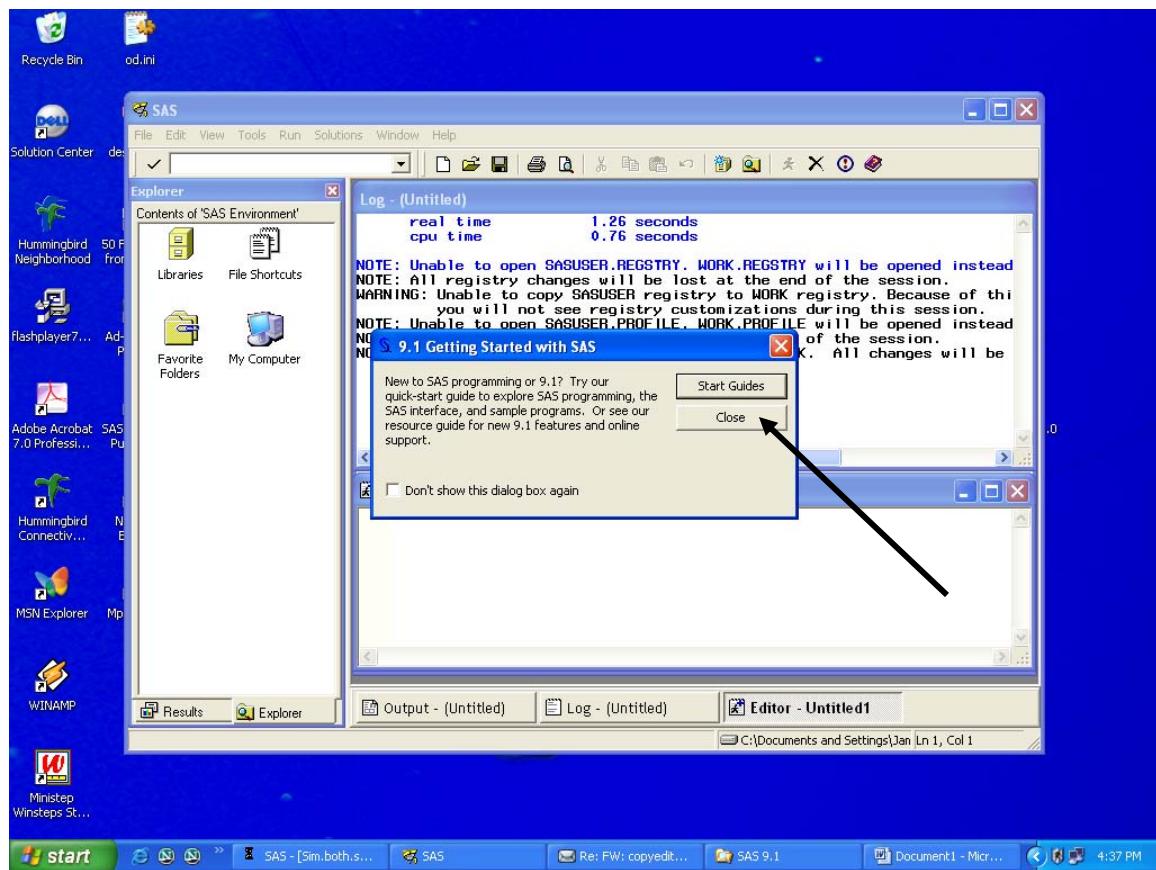
1. Click on the SAS ICON on the desktop,



