AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)

Faculty of Engineering

Department of Electrical and Electronic Engineering

American International University-Bangladesh (AIUB)

MICROPROCESSOR AND EMBEDDED SYSTEM LAB

SUBMITTED BY	
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CLASS SERIAL:36	

LAB NO: 01

TITLE: Familiarization with a microcontroller, the study of blink test and implementation of a traffic control system using microcontrollers.

SECTION: G	SEMESTER: SPRING 2024-25
GROUP NUMBER: 03	DATE OF SUBMISSION: 04/02/2024

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SUBMITTED TO:

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Title: familiarization with a microcontroller, the study of blink test and implementation of a traffic control system using microcontrollers.

Objective: The objective of this experiment is to be familiare with microcontroller. To learn how to use Arduino, blink LED lights using it learning to code for Arduino; delay functions. Additionally, the objective includes the practical implementation of a traffic control system using Arduino.

Theory & methodology:

A microprocesson is a component that performs the instructions and tasks involved in computers processing. It works as a central unit that takes logical instructions and executes according to it.

Arduino is a type of micro controller which is vastly used all over the world. It is an open source platform used for building electronic projects. It consists

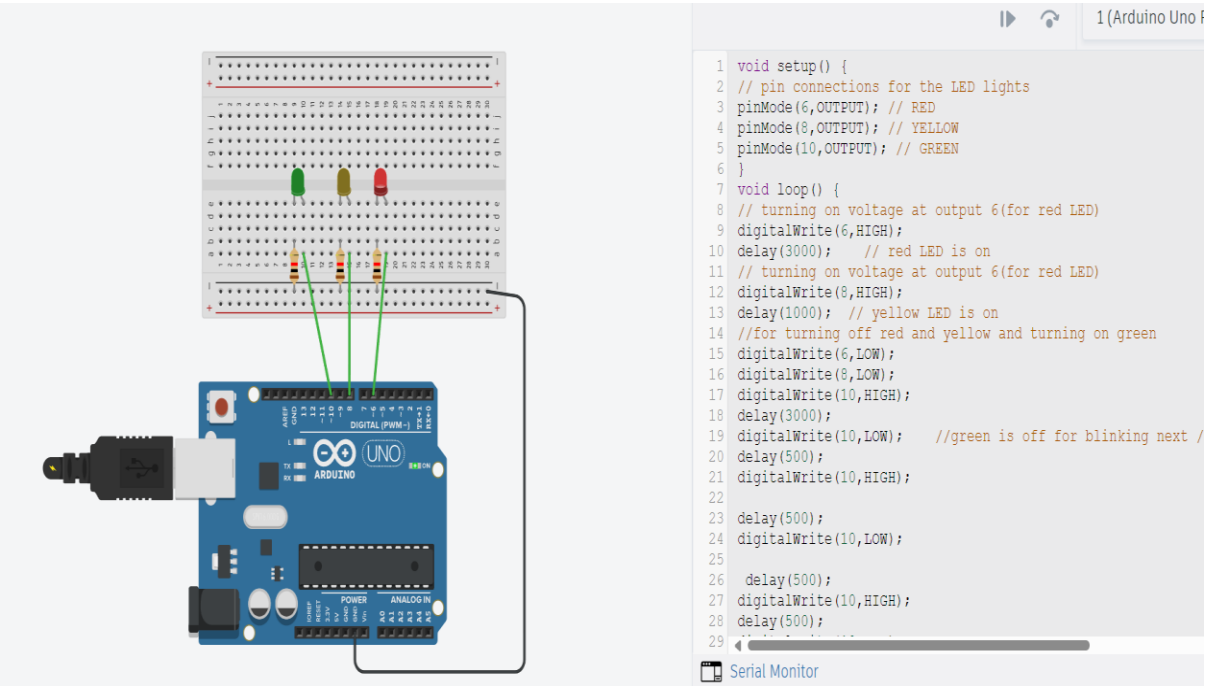
of the hardware wich is the microprocesson and a software that runs in the computen, used to write and ~~uplode~~ upload computen codes to the physical board.

Apparatus:

1. Arduino Board
2. ~~LD~~ LED lights
3. Resistons
4. A working PC
5. Arduino IDE
6. Jumpen wines.

Results and Simulations:

To get the LEDs working like a traffic light system, we typed in necessary codes in the Aurduino IDE and then connected the board to the PC with a USB cable.



After connecting the microcontroller to the PC and uploaded the code and the microcontroller started functioning.

