

## Edge Computing Laboratory

### Lab Assignment 1

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**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, I <sup>2</sup> C)	●	5V DC Power	04
05	GPIO03 (SDL1, I <sup>2</sup> C)	●	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, I <sup>2</sup> C)	●	GPIO01 (SCL0, I <sup>2</sup> C)	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.