

CSE140: Introduction to Intelligent Systems (Winter 2023)

Lab Evaluation – 4

Marks - 20

Date – 01/06/2023

Duration - 50mins

Instructions –

- Zip the code files and submit it on google classroom.
- Zip File should be named as **Lab4_Name_RollNo.zip**
- Do not copy paste from the internet or classmates. **Standard institute plagiarism policy holds**

Question 1:

Using ROS and the TurtleSim package, design a program that allows a turtle to create a pentagon based on user input.

Your program should include the following functionalities:

1. Prompt the user to enter the length of each side for the pentagon.
2. Calculate the required angle for the turtle to rotate in order to create a pentagon.
3. Use the calculated angle and the user-defined side length to guide the turtle in creating the pentagon accurately.
4. Display the resulting pentagon in the TurtleSim window.

Your program should be implemented using Python and the rospy package for ROS.

Please provide the code and instructions for running the program, and describe any additional steps or considerations required to achieve the desired functionality.

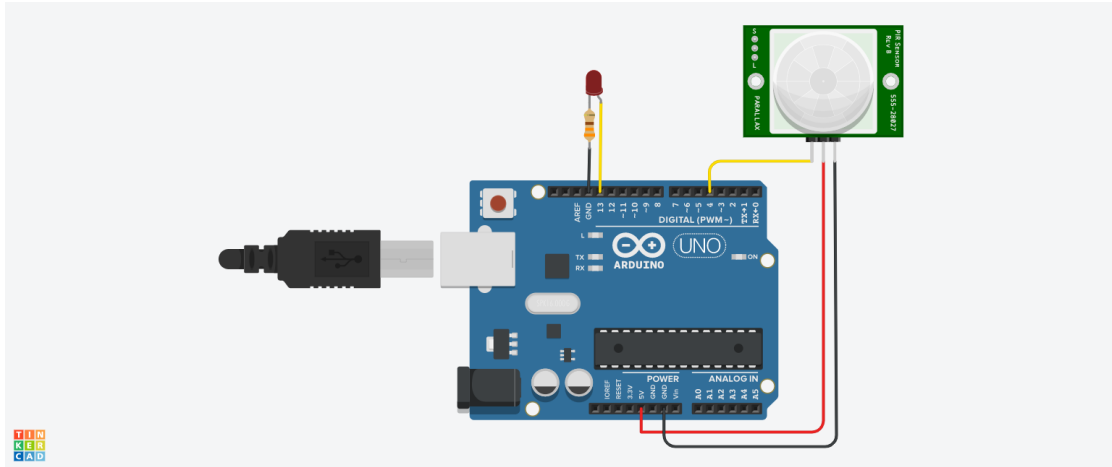
Question 2

[10 marks]

Complete the following arduino code template that uses a PIR motion sensor to sense any movement nearby and accordingly signal this through an LED.

Scenario -

- The PIR sensor is connected to **digital pin 4**
- The LED is connected to **digital pin 13**.
- When the PIR sensor detects movement, it sets **pin 4 to HIGH** and then you need to turn on the LED by setting **pin 13 to HIGH**.
- Again when there is movement it sets **pin 4 to LOW** and you need to accordingly **set pin 13 to LOW** to turn off the LED.



Copy and paste the code template [available here](#) into this [tinkercad](#) circuit and complete your code. You can test and debug the code using the simulator present in tinkercad.

Finally submit the code you have designed in a txt file and upload to the classroom.