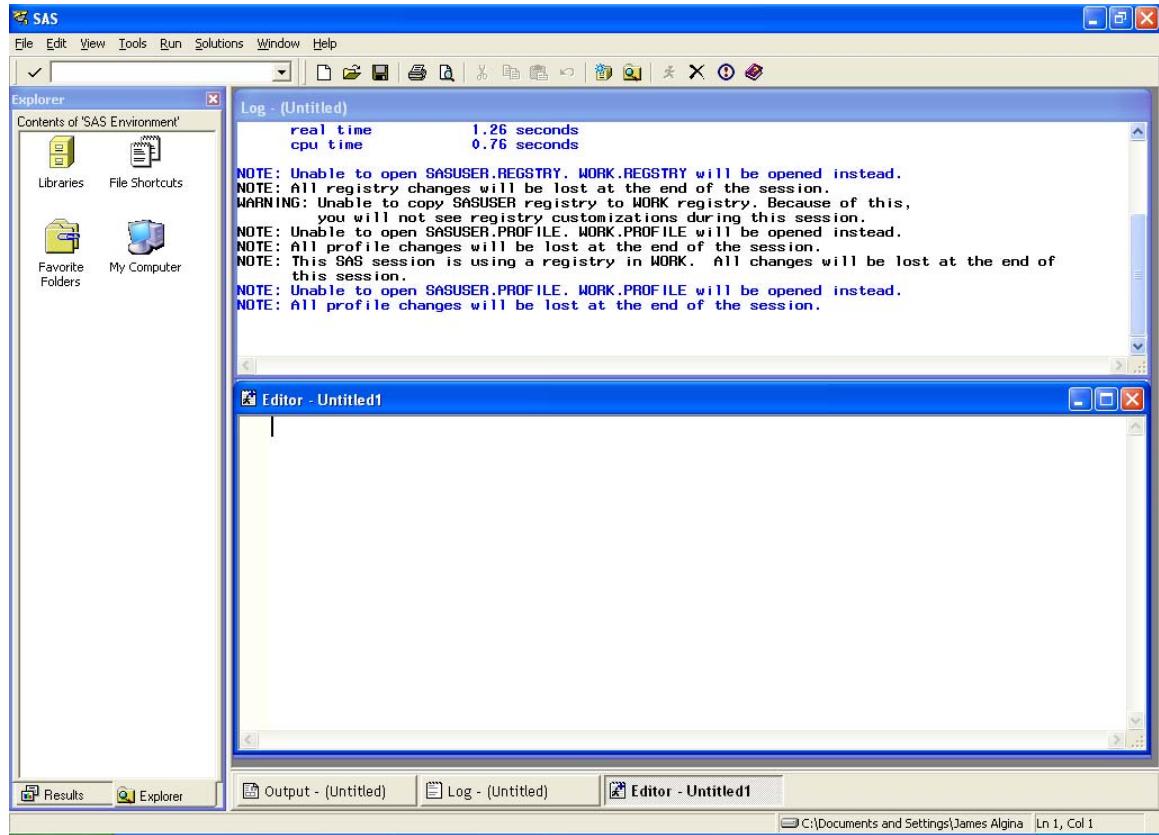
or

2. Click START, ALL PROGRAMS, SAS, and the SAS ICON

The result looks like this:



Click on Close on the Getting Started With SAS dialog box. If someone has turned off Getting Started With SAS, you will not have to do this). The result is



