AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH (AIUB)
Faculty of Engineering
Department of EEE and CoE
Undergraduate Program

Course: Microprocessor and Embedded Systems **Summer 2021-22, Final**

Experiment 10: Familiarization with Raspberry Pi

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Theory and methodology:

The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. The most important thing about different versions of Raspberry Pi is that, it is a computer that costs $5 to $75.

Objectives:

To get familiar with Raspberry Pi

Equipment List:

1) Activated Raspberry pi
2) LED
3) Resistor (220 Ω)
4) Breadboard
5) Jumper wires

Hardware Setup:

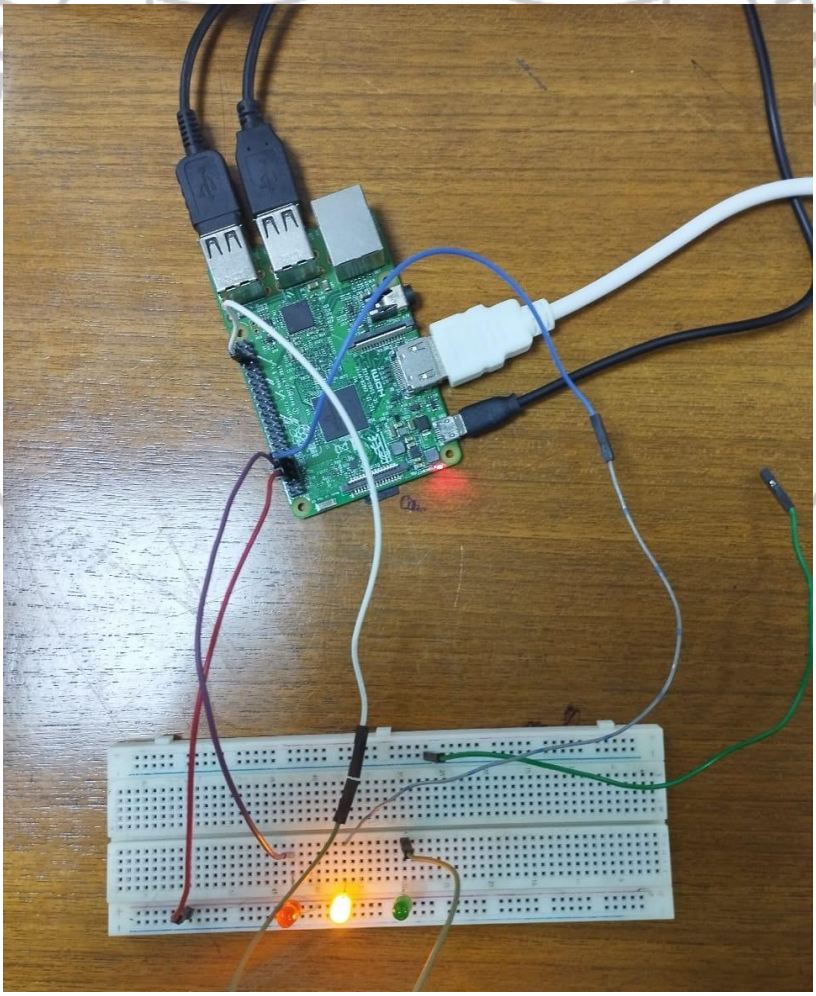

Fig 1: Hardware setup for traffic light system

Experiment result:

