Project
Due Mon. 12/05

8085 Assembly Programming Project
Example Project Proposals

1. Switch Controlled Counter
   Display the count on either the 7-segment or LCD display. A pair of switches controls 1 of four counters with one switch incrementing and the other decrementing the counter. After every switch press, the count is placed onto the display.

2. Stopwatch
   A stopwatch timer measures the amount of time between two events. A input press (swithc) starts the stopwatch and the timer is stopped at the second press. The total elapsed time between presses can be placed on the the 7-segment display. A reset button is provided to zero the stopwatch timer in order to time another event.

3. Alarm
   The alarm program should have an input time and upon a button press the timer will count-down. When the timer reaches 0 the alarm will go off by indication of LEDs or 7-segment display.

4. Keypad Display
   When a key is pressed on the keypad, that key symbol is displayed on the 7-segment LED display.

5. Simple Calculator
   The program will perform simple mathematical operations (`10 + 3 = 13`). Input can be obtained from the serial port and outputs can be sent via the serial port.

6. Conversion Tool
   Convert a number from one base to another and display the results. An example would be to use the switches to represent a binary number and output the hex equivalent on the 7-segment display.

7. Speedometer
   The speedometer will convert rotations of the motor into a speed (e.g. meters/sec) and display the speed on an output device. This may be tricky due to simulation update frequencies.

8. Array Processing
   Given an input array from the UART, calculate basic statistics of its elements including the min, max, and mean.

9. PWM Signal
   Many robotics applications use pulse width modulation (PWM) to control motors. A very good example of this is a servo. DC motor speed can be controlled by providing a PWM signal so that only an effective voltage is applied across its terminals. The goal of this project is to generate a PWM signal with given duty cycle (high time) and display the resulting signal on the scope.