Getting Started with S-Plus

- **If you are using the Sequoia Hall PC lab, follow these steps:**

  1. log into a PC as a "student"
  2. double-click on `Samson for Windows` and log into one of the leland machines (i.e. `saga`, `elaine`, `myth`, etc.)
  3. note the name of your PC which is displayed on top right of the monitor; it is something like `seqpc-xx`. I shall use `seqpc-10` in my example below. Type:

     ```
     setenv DISPLAY seqpc-10.stanford.edu:0.0
     ```

- **Getting going with S-Plus on the Leland machines.**

  Before you run S-Plus you need to set up a few things. First create a directory where you want to do your work, and then go into that directory:

  ```
  saga15:~> mkdir stats202
  saga15:~> cd stats202
  ```

  The simplest way to run S-Plus is just to call it from the command line:

  ```
  saga15:~/stats202> Splus
  ```

  after which you will get

  ```
  S-PLUS : Copyright (c) 1988, 2000 MathSoft, Inc.
  S : Copyright Lucent Technologies, Inc.
  Version 6.0 Release 1 for Sun SPARC, SunOS 5.6 : 2000
  Working data will be in /afs/ir/users/i/b/ibelit/MySwork
  >
  ```

  and you can start typing S-Plus commands at the ">" prompt:

  ```
  > x <- c(5,6,7)
  > x+2
  [1] 7 8 9
  ```

  and so on. Note that an S-Plus "object" called `x` was created above, and is stored as a file in the subdirectory `.Data` of the directory `MySwork` which you can find in your home directory. If you quit from S-Plus:

  ```
  > q()
  ```

and then restart it, the objects you create will still be there. A very useful command:

```
> help.start()
```

which opens a separate help window, which you can use to look up S-Plus functions definitions.

- **Splus from within Emacs–THE WAY TO GO!!!**

  A far more convenient way to run S-Plus though is through the Emacs editor, using an extension to Emacs called S-mode. Even if you have never used Emacs, it is worth getting to know it just so you can use S-Plus from within it. There are Emacs reference handouts and other resources at Sweet Hall. The first few steps are:

  1. Run Emacs from within, for example, the `stats202` directory created as above.

     ```
     saga15:~/stats202> emacs &
     ```

  2. To start S-Plus from within Emacs, type `ESC`, followed by `x`, followed by the letter `S`, and then Enter. You will see `M-x S` at the bottom of the emacs window. Emacs will ask for an "S starting data directory". This is the directory where it will look for the `.Data` subdirectory, so, in this case, type `stats202`.

     Problem with Leland machines: If the load on the machines is very high, S-Plus may not load first time. Instead, the Emacs window will split in two, there will be some message about a timeout, and S-Plus will appear to start in the lower window - don't use it. Get out of Emacs (`c-x c-c`, ie Control-x followed by Control-c), and try running Emacs again.

     (Eventually) the S-Plus prompt will appear in the Emacs window. You can now use S-Plus within Emacs, with all the Emacs editing commands available to you.

  3. A good way to work is to split the Emacs window in half, use one half for running S-Plus, and the other half for editing a file containing S-Plus commands. Type `c-x 2`. This splits the window. You get two copies of the S-Plus session, one in each window.

  4. Type `c-x c-f`. Emacs asks for a file name. Type, say, `myfile.S`. An (empty) file appears in the one window. You can type a series of S-Plus commands in this file. To execute one of these commands, just put the cursor on the line of the command and type `c-c c-n`, which copies the line onto the S-plus prompt and executes it. You can do this repeatedly to execute a series of commands.

  5. As an example, try copying the file `examples.S` from the class directory,

     ```
     /usr/class/stats202
     ```

     to your home directory. This file contains the commands used in the introductory example, handout #2. You can load this file into emacs and execute the commands as above.