

Ahsanullah University of Science and Technology
CSE 3216: Microcontroller Based System Design Lab

Fall 2020

Lab Final Quiz (Section-A)

Time: 50 Minutes(7:00 to 7:50pm)

Date: 30-09-2021

Proteus Setup+Code (20): A description of a Microcontroller-based project has been provided. You must construct all the components together to form a whole system.

Smart Greenhouse for Plants:

Necessary Components:

Keypad, LCD, LDR, Buzzer, Servo, LM35, DC motor, Arduino

Working principle:

1. Enter password X21 to enable the entire system. Nothing should work if the system is not enabled. [6 marks]
 - a. If the user enters the wrong password, print "Wrong password!" for the first 2 times on the LCD display, on the 3rd time, print "Intruder Alert!" and turn on the buzzer alarm.
 - b. The buzzer is only turned off if the correct password is typed in.
2. Some sensitive plants must be stored at certain temperatures. If the temperature is equal to or above Y° (i.e. $\text{temp} \geq Y^{\circ}$) Celsius, a fan motor is turned on. It gets turned off when the temperature goes below Y° Celsius. [6 marks]
3. There is an overhead window that is light-dependent. It works in the following ways: [8 marks]
 - a. For intensity within 10-300: window is set at P° angle
 - b. For intensity within 301-600: window is set at Q° angle
 - c. For intensity above 601: window is set at R° angle

Here, X = last 2 digits of your ID (ex: if ID=190204001, $X=01$)

$Y = (\text{last 2 digits of your ID} * 25) \% 55$

$P = (\text{last 2 digits of your ID}) \% 45$

$Q = (\text{last 2 digits of your ID} \% 10) + 60$

$R = (\text{last 2 digits of your ID} \% 5) + 78$