

**Assignment -3**  
**Python Programming**

Assignment Date	1 October 2022
Student Name	HARI PRAKASH
Maximum Marks	2 Marks

**Question-1:**

Write a python code for Blinking LED for Raspberry Pi.

**Blinking LED – Python Code for Raspberry Pi**

```
import RPi.GPIO as GPIO # Import Raspberry Pi GPIO library

import time # Import the time module

LED_PIN = 17 # Set the PIN number for the LED

GPIO.setmode(GPIO.BCM) # Use BCM pin numbering

GPIO.setup(LED_PIN, GPIO.OUT) # Set LED_PIN (17) to be an output pin and set initial value to LOW (OFF).

try: # executes by default, when no interrupt from keyboard is made.

    while True:

        GPIO.output(LED_PIN, GPIO.HIGH) # set LED_PIN (17) to HIGH (ON).

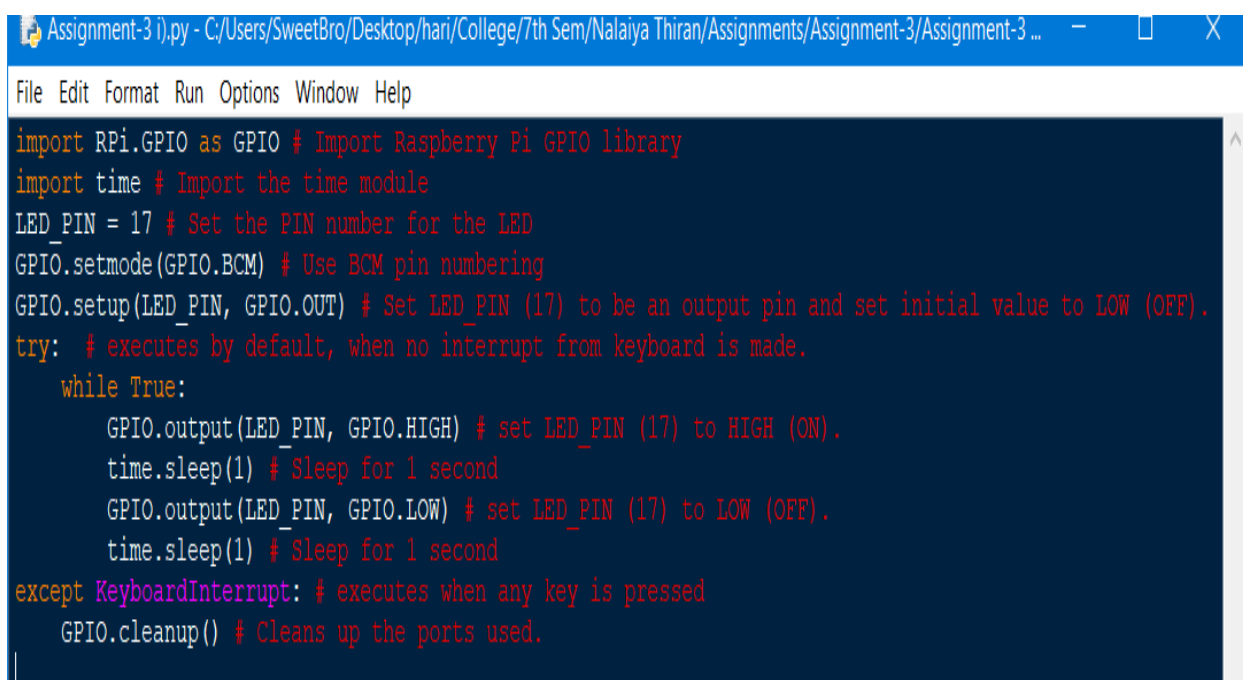
        time.sleep(1) # Sleep for 1 second

        GPIO.output(LED_PIN, GPIO.LOW) # set LED_PIN (17) to LOW (OFF).

        time.sleep(1) # Sleep for 1 second

except KeyboardInterrupt: # executes when any key is pressed

    GPIO.cleanup() # Cleans up the ports used.
```

