AMIT D61 Project: PWM Drawer

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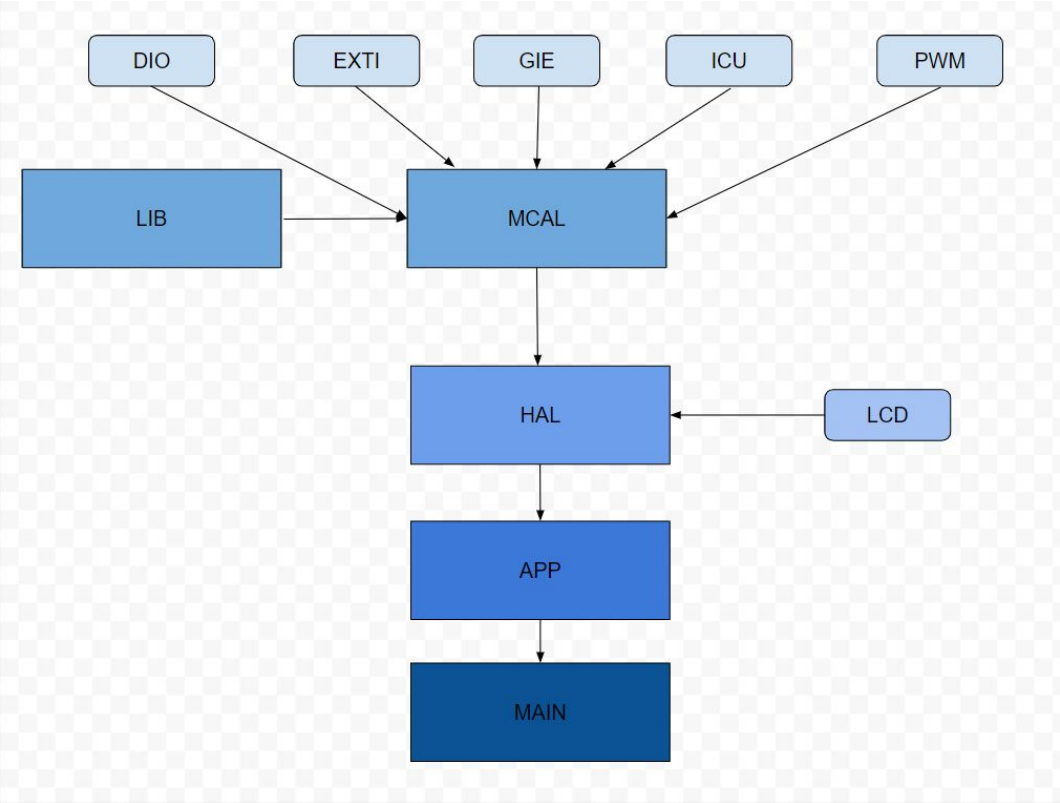
Objective

1. Ability to measure a PWM signal input to the microcontroller used (Atmega 32) and measure the following:
    a. Frequency
    b. Duty Cycle
2. Display the measurements onto an LCD.

Flow Chart



Description of Functionality

PWM:

- PWM acts as an output that provides a signal that can be configured based on the duty cycle and frequency desired by the user.

ICU:

