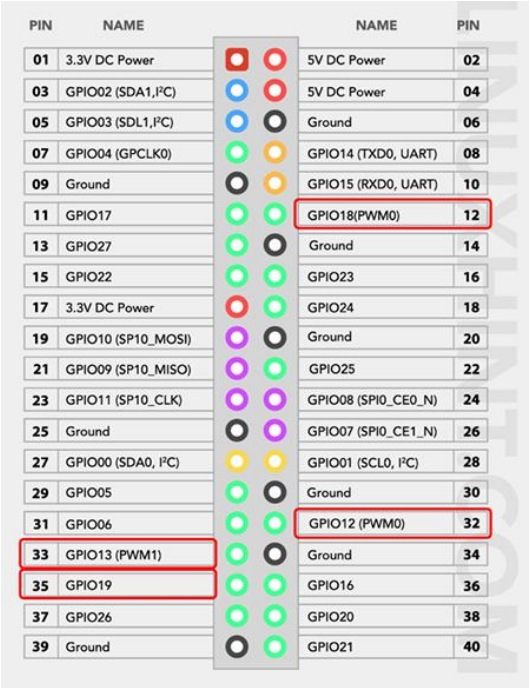
Edge Computing Laboratory

Lab Assignment 1

Name: Rahul Bhati
Class: TY AIEC Batch B
Enrollment No: MITU22BTCS0624
Roll No: 2223416

Title: "Hello World" to Raspberry Pi

Theory:
GPIO (General Purpose Input/Output) pins on the Raspberry Pi are used for interfacing with other electronic components. BCM numbering refers to the pin numbers in the Broadcom SOC channel, which is a more consistent way to refer to the GPIO pins across different versions of the Raspberry Pi.



PIN	NAME	NAME	PIN
01	3.3V DC Power	5V DC Power	02
03	GPIO02 (SDA1, I²C)	5V DC Power	04
05	GPIO03 (SDL1, I²C)	Ground	06
07	GPIO04 (GPCLK0)	GPIO14 (TXD0, UART)	08
09	Ground	GPIO15 (RXD0, UART)	10
11	GPIO17	GPIO18(PWM0)	12
13	GPIO27	Ground	14
15	GPIO22	GPIO23	16
17	3.3V DC Power	GPIO24	18
19	GPIO10 (SP10_MOSI)	Ground	20
21	GPIO09 (SP10_MISO)	GPIO25	22
23	GPIO11 (SP10_CLK)	GPIO08 (SPI0_CE0_N)	24
25	Ground	GPIO07 (SPI0_CE1_N)	26
27	GPIO00 (SDA0, I²C)	GPIO01 (SCL0, I²C)	28
29	GPIO05	Ground	30
31	GPIO06	GPIO12 (PWM0)	32
33	GPIO13 (PWM1)	Ground	34
35	GPIO19	GPIO16	36
37	GPIO26	GPIO20	38
39	Ground	GPIO21	40

Python Code:
A simple Python script to control the LED by turning it on and off will be provided, demonstrating the use of GPIO library and BCM pin numbering.

```
import RPi.GPIO as GPIO
import time
# Set up GPIO using BCM numbering
GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)  # Disable warnings
```

```
# Define the LED pin (BCM numbering)
LED_PIN = 18

GPIO.setup(LED_PIN, GPIO.OUT)

try:
    print("Controlling LED (Press CTRL+C to exit)")
    while True:
        # Turn LED on
        GPIO.output(LED_PIN, GPIO.HIGH)
        print("LED ON")
        time.sleep(1)

        # Turn LED off
        GPIO.output(LED_PIN, GPIO.LOW)
        print("LED OFF")
        time.sleep(1)

except KeyboardInterrupt:
    print("\nProgram stopped by user")
finally:
    GPIO.cleanup()
```

Output:

```
Controlling LED (Press CTRL+C to exit)
LED ON
LED OFF
LED ON
LED OFF
LED ON
LED OFF
...
```

Conclusion:

A summary of the key learning points from the manual and encouragement for students to explore further applications and configurations of the Raspberry Pi 4.