

AMERICAN INTERNATIONAL UNIVERSITY BANGLADESH
Faculty of Engineering

Laboratory Report Cover Sheet



Students must complete all details except the faculty use part.

Please submit all reports to your subject supervisor or the office of the concerned faculty.

Laboratory Title: Familiarization with a microcontroller, the study of blink test and implementation of a traffic control system using microcontrollers
Experiment Number: 64 Due Date: _____ Semester: _____
Subject Code: EEE Subject Name: Microprocessor and E. system Section: N
Course Instructor: _____ Degree Program: _____

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Group Number (if applicable): ☐ Individual Submission ☐ Group Submission

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For faculty use only:

Total Marks: _____ Marks Obtained: _____

Faculty comments

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

Introduction: The objective of this experiment is to get familiarized with microcontroller.

- (i) learning to make LED blink using Arduino and the delay functions.
- (ii) Implementation of a traffic control system using Arduino.

Theory and methodology: Arduino is an open source platform used for creating interactive electronics projects. Arduino consists of both a programmable microcontroller and a piece of software, or IDE that runs on our computer, used to write and upload computer code to the microcontroller ~~code~~ board. Arduino Uno also does not need a hardware circuit to load a new code into the board. We can easily load a code into the board just using a USB cable. and the Arduino IDE. which uses an easier version of C++ to write code.

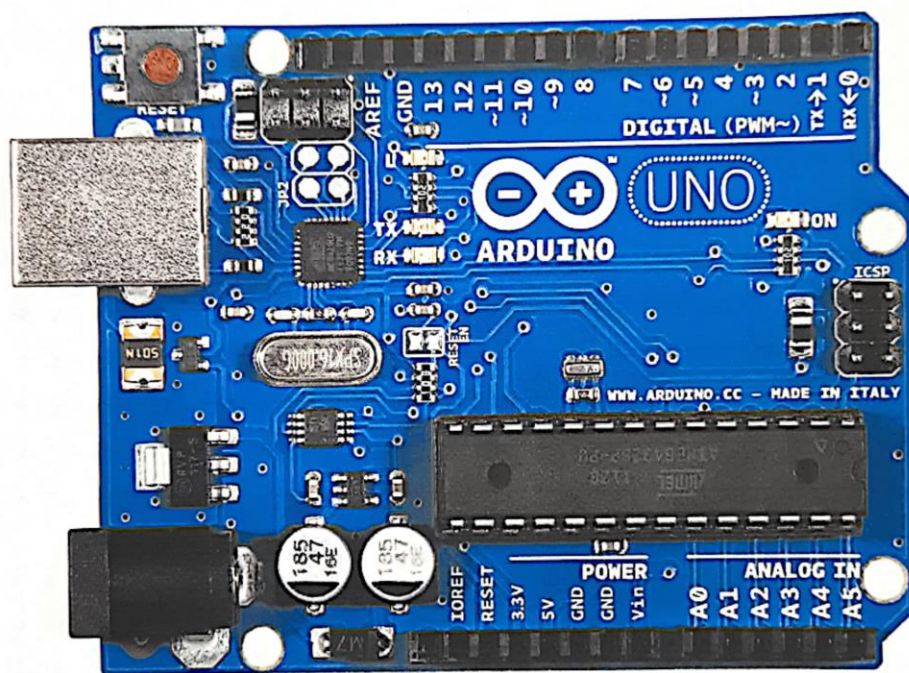
Apparatus:

- (i) Arduino IDE
- (ii) Arduino Uno (R3) board ~~and/or~~ Arduino mega 2560 board.
- (iii) LED lights (RED, GREEN, YELLOW) and three 200 ohms resistors and jumper wires.

Experimental procedure:

This main task of our lab is to understand and implement a traffic control system after understanding to blink a LED light. Make the circuits first using the ~~flow~~ following connection system between all the elements.

Arduino Uno:





Program for Traffic control system:

```
void setup() {  
  // pin connections for LED lights
```

```
  pinMode(8, OUTPUT);
```

```
  pinMode(10, OUTPUT);
```

```
  pinMode(12, OUTPUT);
```

```
}
```

```
void loop() {
```

```
  digitalWrite(8, HIGH);
```

```
  delay(3000);
```

```
  digitalWrite(10, HIGH);
```

```
  delay(1000);
```

```
  digitalWrite(8, LOW);
```

```
  digitalWrite(10, LOW);
```

```
  digitalWrite(12, HIGH);
```

```
  delay(3000);
```

```
  digitalWrite(12, LOW);
```

```
  delay(500);
```

```
  digitalWrite(12, HIGH);
```

```
  delay(500);
```

```
  digitalWrite(12, LOW);
```

```
  delay(500);
```

```
  digitalWrite(12, HIGH);
```

```
  delay(500);
```

```
  digitalWrite(12, LOW);
```

```
  delay(500);
```

```
  digitalWrite(12, HIGH);
```

```
  delay(500);
```

```
  digitalWrite(12, LOW);
```

```
  digitalWrite(10, HIGH);
```

```
  delay(1000);
```

```
  digitalWrite(10, LOW);
```

```
}
```

Rewrite the code for the same operation and same circuit by defining the delays:

```
#define RED-PIN 8
#define YELLOW-PIN 10
#define GREEN-PIN 12
int red-on = 3000;
int red-yellow-on = 1000;
int green-on = 3000;
int green-blink = 500;
int yellow-on = 1000;

void setup() {
  pinMode(RED-PIN, OUTPUT);
  pinMode(YELLOW-PIN, OUTPUT);
  pinMode(GREEN-PIN, OUTPUT);
}

void loop() {
  digitalWrite(RED-PIN, HIGH);
  delay(red-on);
  digitalWrite(YELLOW-PIN, HIGH);
  delay(red-yellow-on);
  digitalWrite(RED-PIN, LOW);
  digitalWrite(YELLOW-PIN, LOW);
  digitalWrite(GREEN-PIN, HIGH);
  delay(green-on);
  digitalWrite(GREEN-PIN, LOW);
  for (int i = 0; i < 3; i = i + 1)
  {
    delay(green-blink);
    digitalWrite(GREEN-PIN, LOW);
  }
  digitalWrite(YELLOW-PIN, HIGH);
  delay(yellow-on);
  digitalWrite(YELLOW-PIN, LOW);
}
```


References):

- (1) <https://www.arduino.cc/>.
- (2) <https://www.coursera.org/learn/arduino/lecture/ei4ni/1-10-first-glance-at-a-program>
- (3) Jeremy Blum; Exploring Arduino: Tools and Techniques for Engineering Wizardry.