A Few Guidelines for Using the Lego RCX Computer

1. Motors or lights can only be attached to Letter Ports A, B or C
   Sensors can only be attached to Number Ports 1, 3, or 3

   Make sure RCX is powered Off when attaching or removing motors or
   sensors. Note: Mindstorms and Robolab kits do not come with lights.
   However, I will demonstrate in class how to build one using LED’s.

2. The RCX computer can hold 5 separate programs. One and two are
   locked by default and cannot normally be changed. To change this, go into
   the Administrator function in Robolab, click the RCX tab at the bottom of
   the window, and you'll see where you can change this setting. Program 1
   is useful to adjust motor directions since it is a simple program which turns
   on ports A and C as outputs for motors running forward. Program 2 is the
   same except that it adds the ability to stop either motor using touch
   sensors attached to Ports 1 and 3.

3. When building your robots, keep in mind that you need access to the
   buttons on the top of the RCX. If you have more than one program, you
   may need to be able to see the display on top of the RCX; the display is
   also useful for troubleshooting.

4. Nonmoving robots can run on AC power, saving batteries and
   providing the flexibility of running the RCX for long periods of time (hours,
   days, even weeks). There is an AC adapter plugged into the wall near
   Computer 1. The adapter MUST be one that delivers 9-10 volts AC, not
   DC. Before plugging one into the RCX look carefully at the top of the
   power supply to see that is says “9VAC” or “10VAC”. When uploading
   ‘firmware’ (the program that the RCX needs to recognize understand
   Robolab instructions), you should use the AC power adapter to save
   batteries, since the process takes about 5 minutes.

5. Computers 1 and 2, nearest the door, are currently set up as
   programming stations. The infra-red transmitter towers (Lego IR Tower) are
   tucked between the monitors and computer towers. I did this to minimize
   problems when two people are programming at the same time. The black
   window of the RCX should be pointing toward the Lego IR Tower
A Few Guidelines for Using Robolab

1. To start Robolab, double click the “ROBOLAB260 alias” icon on the desktop. If it is not there, open the hard drive then “Users” then “cacuser” then “Documents” and finally “Robolab 2.6.1”. Double click the “ROBOLAB260 alias”.

2. Once the program has started, click “Programmer”. I’d suggest going directly to Inventor Level 4. Double click on “Inventor 4” to open a new programming environment. Next, click the rightmost circle (+) in the upper left of the lower window (the one with the traffic lights) to expand the programming space to fill your screen. Finally, go to the “Window” menu and choose “Show Tools”. Now you have everything you need to begin programming.

3. Be sure to name your programs intelligently, so you can find them later. All Robolab programs will have the extension “.vi”. Also, Robolab, has a unique filing structure for storing programs and it takes a bit of getting used to. I have set up the program to use its default folder structure. Programs are stored in “/Users/cacuser/Documents/ROBOLAB data”. Once in the “ROBOLAB data” folder, you can find your files in “Program Vault/Inventor/My Programs/Level4”. Note, the “/” denotes folders. I find it useful to FTP my programs to my Web site so I can access them later. This peculiar structure is designed for classrooms, where students might be working at different levels of Robolab such as Pilot levels 1-4 or Inventor levels 1-4, with programs being saved in folders corresponding to the level. It also has a fair number of sample programs which can be used with various curriculum materials or specific Lego classroom additions.

4. Context sensitive help is available through “Apple-H” and will show helpful information for any icon under the mouse pointer. The Robolab programming guide is available on the center table of our classroom. There is also a large PDF file on the two machines set up as programming stations (machines 1 and 2 closest to the door).

5. Tufts University has generously allowed us to use their newest version of Robolab, which runs in native mode under Macintosh OS-X. It has many new features and runs far faster and more reliably than previous versions. This prerelease version, called “beta software” might still have problems which need to be corrected prior to the final release. Software developers depend on their “beta testers” to help find these problems. If anything isn’t working the way you think it should, or there are sudden crashes or freezes, please e-mail a description to me so we can alert the programmers to the problem.