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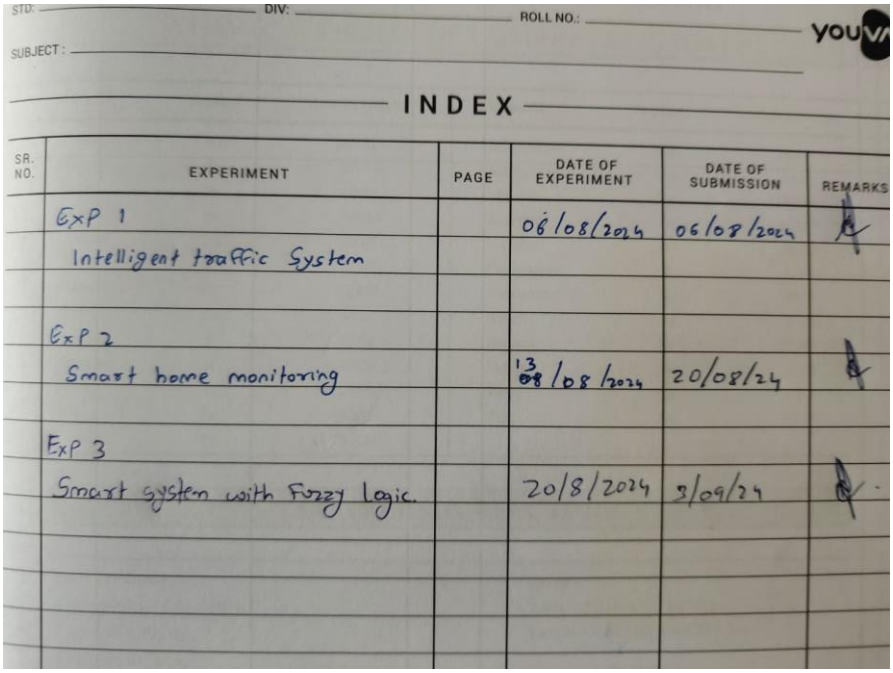
VIKRAM SINGH

03/09/24

LAB EXPERIMENT 6

Smart Mat



STD: DIV: ROLL NO.:

SUBJECT:

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Working Principle :

1) Initialization
GPIO pins connected to ultrasonic sensor, led. are setup & trig pins are configured as output.

2) Distance Measurement
1) Triggering Sensor : Sends a short pulse to ultrasonic sensor
2) Receiving the echo : The sensor emits a sound wave that reflects through & echo pin listens for returning wave.