### Four Windows

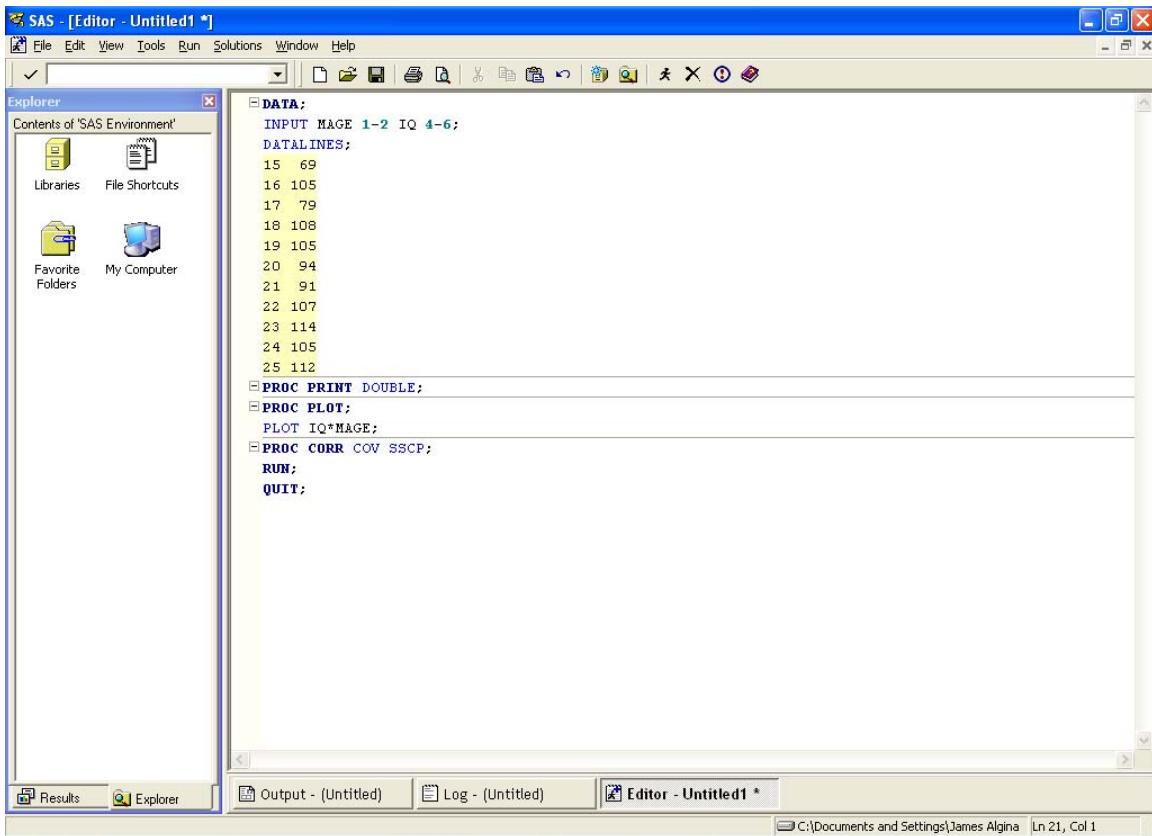
Shown are parts of two of the four windows that are important in this class:

- the Editor window and
- the Log window.

The other important windows are the Output window and the Results window. Notice on the bottom tool bar the words Results, Output, Log, and Editor. Clicking one of these changes the Window that is active. Also notice that each of Output, Log, and Editor says untitled. This is because the contents of these windows have not been saved.

## The Editor Window

The Editor window is used to type SAS programs. It works like a word processor. The following shows the Editor Window after it has been maximized and after I typed a program into it. This is the program we covered in class.



The screenshot shows the SAS software interface with the title bar "SAS - [Editor - Untitled1 \*]". The menu bar includes File, Edit, View, Tools, Run, Solutions, Window, and Help. The toolbar contains various icons for file operations. On the left, there is an "Explorer" pane titled "Contents of 'SAS Environment'" with sections for Libraries, File Shortcuts, Favorite Folders, and My Computer. The main editor area contains the following SAS code:

```

DATA;
  INPUT MAGE 1-2 IQ 4-6;
  DATALINES;
  15 69
  16 105
  17 79
  18 108
  19 105
  20 94
  21 91
  22 107
  23 114
  24 105
  25 112
  PROC PRINT DOUBLE;
  PROC PLOT;
    PLOT IQ*MAGE;
  PROC CORR COV SSCP;
  RUN;
  QUIT;

```

The status bar at the bottom right shows the path "C:\Documents and Settings\James Algina" and "Ln 21, Col 1". Below the editor are tabs for Results, Explorer, Output - (Untitled), Log - (Untitled), and the active Editor - Untitled1 \*. The status bar also displays the current location and line/column information.

Notice that Notice the use of color:

- Dark blue and blue for SAS keywords
- Green for format elements
- Black highlighted in yellow for data and black for code that is not keywords.
- Red will sometimes appear. Usually this means you have made a mistake.

To save the program use one of the following two procedures:

1. Click on File on the toolbar and then on Save or Save As. This opens a standard Windows dialog box for saving the files.
2. Click on the disc icon. This opens a standard Windows dialog box for saving the files, but if you are saving a file that has already been changed, it just saves the file.