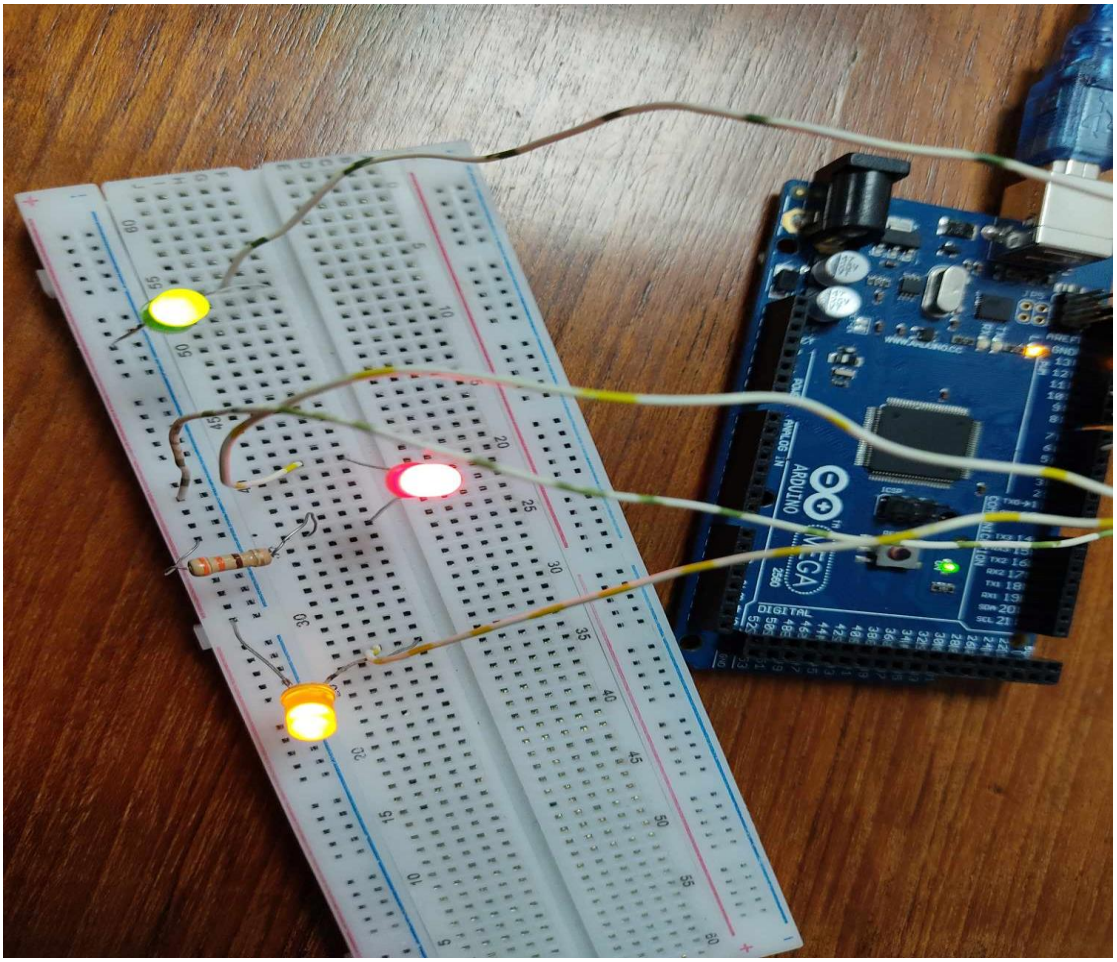
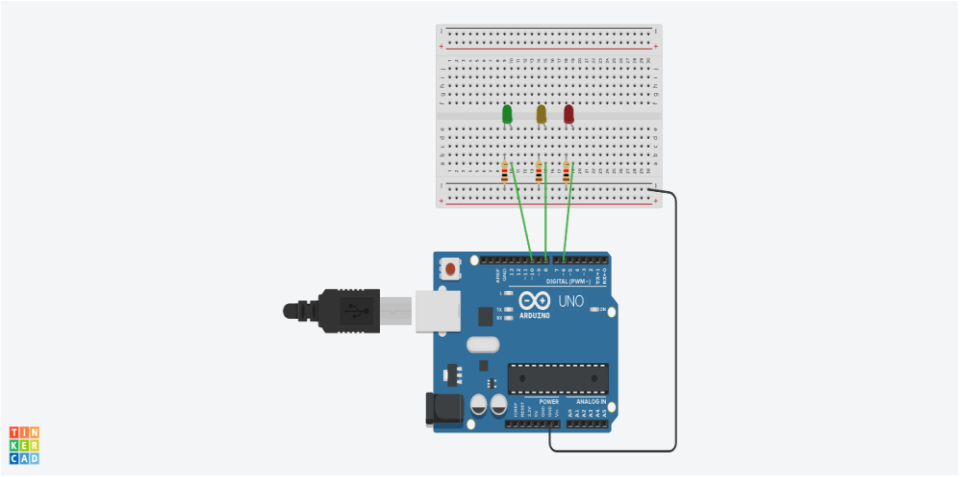


Fig: LED lights turning on and off and acting like a traffic light system

I also simulated the entire thing using TinkerCAD.



Discussion and conclusion:

In class we have been introduced to Arduino circuit and its components. The lecture had an Arduino MEGA and showed us the pins; RX-TX etc.. And explained us the functionality. After that, we have been produced an Arduino UNO, some LED lights of Red, Green, Blue, resistors, A PC that had Arduino IDE installed. We have been provided a Lab manuel that contained the instructions and codes to help us accomplish the task. We set up the LEDs on the breadboard and connect the Red LED on the 6th pin, Yellow 8th pin and Green on the 12th pin. Connect the negative with a common ground on the ground pin. We use resistor in series with LEDs to reduce the flow of current. After setting up, we turned the IDE on and wrote the code with the help of the manual.

Then we varified by clicking on the tick button and uploaded after connecting the Arduino with the usb wire. After uploading, the RX-TX LEDs blinked which indicated that our codes were uploaded.

The LEDs started blinking like a traffic light just the way we coded. ~~Through the~~ By doing these, we had a good chance to be familiare with the microprocessor and got to implement by making a traffic light system.

References:

1. *Microprocessor* (1970) *Techopedia*. Available at: https://www.techopedia.com/definition/2874/microprocessor (Accessed: 25 September 2023).

2. Team, T.A. (no date) *What is Arduino?*, *Arduino Documentation*. Available at: https://docs.arduino.cc/learn/starting-guide/whats-arduino (Accessed: 25 September 2023).

3. *What is an Arduino?* (no date) *What is an Arduino? - SparkFun Learn*. Available at: https://learn.sparkfun.com/tutorials/what-is-an-arduino/all (Accessed: 25 September 2023).