**ENGR 4020 Milestone 1[[1]](#footnote-1) [100 pts]**

**Demonstrate by 1/23/2020**

**Milestone Report by 1/24/2020**

**Demonstration after the Due Date: [75 pts]**

In this milestone, you must complete two primary tasks:

1. Demonstrate programming capability with the mbed by reading and writing digital signals [50 pts]
2. Assemble your robot kit [25 pts]

**Tasks**

1. Make the microcontroller control two LEDs in two clearly distinct patterns. Each pattern will be associated with a push button (SPST switch). Each pattern should be exactly 12 flashes and should make use of both LEDs. Each button should display their own pattern only. After the pattern is displayed, the microcontroller must stop and wait until either button is pressed again. If either button is pressed while the pattern is flashing the microcontroller must begin flashing the pending pattern after completing the current pattern.

To demonstrate operation, your microcontroller must respond appropriately to up to five button presses to by the instructor.

1. Assemble the kit for the robot, matching the example robot. Show the instructor your kit is assembled correctly to gain credit.

**Requirements**

1. Demonstrate the tasks outlined above. Demonstration of task 1 after the due date will yield a deduction of 25 points from the total score.
2. Submit a milestone report [25 points]. The milestone report must summarize the approach to the milestone as well as the performance and reliability in meeting the milestone. You must also submit a flowchart for the program’s actual structure, a copy of the .cpp file (with comments) and a diagram of the circuit used. This submission is on paper! This report must be put in your group’s design notebook, and the whole notebook turned in to Dr. McPheron.

1. Adapted from ENGR 450: Mechatronics by Matthew Stein, Roger Williams University [↑](#footnote-ref-1)