Ahsanullah University of Science and Technology

CSE 3216: Microcontroller Based System Design Lab

Fall 2020

Lab Final Quiz (Section-C)

Time: 50 Minutes(4:00 to 4:50pm)

Date: 29-09-2021

Proteus Setup+Code (20):

Smart Pool Controller:

Necessary Components:

LM35, LCD, Ultrasonic Sensor, Buzzer, DC motor, IR sensor, Servo Motor, Arduino

Working principle:

1. The entry door to the pool room is automated. If the IR sensor detects a person standing at the door, the door is opened X°, then automatically closes Y seconds later. [6 marks]
2. 2 temperature sensors are used inside the pool water and in the outside environment to constantly monitor the temperature. Individual LCD displays are used to display corresponding temperatures. Ex- “Pool temp: 25 deg celsius” and “Air temp: 28 deg celsius” [6 marks]
3. The water level is constantly monitored, once every 15 minutes. 5 LED lights indicate the water level detected by the sensor. Assume, the sensor is placed in such a manner that it is perpendicular to the water surface. [8 marks]
    a. If the distance is within 0-20cm, all 5 lights are on, indicating the pool is filled 100%
    b. If the distance is within 21-40cm, 4 lights are on, indicating the pool is filled 80%
    c. If the distance is within 41-60cm, 3 lights are on, indicating the pool is filled 60%
    d. If the distance is within 61-80cm, 2 lights are on, indicating the pool is filled 40%
    e. If the distance is greater than 81cm, 1 light is on, indicating the pool is filled 20%. In this case, a buzzer goes off as a warning and a motor is turned on for refilling the pool.

Here,

X = [(last 2 digits of your ID % 20) + 65] (For ex: if ID=190204001, X = [(01)%20+65])

Y = [(last 2 digits of your ID % 30) + 15]