Here is what SAS looks like after the file is saved

The screenshot shows the SAS software interface. The title bar reads "SAS - [disc.sas]". The menu bar includes File, Edit, View, Tools, Run, Solutions, Window, and Help. The toolbar contains various icons for file operations. On the left is an "Explorer" sidebar with sections for Libraries, File Shortcuts, Favorite Folders, and My Computer. The main "Editor" window displays a SAS program:

```

DATA;
  INPUT MAGE 1-2 IQ 4-6;
  DATALINES;
  15 69
  16 105
  17 79
  18 108
  19 105
  20 94
  21 91
  22 107
  23 114
  24 105
  25 112
  PROC PRINT DOUBLE;
  PROC PLOT;
    PLOT IQ*MAGE;
  PROC CORR COV SSCP;
    RUN;
    QUIT;
  
```

The status bar at the bottom shows "File saved successfully." and the path "C:\Documents and Settings\James Algina\Ln 21, Col 1".

Note disc.sas (the file name under which I save the program) on the bottom toolbar.

Suppose I make a change to the text in the Editor window. For example taking out the DOUBLE in PROC PRINT DOUBLE. Here is what SAS looks like:

The screenshot shows the SAS software interface. The main window displays a SAS program named 'disc.sas'. The code includes data input, PROC PRINT, PROC PLOT, and PROC CORR statements. The data section contains numerical values. The file explorer on the left shows 'Libraries' and 'Favorite Folders'. The status bar at the bottom indicates 'File saved successfully.' and the path 'C:\Documents and Settings\James Algina'.

```
DATA;
  INPUT MAGE 1-2 IQ 4-6;
  DATALINES;
  15 69
  16 105
  17 79
  18 108
  19 105
  20 94
  21 91
  22 107
  23 114
  24 105
  25 112
  ;
PROC PRINT;
PROC PLOT;
  PLOT IQ*MAGE;
PROC CORR COV SSCP;
  RUN;
  QUIT;
```

Notice the asterisk modifying disc.sas. This signifies that a change has been made to the file and the file has not been saved since the change was made. If I save the file, the asterisk disappears.

### Running the Program

There are two ways to run the program.

1. Click on the running icon on the toolbar.
2. Press F3.

Here is what you see:

The screenshot shows the SAS software interface. The menu bar includes File, Edit, View, Tools, Solutions, Window, and Help. The main window is titled "Output - (Untitled)". It displays several statistical tables:

- Covariance Matrix, DF = 10**

	MAGE	IQ
MAGE	4510.0000	22084.0000
IQ	22084.0000	109847.0000

- Simple Statistics**

Variable	N	Mean	Std Dev	Sum	M
MAGE	11	20.00000	3.31662	220.00000	15
IQ	11	99.00000	14.26885	1089	69

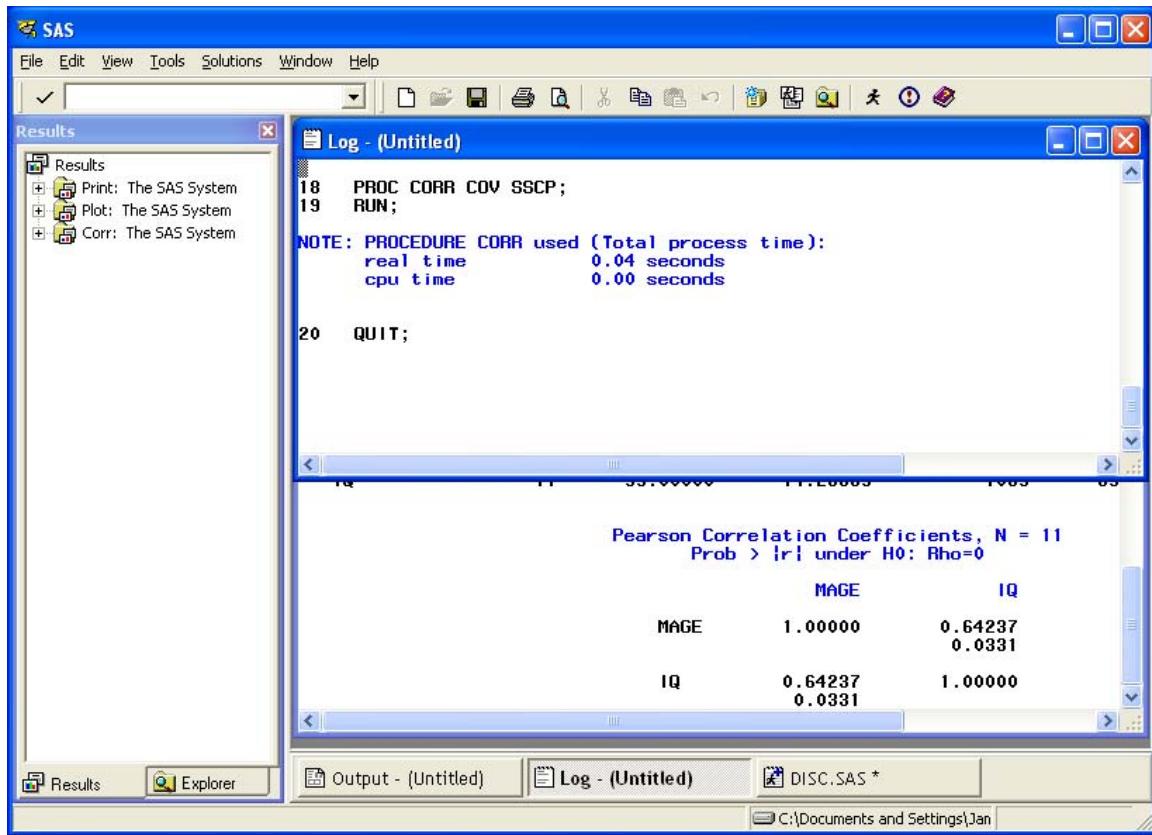
- Pearson Correlation Coefficients, N = 11**

