CECS346 Lab 6 - Obstacle Avoidance Sensor and Battery Power Supply

Preparation:
You will need a TI TM4C LaunchPad, battery holder, batteries, voltage regulator, capacitors for power supply circuit (2x 470 uF, 1x 1 uF), and one IR obstacle avoidance IR sensor. See the Parts List on Beachboard for more details on those components.

References: Lecture 7 - Obstacle Avoidance Sensor, Power Supply and Debugging

Starter Project: Lab 5/EdgeInterrupt

Purpose:
The purpose of this lab is to:

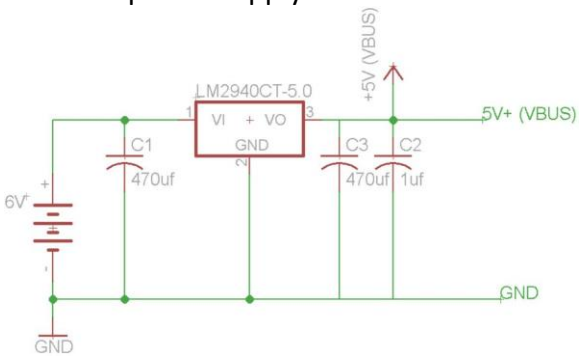
- Learn how to interface an infrared obstacle avoidance sensor
- Build and use a battery powered power supply
- Learn how to use both-edge interrupt
- Lear how to write a debouncing code

System Requirements:

- Build a power supply circuit and use it to power your LaunchPad.
- Use an IR obstacle avoidance sensor to detect an obstacle within 15 cm: turn the onboard green LED on when the obstacle is more than 15cm away; turn the onboard red LED on when the obstacle is within 15cm away.

Procedure:

1. Build the power supply circuit shown below. Recommend 4-8 AA batteries.



2. Connect the IR obstacle avoidance sensor to 5V and GND on the LaunchPad. Adjust the IR sensor to detect an obstacle 15cm away. Use one GPIO pin of your choice to take IR sensor output.
3. Disconnect LaunchPad from computer and power it via battery power supply.
4. Verify your code and IR obstacle avoidance sensor work as expected.

Deliverable:

1. Demonstrate your lab on board.
2. Submit source code and demonstration video to Beachboard.