Alexandria University
Faculty of Engineering
Computer and Systems Engineering Department

CSE343 Embedded Systems
Assigned: Saturday 24/02/2024
Due: Saturday 02/03/2024

Lab Experiment 02

Objectives

Implement an experiment based on Analog Input/Output.

Adjustable Brightness Desk Lighting System

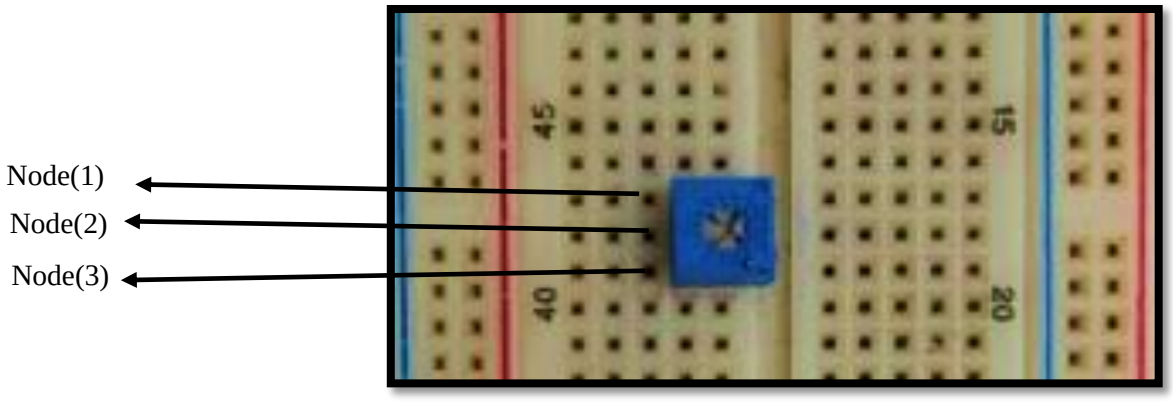
Adjustable brightness desk lightning system is mainly composed of a lighting with an additional feature of multilevel brightness based on user demand. The feature can be expressed as a rotating button(potentiometer). This tool is mainly used for focused desk work. Being adjustable in brightness, it gives the user the ability to control the level of brightness that makes him/her comfortable while doing the deskwork.

You are asked to simulate a similar system using your arduino kit, 1 LED, and a potentiometer.

Once the user starts adjusting the potentiometer for triggering the lighting source, the lighting source should start to light with the associated intensity increasing proportionally to the rotational position until it reaches the maximum possible intensity. Once the user, rotates the potentiometer in the opposite direction, the lighting source intensity should decrease proportionally to the rotational position of the potentiometer, and so on.

NOTES:

- You should consider using a resistor(330 Ω is a standard) for interfacing the LED.
- You should consider using a potentiometer of range (20-50 KΩ).
- The potentiometer should be placed on the breadboard in the way shown below.



References

Arduino PWM and Analog output/Input Tutorial

https://drive.google.com/file/d/1Z2E2CdqUTy3Ejspr1Hxflgqio0EvRzuo/view?usp=share_link

Analog Input

https://www.arduino.cc/en/Tutorial/BuiltInExamples/ReadAnalogVoltage#hardware-required

Delivery Policy

- Each group must send a 20-second video showing the Arduino kit and external components with the system at rest, and then increasing the intensity till maximum, following gradual decrease of the intensity till rest state.
- You should submit a report showing your schematic diagram and the challenges you faced (if any).
- You should submit the sketch source code (.ino file(s)).
- You should cite any additional resources you used.
- Further details for the submission instructions will be posted later on MS Teams.

Good Luck