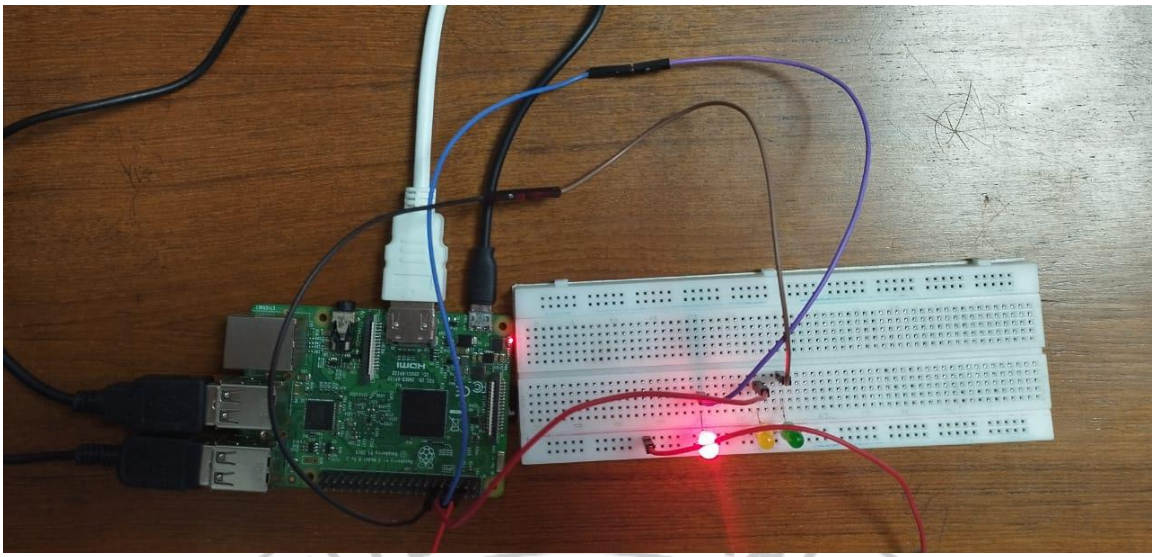

Fig 2: Red LED on

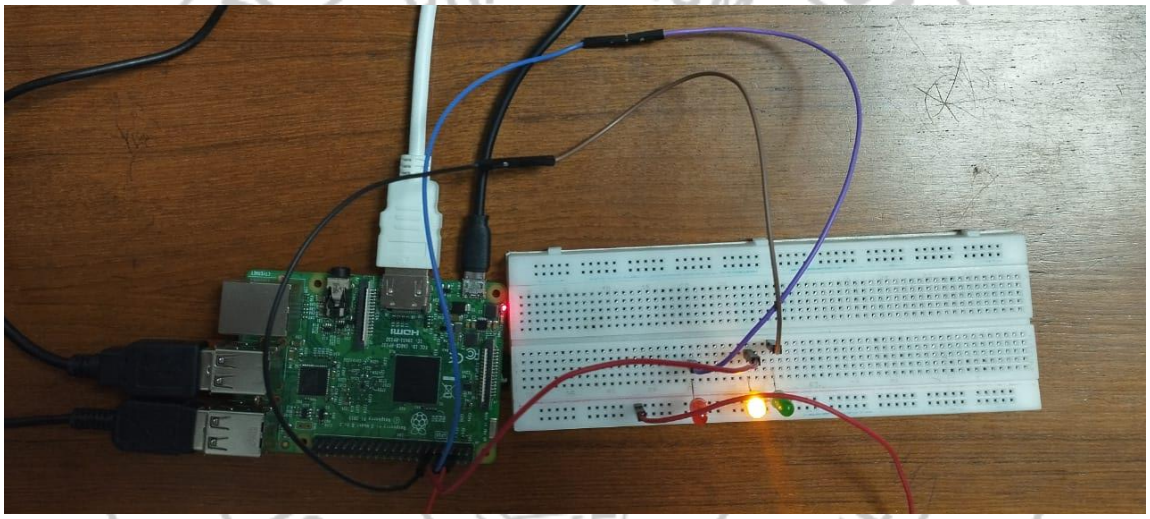

Fig 3: Yellow LED on

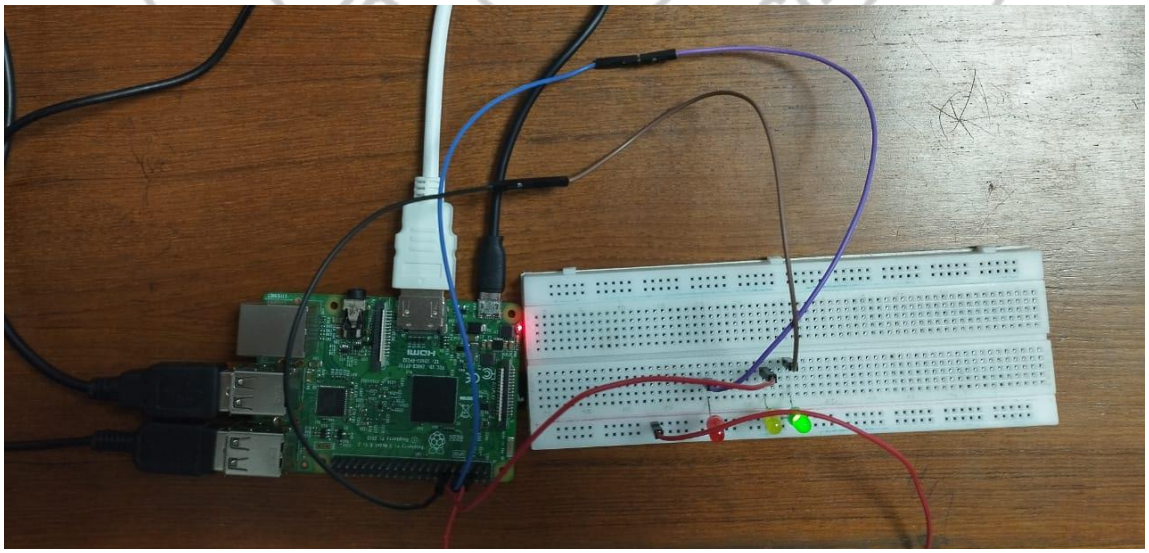

Fig 4: Green LED on

Code Analysis:

