ENGR 171 -- Assignment 4

Warm-up exercise

First, read Experiment #4 of What’s a Microcontroller wire up your breadboard as shown on page 51, and then carefully study the program that starts on the bottom of page 56 to see how the programs reads the "value" of the photocell.

Second, write a program that first moves the servo to its extreme counterclockwise position and then slowly and smoothly rotates the servo clockwise. Try to get the servo to move 180˚ degrees in about 30 seconds. You'll have to do a little figuring to make this work.

1) Compute the amount of time your motor will spend in each of the 500 possible servo positions.
2) Compute the amount of time required for one servo pulse and pause.
3) Compute the number of pulses required for each servo position.

Graded exercise

Modify your program so that the servo rotates clockwise, if the photocell is in the shadow, and rotates counterclockwise, if the photocell is in the light. When the servo position is in the middle, which we'll define as a pulse width between 1.48 and 1.52 msec, the LED should be on. Otherwise, the LED should be off.

Turn in the following:

1) A brief description of your program.
2) An appropriately commented copy of your PBASIC program.

This week the schematic is not required.