	MAGE	IQ
MAGE	1.00000	0.64237 0.0331
IQ	0.64237 0.0331	1.00000

This is part of the output, but before looking at the output you should **ALWAYS** switch to the Log window to check whether the program ran correctly. There are four ways to do this:

1. Click Log at the bottom of the screen. (This does not work if the Log window has been closed).
2. Click Window and then Log.
3. Click View and then Log.
4. Press F6.

Here is what you see:



Maximizing SAS, maximizing the log window, and using the slide at the right to go to the top, we can see the whole Log window:

The screenshot shows the SAS Log window titled "SAS - [Log - (Untitled)]". The menu bar includes File, Edit, View, Tools, Solutions, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Find. The left sidebar has a tree view under "Results" with nodes for Print, Plot, and Corr. The main log area displays the following code and its execution results:

```

1  DATA;
2  INPUT IMAGE 1-2 IQ 4-6;
3  DATALINES;
NOTE: The data set WORK.DAT1 has 11 observations and 2 variables.
NOTE: DATA statement used (Total process time):
      real time          0.03 seconds
      cpu time           0.03 seconds

15  PROC PRINT DOUBLE;
NOTE: There were 11 observations read from the data set WORK.DAT1.
NOTE: PROCEDURE PRINT used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds

16  PROC PLOT;
17  PLOT IQ*IMAGE;
NOTE: There were 11 observations read from the data set WORK.DAT1.
NOTE: PROCEDURE PLOT used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds

18  PROC CORR COV SSCP;
19  RUN;
NOTE: PROCEDURE CORR used (Total process time):
      real time          0.07 seconds
      cpu time           0.01 seconds

20  QUIT;

```

The status bar at the bottom shows the current working directory as "C:\Documents and Settings\James Algina".

Notice that there are NOTES but no WARNINGS or ERRORS. This means that your program has run correctly. By contrast, here is a Log window for a program on which I deliberately made a mistake by changing PROC PRINT to PROC RINT:

The screenshot shows the SAS software interface with the title bar "SAS - [Log - (Untitled)]". The main window displays the SAS log output. The log content includes several PROC statements and their associated notes and errors. A red error message "ERROR: Procedure RINT not found." is visible at line 35. The log also shows notes about data sets and procedure times.

```

21 DATA;
22 INPUT IMAGE 1-2 IQ 4-6;
23 DATALINES;

NOTE: The data set WORK.DATA2 has 11 observations and 2 variables.
NOTE: DATA statement used (Total process time):
      real time          0.01 seconds
      cpu time           0.01 seconds

35 PROC RINT DOUBLE;
ERROR: Procedure RINT not found.

NOTE: The SAS System stopped processing this step because of errors.
NOTE: PROCEDURE RINT used (Total process time):
      real time          0.07 seconds
      cpu time           0.03 seconds

36 PROC PLOT;
37 PLOT IQ*IMAGE;

NOTE: There were 11 observations read from the data set WORK.DATA2.
NOTE: PROCEDURE PLOT used (Total process time):
      real time          0.00 seconds
      cpu time           0.00 seconds

38 PROC CORR COV SSCP;
39 RUN;

NOTE: PROCEDURE CORR used (Total process time):
      real time          0.00 seconds
      cpu time           0.00 seconds

40 QUIT;

