## ECE 476/676 - Test #3: Name

Due Sunday, May 11th at midnight. Individual Effort.

## **Mine Sweeper**

Write a python program to play a game of mine sweeper with your Pi-Pico and a GPS module.

At the start of the game, press GP15.

- This reads the GPS sensor and defines your current GPS position as (0,0)
- It also generates a random location for a mine you're trying to find from (-100,100) to (+100,+100) meters

Once the game starts, the LCD display should show you your current GPS position relative to your starting position (0,0) as you walk around.

When you press GP14,

- A pin is placed at that location on the map
- The distance to the mine is displayed on the LCD display (just distance, not direction).
  - Distance can be shown using text, using a circle, or whatever method you like
- A counter is incremented (the number of pins droppped).

The game ends when the distance to the mine is less than 2 meters.

Your score is the number of pins used to locate the mine.



## Grading: (100 points total)

- (10 points): Initialize the LCD display using a Python program
- (10 points): Using the GPS sensor to determine your (x,y) position
   joystick or keyboard entries result in partial credit for test #3
- (10 points): Displaying your current GPS position on the LCD display as you walk around
- (10 points): Use interrupts to start the game by pressing GP15
- (10 points): Compute a random location for the mine at the start of a game
   x = -100 to +100 meters, y = -100 to +100 meters
- (10 points): Use interrupts to drop a pin by pressing GP14
- (10 points): Compute and display the distance from the dropped pin and the time
- (10 points): Game ends when the distance from the dropped pin to the mine is less than 2 meters
- (10 points): Use BlueTooth or WiFi to allow others to watch your progress as the game goes on
  Share the location of dropped pin (x, y) and distance to the mine
- (10 points): Demo (in-person on with a video)