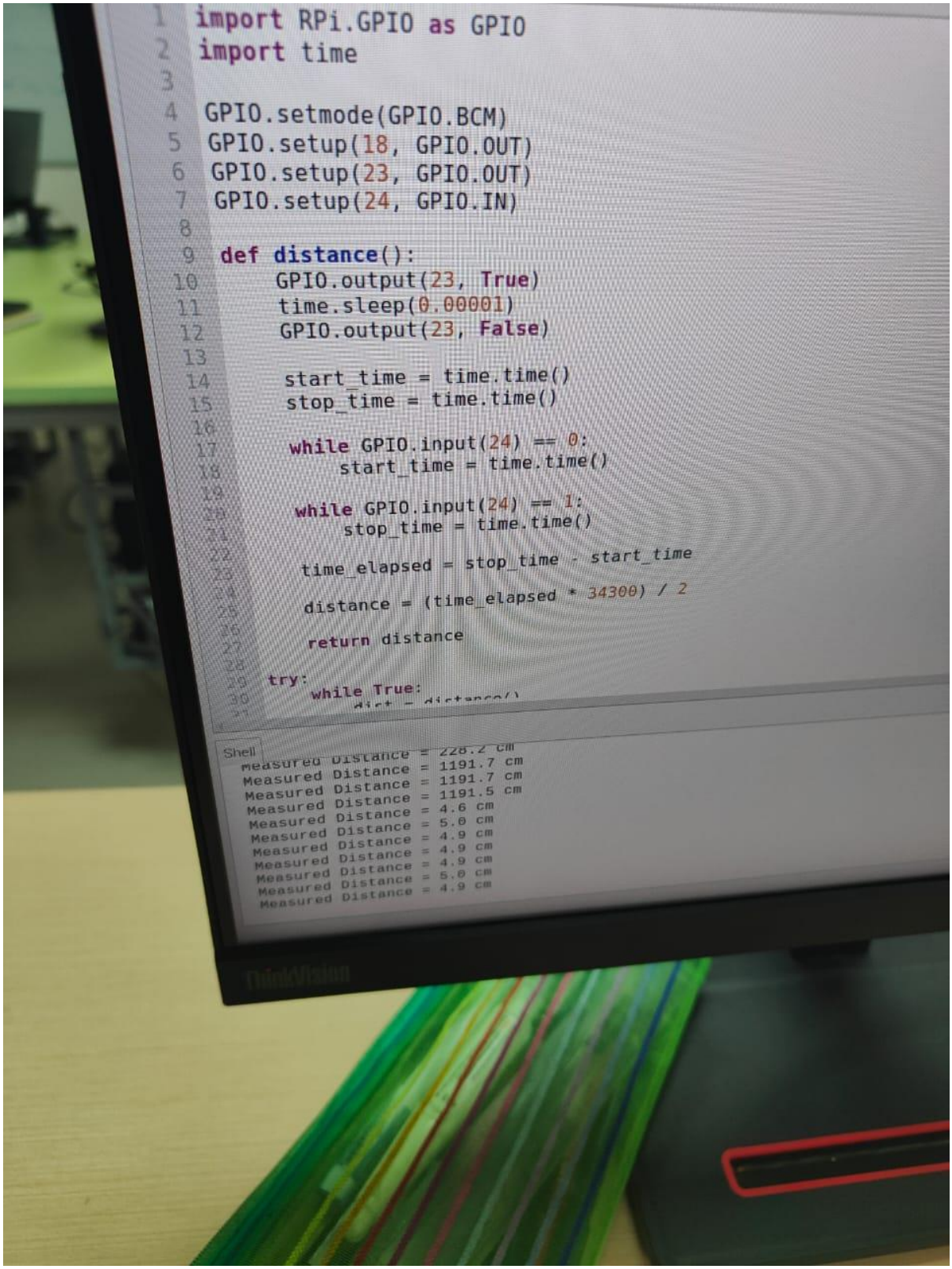
3) Calculating distance : Any 1 edge uses ultrasonic sensor while other 3 are simulated using random distance values.

4) Threashold check : The system checks whether distance values are below threashold, thereby determining if object is at edge & signals LED

5) Termination : Post operation method, the pins are cleared up.

Conclusion : The smart mat was succesfly implemented using ultrasonic sensors & can be used to detect objects at the edge.

Teacher's Signature:


import RPi.GPIO as GPIO
import time
GPIO.setmode(GPIO.BCM)
GPIO.setup(18, GPIO.OUT)
GPIO.setup(23, GPIO.OUT)
GPIO.setup(24, GPIO.IN)
def distance():
GPIO.output(23, True)
time.sleep(0.00001)
GPIO.output(23, False)
start_time = time.time()
stop_time = time.time()
while GPIO.input(24) == 0:
start_time = time.time()
while GPIO.input(24) == 1:
stop_time = time.time()
time_elapsed = stop_time - start_time
distance = (time_elapsed * 34300) / 2
return distance
try:
while True:
Shell
Measured Distance = 228.2 cm
Measured Distance = 1191.7 cm
Measured Distance = 1191.7 cm
Measured Distance = 1191.5 cm
Measured Distance = 4.6 cm
Measured Distance = 5.0 cm
Measured Distance = 4.9 cm
Measured Distance = 4.9 cm
Measured Distance = 4.9 cm
Measured Distance = 5.0 cm
Measured Distance = 4.9 cm