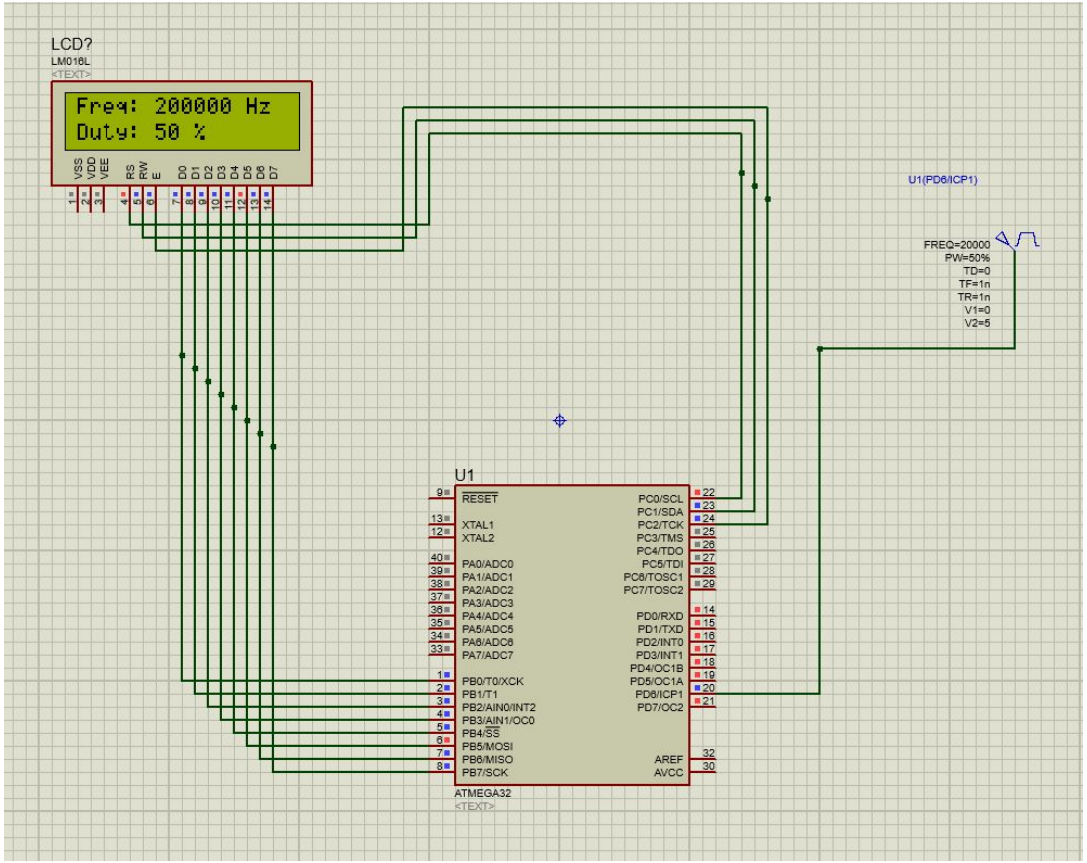
- ICU acts as an input that raises a flag when it detects an trigger edge (rising or falling) and captures the time it detected the edge. This is used to calculate duty cycle and frequency.

LCD:

- LCD is used to display the values of the frequency, period, and duty cycle measured by the ICU.

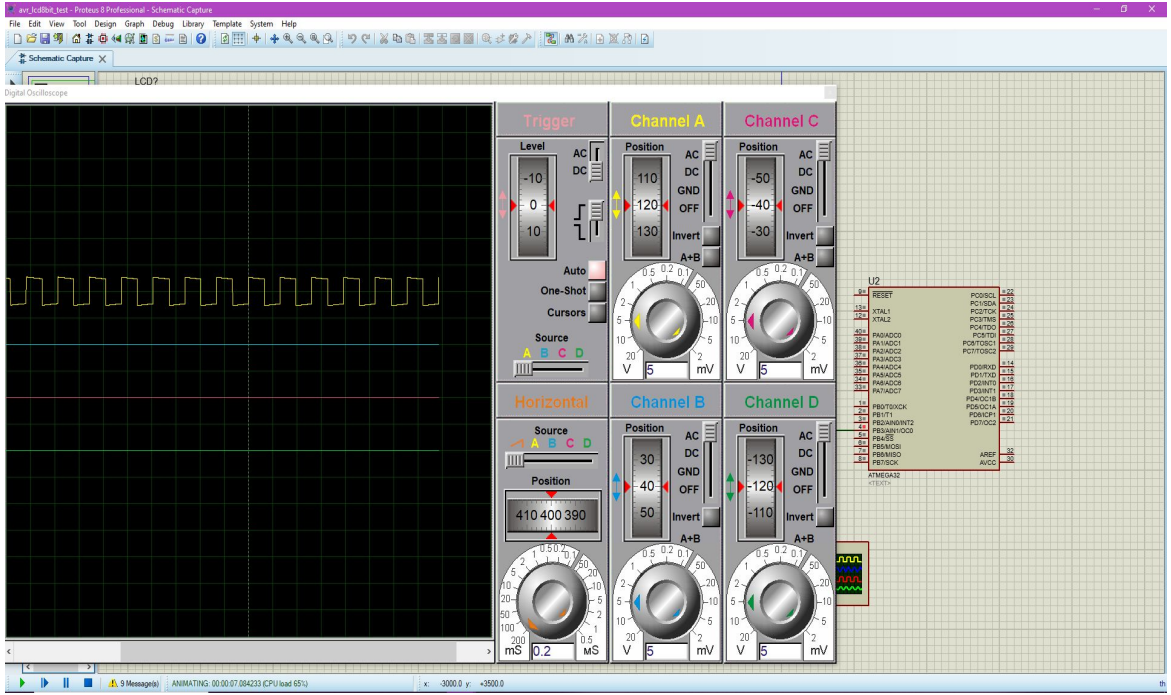
Phase 1: Read Signal and Display Duty Cycle and Frequency

