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**DESCRIPTION OF LAB ACTIVITY**

Make the ActivityBot travel on a table without falling off the edge using IR sensors.

**ANALYSIS OF WHAT YOU NEEDED TO DO/LEARN**

1. Learn how to …
   1. attach IR sensors to Arduino/activitybot
   2. make Arduino/Activitybot move around autonomously while avoiding obstacles using IR sensors
2. Create a…
   1. function using functions to make robot move using IR sensors

**ALGORITHM FOR CODING**

1. First create a …
   1. stop functions that makes the robot stop
   2. straight function that makes the robot travel straight
   3. right turn function to make the robot turn right
   4. left turn function to make the robot turn left
   5. backward function that makes the robot travel backward
   6. whisker function that uses the straight/backward, stop, and right/left turn functions to create a square pattern
2. Make the robot …
   * 1. travel straight for x distance (using straight function)
     2. if IR sensor detects an no object (off table/out of bounds)…
        1. if only the left IR sensor detect boundary
           1. travel backward for 1 second (using backward function)
           2. turn robot right ~ 30 degrees (using right turn function)
        2. if only the right IR sensor detect boundary

**IR Sensor Functions**

* + - * 1. travel backward for 1 second (using backward function)
        2. turn robot left ~ 30 degrees (using left turn function)
      1. if both IR sensor detect boundary
         1. travel backward for 1 second (using backward function)
         2. turn robot right ~ 60 degrees (using right turn function)

**ACTUAL CODE – ATTACH**

**KEY CONCEPTS LEARNED/DISCOVERED (MATH/ELECTRONICS/PROGRAMMING/ETC)**

1. IR sensors obstacle avoidance logic/readings
2. Circuitry ( attaching IR sensors)
3. Learned how IR works

**REFLECTION/QUESTIONS/COMMENTS**

I found the assignment to be very fun and I enjoy learning how to build the circuits. I found it difficult to work with the IR sensors. The IR sensors are not reliable in our case. The room and more places have much IR interference (including our cell phones and the class florescent lights). The robot falls off the edge in some cases due to bad readings even with a debounce reading for the IR sensors. I believe with brand new equipment and limited external interference the lab would have been more successful.

The robot did however work for the most part as demonstrated in class.

**ASSESSMENT (TO BE FILLED OUT BY INSTRUCTOR)**