Check list for demo of EE-314 Lab 9

*** Please maintain a menu in your final demo program to make the following demo tests possible.

Total points: 100

Part 1. Position Control (20 pts)

1. Take the position value from the user in **degree** (0 – 180 degrees), and move the servo head to the specified angular position. (10 pts)

2. Sweep the servo head to one extreme position, then step to the other extreme position at a rate specified by the user. Then, step back. Allow the user to enter the angular step amount **(in degrees)** and the time delay **(in seconds)** to pause at each position. (10 pts)

Part 2. Reading the Sensor (30 pts)

1. Read the sample values from each of the light sensors. Continuously print in a new line **the sample values** read from the five channels **after each time interval** (say, 2 sec.) The printed values can be Hex decimal or decimal. If some channel samples are not available because of sensor malfunctioning, your program should print question marks (???) to indicate this. (10 pts)

2. Your program should print **varying sample values** when the light source changes its light intensity. (10 pts)

3. Your program has the basic **error detection** function. For example, if the serial port is disconnected, your program should timeout (say, 30 sec.), print some message, and wait for the user response (check the connection or terminate the program). (10 pts)

Part 3. Closed Loop Control (50 pts)

1. Sweep the sensor head back and forth looking for a bright light source (a flash light). (10 pts)

2. When a bright light source is detected, it should center the sensor array on the bright light source. (10 pts)

3. The sensor head should track a **slowly moving** light source. (10 pts)

4. If the light source goes away, the servo motor should go back to the searching mode. (10 pts)

5. Maintain a **graphic display** indicating the direction that the sensor head is pointing and a **bar graph** showing the light intensity detected by the sensor. **The display should be updated continuously.** (10 pts)