Assignment 2

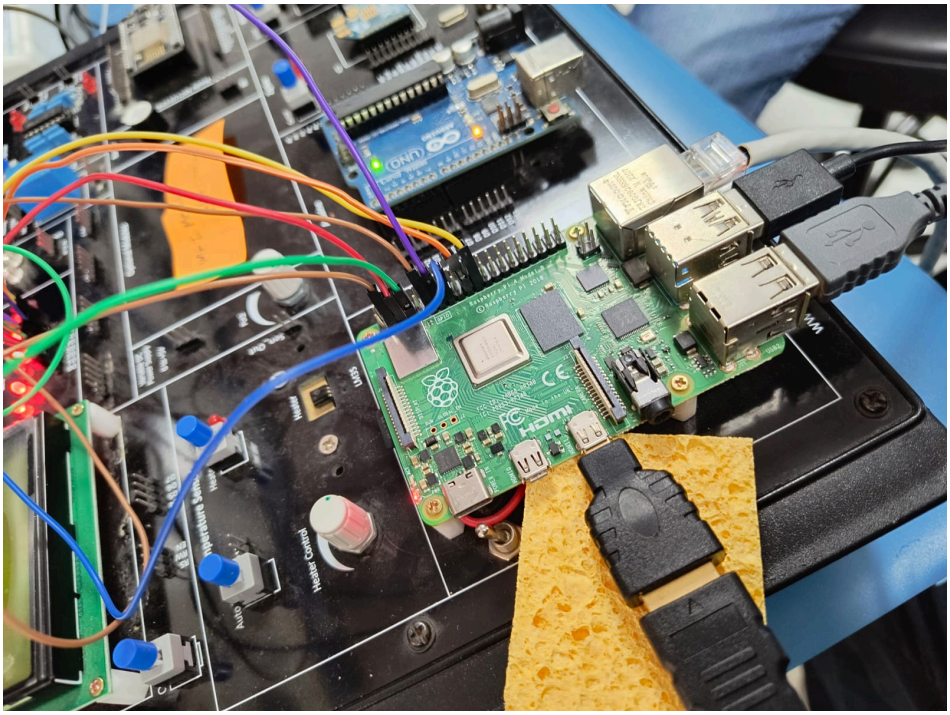
Aim:- To develop a system that uses a Raspberry Pi to display the 8-bit binary representation of user-inputted decimal numbers through LEDs .

Equipment Used:-

i. Rasberry Pie 4
ii. Desktop
iii. Female to female connecting jumper wires
iv. HDMI and ethernet cables
v. Eight LED lights

Methodology:- Below are the connections shown of GPIO pins of rasberry pie with positive terminals of LED lights:-

Connections:- GPIO pin3, GPIO pin5, GPIO pin7, GPIO pin11, GPIO pin13, GPIO pin15, GPIO pin19, GPIO pin21 of raspberry pie 4 board are connected to LED D0, LED D1, LED D2, LED D3, LED D4, LED D5, LED D6, LED D7 respectively.



LED lights are already grounded in above shown board.

Results:- Below is the drive link attached that contains video which shows glowing of leds which corresponds to output bit “1” and not glowing leds as output bit “0”.

Numbers:- 17, 55, 191, 237 are given as input by user and then corresponding output led glows up to show the 8 bit value of number.

Example:- number = 17 (NO = not glow; YES = glow)

output = **0 0 0 1 0 0 0 1**

NO NO NO YES NO NO NO YES

DRIVE LINK:- assignment_2_ouput_video.

Conclusion:- We developed the code, made wired connections as well as observed the working of led lights that uses a Raspberry Pi to display the 8-bit binary representation of user-inputted decimal numbers.

Code:- Below is code that we wrote in “THONNY” software:-

```
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BOARD)

GPIO.setup(3,GPIO.OUT) # 4
GPIO.setup(5,GPIO.OUT) # 5
GPIO.setup(7,GPIO.OUT) # 6
GPIO.setup(11,GPIO.OUT) # 7
GPIO.setup(13,GPIO.OUT)
GPIO.setup(15,GPIO.OUT)
GPIO.setup(19,GPIO.OUT)
GPIO.setup(21,GPIO.OUT)
#256GPIO.setup(23,GPIO.OUT)

def func(n):
 if n==1 or n==0:
 l.append(n)
 length = len(l)
 for i in range (8-length):
```

```
 l.append(0)
 l.reverse()
 else:
 r = n%2
 l.append(r)
 n = n//2
 func(n)

g = [3,5,7,11,13,15,19,21]
for i in range(len(g)):
 GPIO.output(g[i],GPIO.LOW)

while True:
 n=int(input("Enter your number :"))
 l=[]
 func(n)
 print(l)
 j = len(l)
 for i in range(j):
 if l[i] ==1:
 GPIO.output(g[i],GPIO.LOW)
 else:
 GPIO.output(g[i],GPIO.HIGH)
```