FORMAN CHRISTIAN COLLEGE
A Chartered University
Embedded Systems CSCS306
LAB-05

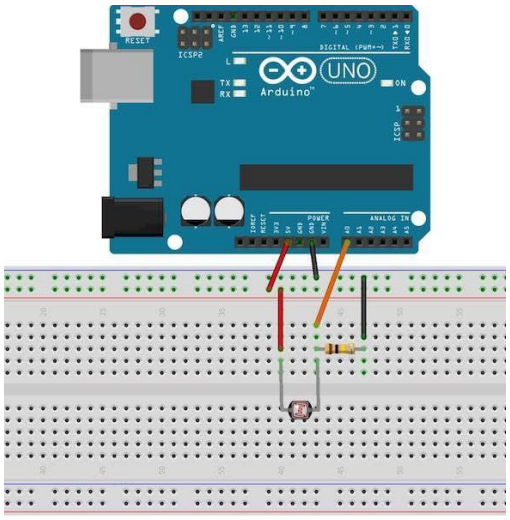
This lab can be performed in groups of maximum three students.
Lab is time constrained. It should be completed within prescribed time.
You need to submit a report comprising of an introduction to the said lab, circuit diagram, image of your final circuit and code. Each lab will be graded out of 100. Rubric for this lab is as follows:

Hardware properly wired and working	**0%**
Code	**80%**
Report	**20%**

In this lab we will work with hashing and encryption/decryption libraries in Arduino. You will also learn how to work with structs in Arduino.

Lab Task 1 [5, 5]

In this task we will learn how to work with an LDR and a PIR motion sensor.
Interface an LDR with Arduino and write code in Arduino IDE that can display the output voltage mapped to the range 0 to 1023 on serial monitor.
Show your circuit and running code to the lab staff.



Next interface a PIR motion sensor with an LED such that if you wave your hand in front of the motion sensor, the LED should glow for some time. Show your working to the lab staff.

Lab Task 2 [30, 10, 30]

Now that we have some working knowledge about the LDR and PIR motion sensor, we are ready to use these in a real-life scenario.

Suppose you are given a task to automate a stair case of a house. The logic is as follows:

- If it is dark in the stair case, and some one climbs up/down the stair the light fixture/s on the stair case should turn ON. The light should remain ON for around 120 seconds, after which the light turns OFF.
- However, if the light fixture is OFF and there is ambient light in the stair case, the light fixture should not turn ON.
- This logic although seems fine, has a glitch. What if there are two person and somehow they decided to have a short chit chat while moving up/down the stair case. Assume their discussion lasts for a couple of minutes. In this case, your control system will switch the lights ON for around 120 seconds, switch the light OFF and then switch it ON again. The customer complaints about this bug in your system. Make correction to the logic and come up with a smart solution.