A screenshot of a Python IDE window titled "Assignment-3 i).py". The window shows the same Python code as the previous block, which controls a Raspberry Pi LED. The code includes imports for RPi.GPIO and time, sets up GPIO mode and the LED pin, and contains a try-except loop with a while True loop to blink the LED. The IDE interface includes a menu bar (File, Edit, Format, Run, Options, Window, Help) and a dark-themed code editor with syntax highlighting. The file path in the title bar is "C:/Users/SweetBro/Desktop/hari/College/7th Sem/Nalaiya Thiran/Assignments/Assignment-3/Assignment-3 ...".

```
Assignment-3 i).py - C:/Users/SweetBro/Desktop/hari/College/7th Sem/Nalaiya Thiran/Assignments/Assignment-3/Assignment-3 ...
File Edit Format Run Options Window Help
import RPi.GPIO as GPIO # Import Raspberry Pi GPIO library
import time # Import the time module
LED_PIN = 17 # Set the PIN number for the LED
GPIO.setmode(GPIO.BCM) # Use BCM pin numbering
GPIO.setup(LED_PIN, GPIO.OUT) # Set LED_PIN (17) to be an output pin and set initial value to LOW (OFF).
try: # executes by default, when no interrupt from keyboard is made.
    while True:
        GPIO.output(LED_PIN, GPIO.HIGH) # set LED_PIN (17) to HIGH (ON).
        time.sleep(1) # Sleep for 1 second
        GPIO.output(LED_PIN, GPIO.LOW) # set LED_PIN (17) to LOW (OFF).
        time.sleep(1) # Sleep for 1 second
except KeyboardInterrupt: # executes when any key is pressed
    GPIO.cleanup() # Cleans up the ports used.
```

## Question-2:

Write a python code for Traffic Lights Simulation for Raspberry Pi.

### Traffic Lights – Python Code for Raspberry Pi

```
import RPi.GPIO as GPIO # Import Raspberry Pi GPIO library

from time import sleep # Import the sleep function from time module

red = 17 # Set the PIN number for the red light

yellow = 22 # Set the PIN number for the yellow light

green = 27 # Set the PIN number for the green light

GPIO.setmode(GPIO.BCM) # Use BCM pin numbering

# Set the red, green and yellow lights PINs as OUTPUT pins.

GPIO.setup(red, GPIO.OUT)

GPIO.setup(yellow, GPIO.OUT)

GPIO.setup(green, GPIO.OUT)

while True:

    GPIO.output(red, GPIO.HIGH) # turn ON RED signal.

    GPIO.output(yellow, GPIO.LOW) # turn OFF yellow signal.

    GPIO.output(green, GPIO.LOW) # turn OFF green signal.

    time.sleep(60) # Sleep for 60 seconds

    GPIO.output(red, GPIO.LOW) # turn OFF RED signal.

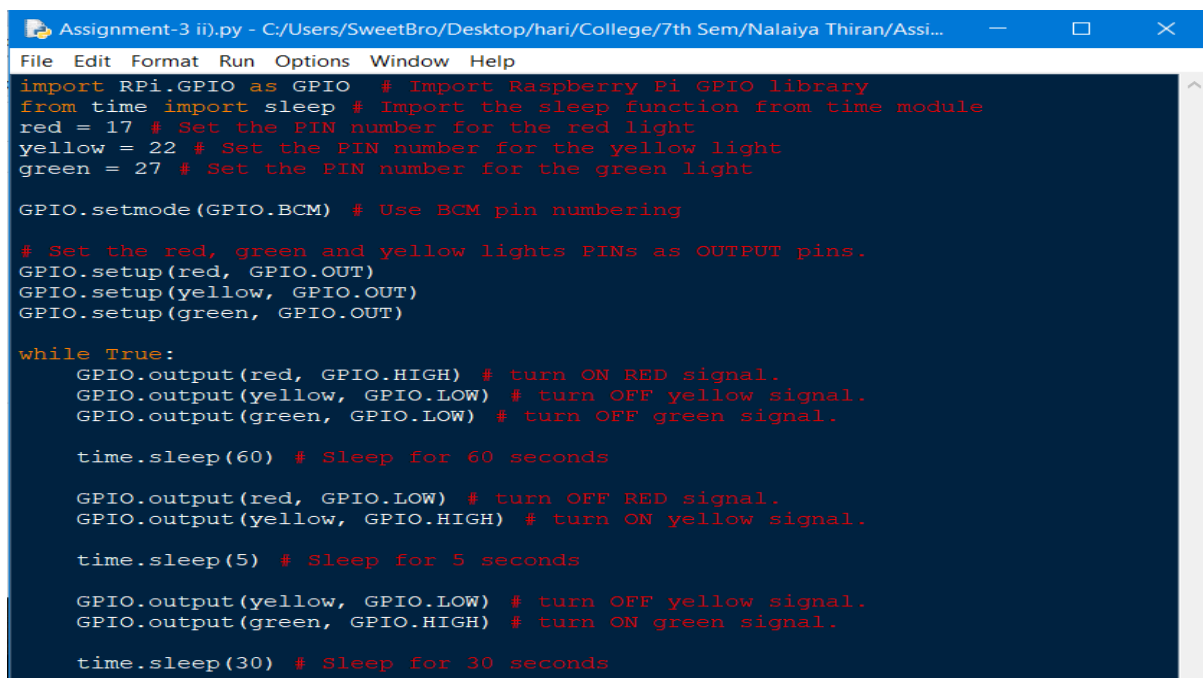
    GPIO.output(yellow, GPIO.HIGH) # turn ON yellow signal.

    time.sleep(5) # Sleep for 5 seconds

    GPIO.output(yellow, GPIO.LOW) # turn OFF yellow signal.

    GPIO.output(green, GPIO.HIGH) # turn ON green signal

    time.sleep(30) # Sleep for 30 seconds
```