```

Note the ERROR printed in red. **All warnings and errors should be cleared up before looking at the Output window because SAS often produces some results even though it issues a warning or has encountered an error.**

You can save the contents of the Log window by using the procedure used to save the Editor window, though typically there is no reason to save the contents of the Log window.

Once you are through looking at the Log window you can clear it by using one of the following two procedures (make sure the Log window is active):

1. Press Ctrl and E simultaneously
2. Click Edit and Clear All.

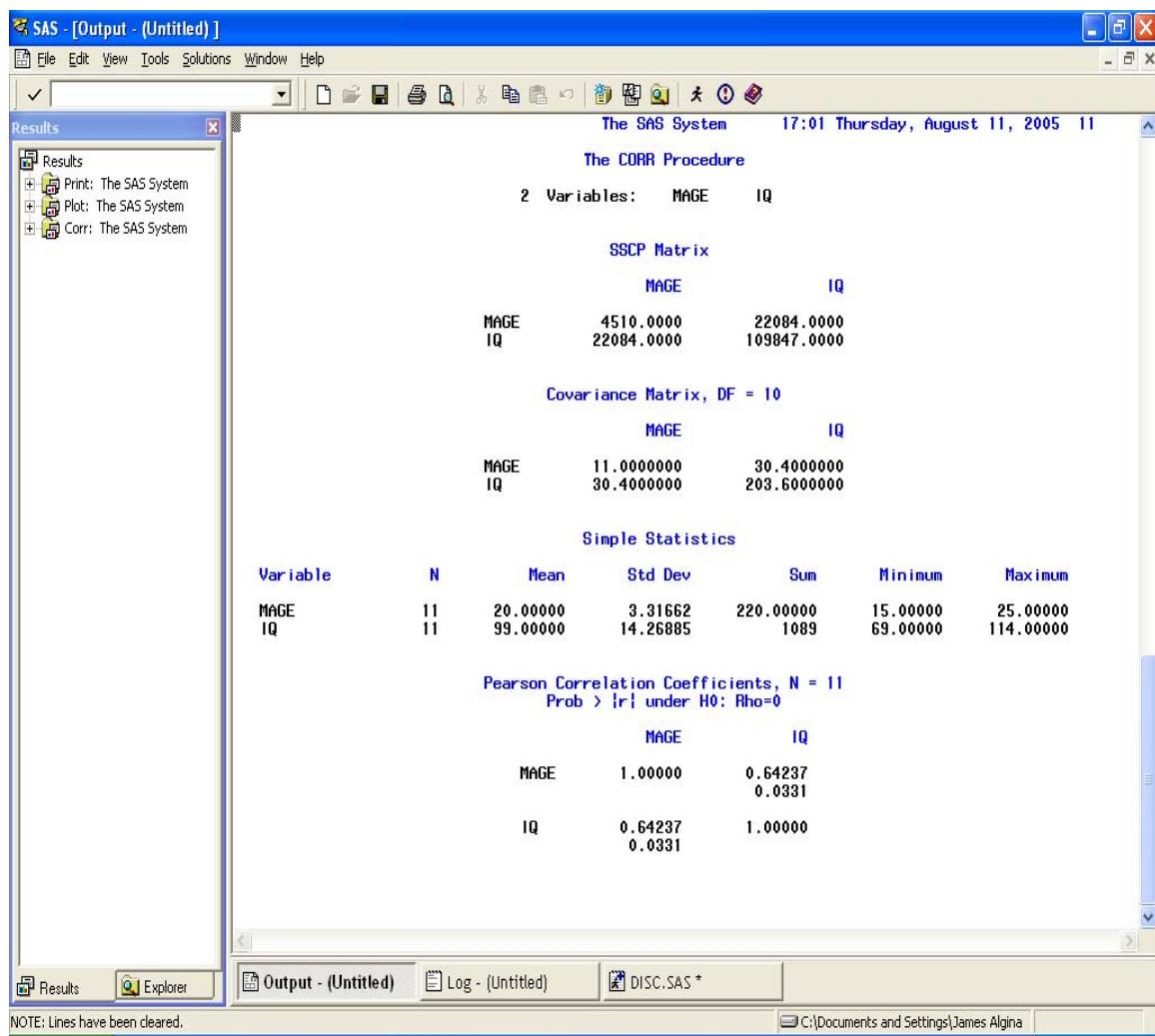
It is a good idea to do this. Otherwise in a session in which you run several programs, you can lose track of which part of the Log window goes with which program

