Chapter 1: Introduction to SAS

- *SAS programs:* A sequence of statements in a particular order.

**Rules for SAS statements:**

1. Every SAS statement ends in a semicolon!!!;

2. Upper/lower case does not matter in SAS.

3. Statements can continue on next line.

4. Statements can be on same line as other statements.

5. Statements can start in any column.

**Comments:** Two possible styles: * ... ; or /* ... */

* Here is a comment;

/* Here’s another comment */
SAS Data Sets

- Variables represented by *Columns*
- Observations represented by *Rows*
- Two Data Types: *Numeric* and *Character*
- Choose data type based on how you *use* the variable
- **Example:** ZIP code could be character
- Missing data in SAS denoted by a period ( . ) for numeric data and blank space for character data
Rules for Naming SAS variables (SAS 9)

- Names can be 32 characters or fewer
- Names must begin with a letter or underscore (_)
- Names may contain only letters, numbers, and underscores
- Can contain upper/lower case
Two Parts to SAS Programs

DATA step:

- Begins with DATA statements
- Reads in and modifies data
- Creates SAS data set

PROC step:

- Begins with PROC statements
- Performs (statistical) analyses on data
- Produces results/output
• Steps may contain many statements.

• Steps usually end when:
  1. another step begins
  2. a RUN; statement appears.

  DATA height;
  ...lots of SAS statements ...
  run;
  
  PROC PRINT DATA = height;
  RUN;
  
  PROC REG;
  ...lots of SAS statements ...
  run;

• SAS executes steps line by line.

• Be sure to do things in correct order.

• SAS reads data sets one observation at a time.
PCs in lab and classroom use **windowing** environment.

See Sec. 1.5 for information on other SAS environments.

**SAS windows**

- 3 main windows and 2 secondary. **Primary:**

- **“Editor”**: Type in and edit SAS programs in the editor window
  (Color coded in new versions of SAS)

- **“Log”**: Contains notes about submitted SAS programs, and info about any errors/warnings

- **“Output”**: Printable results (if any) are printed here **Secondary:**

- **“Results”**: Table of contents for Output window

- **“Explorer”**: Icons for file folders and SAS libraries
Once program is entered into “Editor”, choose “Submit” under “Run” menu to submit it.

Go to Output and Log windows for results or notes.

If program disappears, choose “Recall Last Submit” under “Run” menu.

In any window: Choose “Edit” → “Clear All” to clear window
(Output window can get cluttered)

Log window → error messages, number of observations and variables created.
**Printing/Saving Output:**

- Directly from Output window (wastes paper)
- Using Results window (can print/save partial output)
- Copy to file (Word or Notepad); print that.

**Creating HTML Output:**

- Tools → Options/Preference
- Click “Create HTML”
SAS Libraries

- Location where SAS data sets and SAS files are stored.

- “Libraries” icon in “Explorer” window:
  - Opens “Active Libraries” window

- Sashelp, Sasuser, Work

- Work is the default library SAS will use if another is not specified.

  - or “Right Click → New”

- Name:
  - libref (8 characters or fewer)
  - Path (location for data sets to be stored)
  - Enable (so you don’t have to redefine library each time SAS starts)
Viewing Data Sets in Explorer

- Double-click on a Library, then double-click on available data set (e.g., “Class” in Sashelp)
- Right-click on data set, select “Properties” to view its properties.
- Right-click → “View Columns” gives info on the variables in data set
SAS System Options

Easiest way to set: Use `OPTIONS` statement at beginning of SAS program.

```
OPTIONS LINESIZE=80 NOCENTER NODATE PAGESIZE=64 NONUMBER;
```

Others given on page 27.