A screenshot of a code editor window titled "Assignment-3 ii).py". The window shows the same Python code as the previous block, which simulates a traffic light sequence. The code uses the RPi.GPIO library to control three LEDs (red, yellow, green) connected to pins 17, 22, and 27 respectively. The sequence starts with the red light on for 60 seconds, then the red light turns off and the yellow light turns on for 5 seconds, then the yellow light turns off and the green light turns on for 30 seconds. The cycle then repeats. The code is displayed in a dark-themed editor with syntax highlighting.

```
Assignment-3 ii).py - C:/Users/SweetBro/Desktop/hari/College/7th Sem/Nalaiya Thiran/Assi...
File Edit Format Run Options Window Help
import RPi.GPIO as GPIO # Import Raspberry Pi GPIO library
from time import sleep # Import the sleep function from time module
red = 17 # Set the PIN number for the red light
yellow = 22 # Set the PIN number for the yellow light
green = 27 # Set the PIN number for the green light

GPIO.setmode(GPIO.BCM) # Use BCM pin numbering

# Set the red, green and yellow lights PINs as OUTPUT pins.
GPIO.setup(red, GPIO.OUT)
GPIO.setup(yellow, GPIO.OUT)
GPIO.setup(green, GPIO.OUT)

while True:
    GPIO.output(red, GPIO.HIGH) # turn ON RED signal.
    GPIO.output(yellow, GPIO.LOW) # turn OFF yellow signal.
    GPIO.output(green, GPIO.LOW) # turn OFF green signal.

    time.sleep(60) # Sleep for 60 seconds

    GPIO.output(red, GPIO.LOW) # turn OFF RED signal.
    GPIO.output(yellow, GPIO.HIGH) # turn ON yellow signal.

    time.sleep(5) # Sleep for 5 seconds

    GPIO.output(yellow, GPIO.LOW) # turn OFF yellow signal.
    GPIO.output(green, GPIO.HIGH) # turn ON green signal.

    time.sleep(30) # Sleep for 30 seconds
```