At first import RPi.GPI0 as GPI0 and time then set mode and set warnings then setup a GPI0.OUT as 14 as RED,15 as YELLOW, and 16 as GREEN. In the while loop set pinMode, 14 is HIGH then sleep it for four seconds then set LOW. For YELLOW LED First set pinMode 15 as HIGH and set sleep time is 2 seconds, then set pinMode as LOW this process continues the three-time. And lastly set pinMode 16 as HIGH, as a result, the GREEN light on and then set sleep time as 4 second then set pinMode 16 set as LOW

```
Import RPi.GPIO as GPIO
Import time
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)
GPIO.setup(14, GPIO.OUT)
GPIO.setup(15, GPIO.OUT)
GPIO.setup(18, GPIO.OUT)

While(True):
    GPIO.output(14, GPIO.HIGH)
    time.sleep(5)
    GPIO.output(14, GPIO.LOW)
    for i in range (0,3):
        GPIO.output(15, GPIO.HIGH)
        time.sleep(1)
        GPIO.output(15, GPIO.LOW)
        time.sleep(1)
    GPIO.output(18, GPIO.HIGH)
    time.sleep(5)
    GPIO.output(18, GPIO.LOW)
```

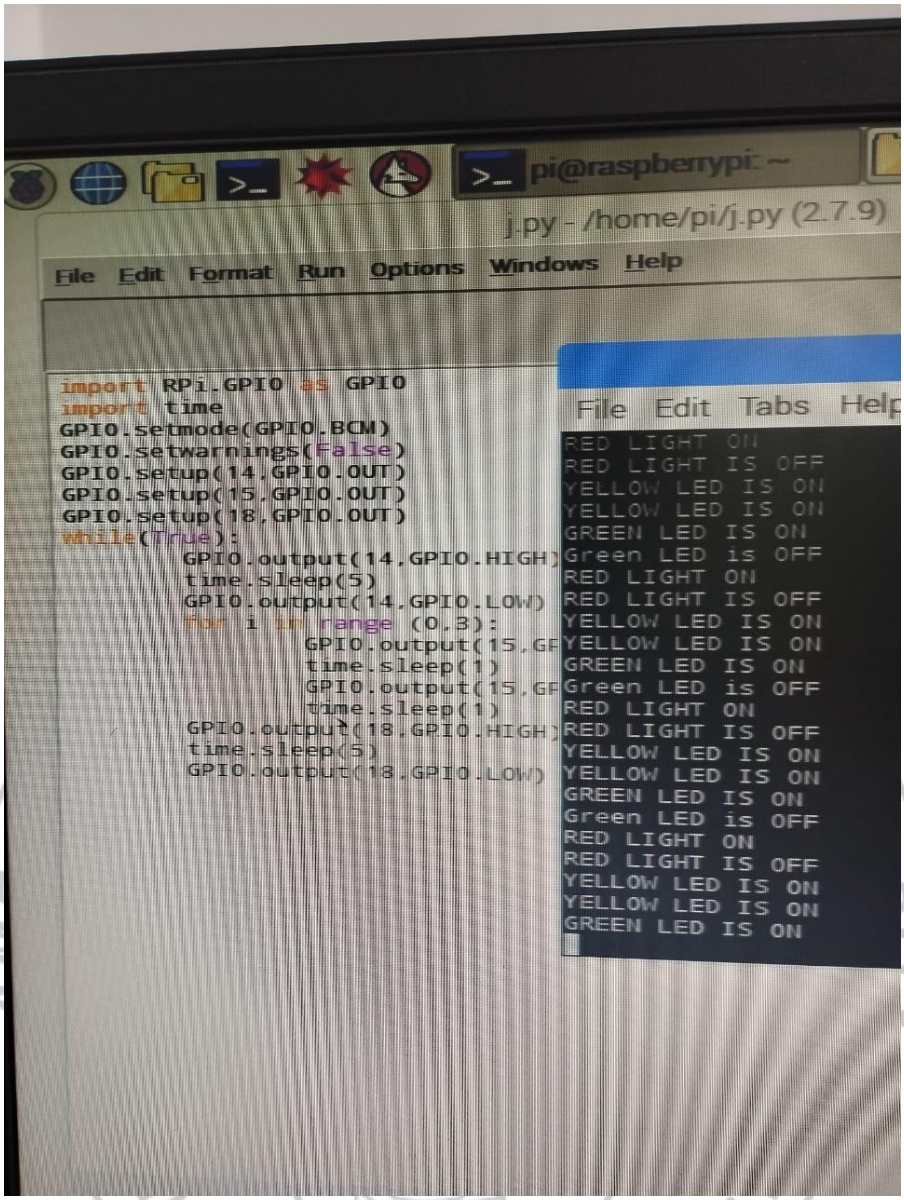

Fig 6: Output for code

Discussion:

In this experiment, we were introduced to a raspberry pi. We have built the traffic control system with three led using raspberry pi. To implement this system, we had to write code in python. We have used python for the loop to do the repetitive task. This concept helps in many complex engineering problems.