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EMERGING TECHNOLOGIES I

MIS 285N | Fall 2021

Project Milestone 1

Overview: Program the microbit to count steps. The microbit is a very simple device (it's actually targeted to kids). For our project, it's a stand-in for a very simple off-the-shelf IoT device over which you may have very little control. For our first milestone, we'll get familiar with the microbit and write a very simple pedometer program based on a provided template.

Step 1: Visit MakeCode (https://makecode.microbit.org/). Use the visual editor to write a step counter. For starters, you can assume a "shake" is equivalent to a step. When you update the counter, you should also display the current step count on the microbit's LEDs.

Step 2: Download Mu (https://codewith.mu/en/about). Use the Mu editor to re-write your step counter in Python. ***[Note: on MacOS, I have in the past had to use the online editor at python.microbit.org because mu wouldn't properly flash the microbit.]*** You might find the python API documentation for the microbit to be useful:

https://microbit-micropython.readthedocs.io/en/latest/microbit_micropython_api.html

(More generally, yes, you're responsible for being able to navigate the contents of that link. We'll see lots of similarly-styled API references in the future.)

Step 3: Test your step counter. Does it reliably count your steps? Identify at least one limitation that is interfering with its step counting (hint: one has to do with the display). Fix the python implementation. Your fix should include (at a minimum) the use of a button.

Step 4: Test the refined step counter. Describe and document your tests, including your results. Identify at least one additional way you might modify your step counter to make it more reliable. For bonus points, attempt to implement your proposed modification(s).

What to submit

First, "claim" a project group under People/Groups on Canvas. Put yourself (and your teammate(s)) in that project group.

Via Canvas, submit a brief writeup (definitely less than a page) describing what you did for each step. The first couple of steps' descriptions will be (very) brief.

On or before Thursday, October 28, in (virtual) office hours, demonstrate your final working pedometer (python) for the TA. All team members need not be present. If attending office hours is not possible, please contact the instructor or TA.