## The Output and Results Windows

Once you have a Log window without errors or warnings, you can open the Output Window by using one of the following four procedures:

1. Clicking Output at the bottom of the screen. (This does not work if the Output window has been closed).
2. Clicking Window and then Output.
3. Clicking View and then Output.
4. Pressing F7.

Here is the Output window, maximized with the cursor at the top of the window:



The screenshot shows the SAS Output window titled "SAS - [Output - (Untitled)]". The window displays the results of the CORR procedure for two variables, MAGE and IQ. The results include the SSCP Matrix, Covariance Matrix (DF = 10), Simple Statistics, and Pearson Correlation Coefficients. The output is as follows:

```

The SAS System 17:01 Thursday, August 11, 2005 11

The CORR Procedure
2 Variables: MAGE IQ

SSCP Matrix
      MAGE          IQ
MAGE   4510.0000  22084.0000
IQ     22084.0000 109847.0000

Covariance Matrix, DF = 10
      MAGE          IQ
MAGE   11.0000000 30.4000000
IQ     30.4000000 203.6000000

Simple Statistics
Variable    N      Mean    Std Dev     Sum   Minimum   Maximum
MAGE       11    20.00000  3.31662  220.00000  15.00000  25.00000
IQ        11    99.00000 14.26885   1089      69.00000 114.00000

Pearson Correlation Coefficients, N = 11
Prob > |r| under H0: Rho=0
      MAGE          IQ
MAGE   1.00000  0.64237
IQ     0.64237  1.00000
          0.0331

```

The status bar at the bottom left says "NOTE: Lines have been cleared." and the bottom right shows the path "C:\Documents and Settings\James Algina".

Notice also the Results Window at the left. You can use this to move around in the Output window. If you click on a plus box, it will show you all of the available results in a section of the Output Window. Clicking on the icon for the results will move the cursor to that part of the Output Window.

You can save the Output window by using the procedure used to save the Editor window. Once you are through looking at the Output window you can clear it by using one of the two following procedures. With the Output window open:

1. Press Ctrl and E simultaneously
2. Click Edit and Clear All.

It is a good idea to do this. Otherwise in a session in which you run several programs, you can lose track of which part of the Output window goes with which program.

### **The Editor Window Again**

You can return to the Editor window by using one of the following four procedures:

1. Clicking Editor (or the file name, whichever is displayed) at the bottom of the screen. (This does not work if the Log window has been closed).
2. Clicking Window and then Editor.
3. Clicking View and then Editor.
4. Pressing F5

With the Editor Widow open, you can clear the Editor Window by using one of the following two procedures:

1. Pressing Ctrl and E simultaneously.
2. Clicking Edit and Clear All.

If you inadvertently clear an Editor Window while you still need the program, pressing F4 will bring the contents from memory into the Editor window.

### **Printing**

You can print the contents of any of the Editor, Log, or Output Windows by using one of the following two procedures:

1. Press the printer icon.
2. Press file and then print.

You can print a selected section of the Output Window by using the Results window to locate the section you want to print, right clicking on the section, and clicking the printer icon.

### **Keys**

Pressing F9 lists the key stroke shortcuts that can be used in SAS.

### **Try SAS Out**

Use the program file (disc.sas) presented in class to try SAS out.