- ATMEGA32 was successfully able to read the PWM signal at the ICP1 pin and display the frequency and duty cycle of the signal onto the LCD



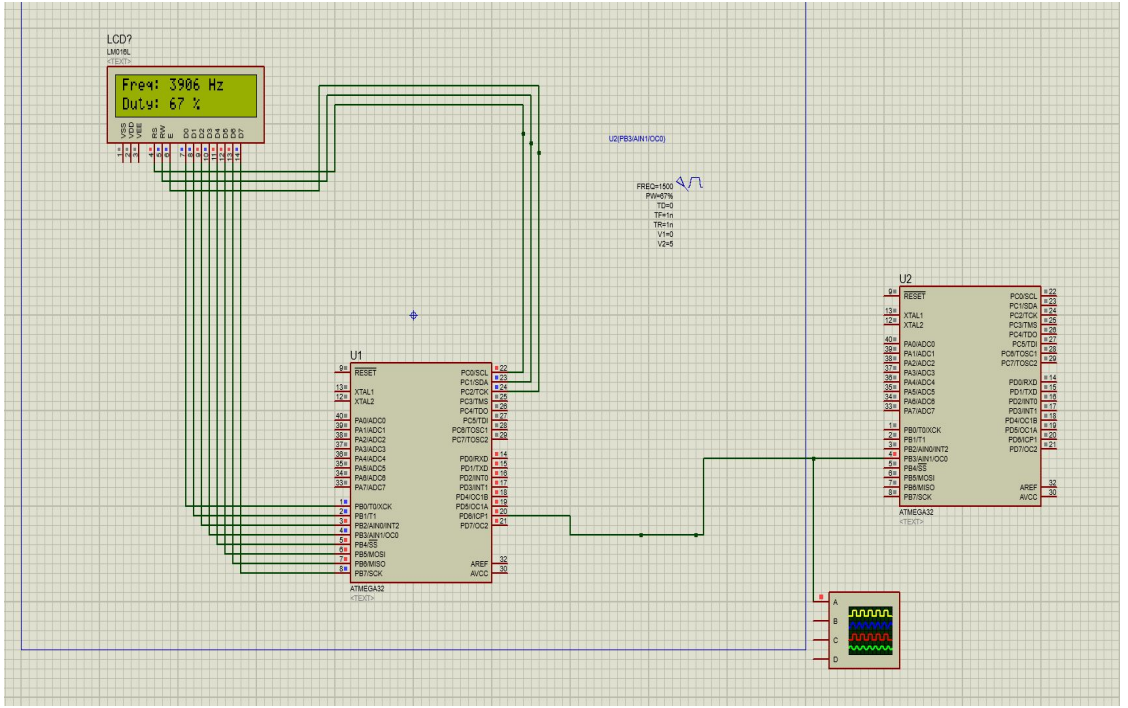
Phase 2: Generate Signal from another Microcontroller

- Successfully implemented PWM generation and displayed signal on Oscilloscope



Phase 3: Reading PWM Signal Generated by another Microcontroller

- Successfully read and displayed frequency and duty cycle of PWM signal produced by another microcontroller.



Future Improvements

- In Phase 1 and Phase 3 , there was several times when the LCD would display approximate results that were not fully accurate to the frequency of the pulse generator/microcontroller.