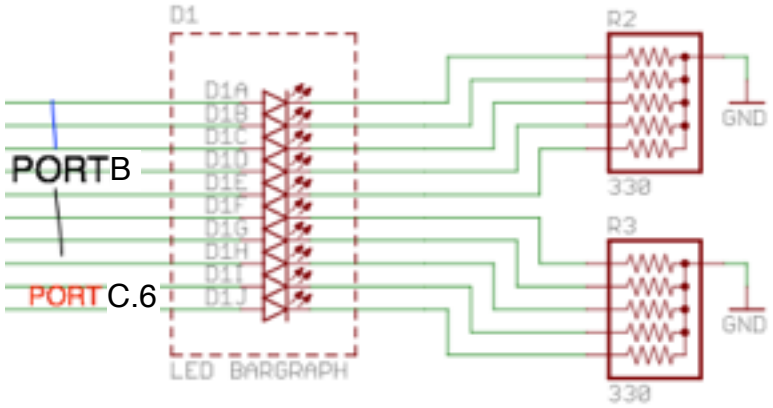
CpE301 - Design Assignment 2 DUE: 3/8/2016

Circuit Diagram:




Design Assignment 2:
The goal of the assignment is use GPIO and delays:

1. Design a delay subroutine to generate a waveform on PORTC.0 with 50% DC and 0.5 sec period.
2. Implement a 8-bit counter to count on every rising edge of the above waveform. The state of the counter needs to be displayed (display 8 bits only) on a 10-bit LED bar connected to PORTB. Do not worry about the counter overflow.
3. Also connect the 9th and 10th bit of the LED bar to PORTC.5 and PORTC.6 pins. Toggle PORTC.5 and PORTC.6 for every 5th rising pulses and every 10th rising pulse of the counter respectively.
4. Modify the above code to use interrupts to update the status/toggle of the 9th and 10th LED.

Submission:
The following are required for successful completion of the design assignment:

a. AVR ASM code that has been compiled and working for all four tasks. Verify the period and duty cycle of the waveforms in simulation and emulation.
b. AVR C code that has been compiled and working for all four tasks. Verify the period and duty cycle of the waveforms in simulation and emulation.
c. The C code should be well documented with explanation of every instruction.
d. A word document that contains the code with comments, complete schematics, that includes the AVR, components connected on the breadboard and LED should be included. Follow the template provided.
e. A snapshot of the board with connected components and a video of the complete LED bar blink sequence should be recorded and uploaded to Youtube and the line to be provided for each task.
f. The git directory should have DA2\DA2T1, DA2\DA2T2, … folders, with one doc file and video link file.