

Assignment -1
Python Programming

Assignment Date	1 October 2022
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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).

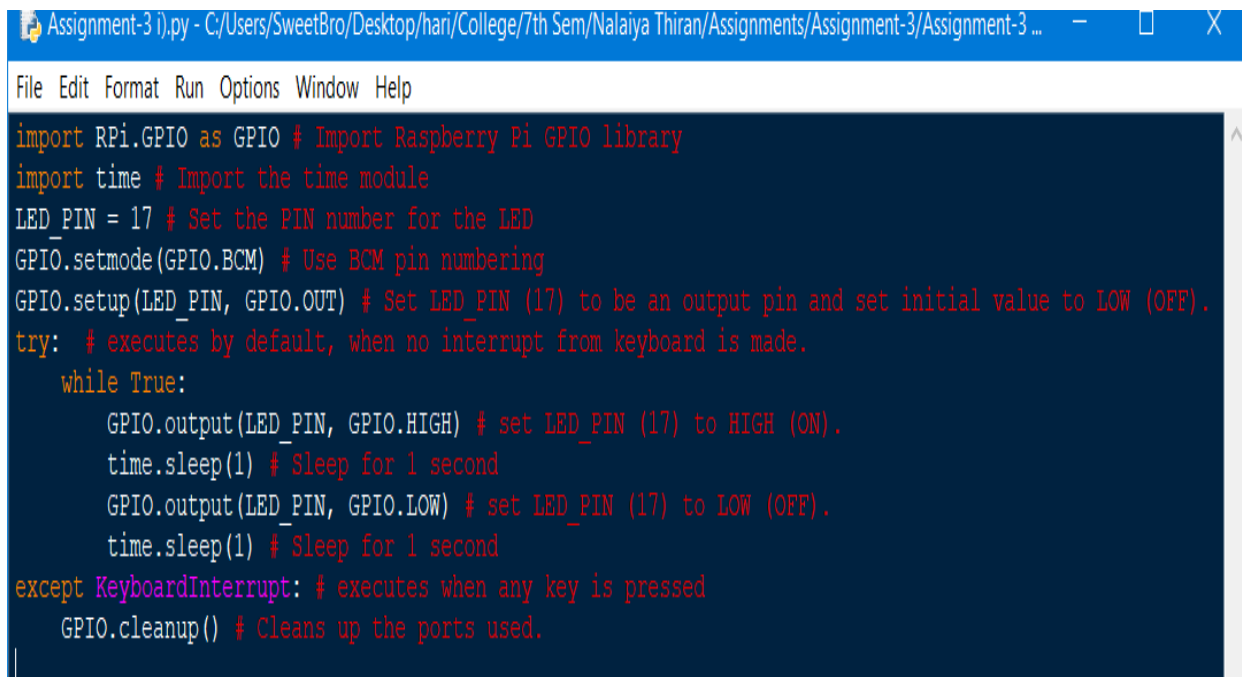
        time.sleep(1) # Sleep for 1 second

        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 for blinking an LED on a Raspberry Pi. The code is displayed with syntax highlighting: keywords like 'import', 'while', 'except', and 'try' are in blue; comments are in red; and function names and variables are in white. The IDE has a menu bar with "File", "Edit", "Format", "Run", "Options", "Window", and "Help". The code is as follows:

```
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.

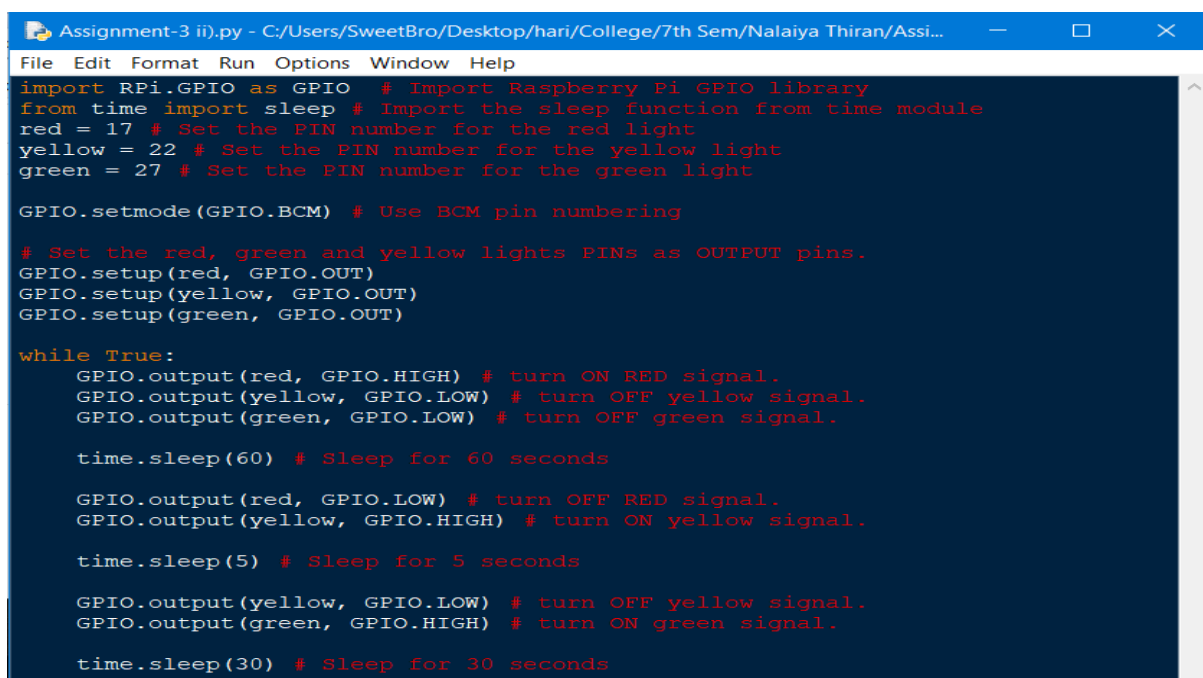
    GPIO.output(yellow, GPIO.HIGH) # turn ON yellow signal.

    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 Windows-style application window titled "Assignment-3 ii).py - C:/Users/SweetBro/Desktop/hari/College/7th Sem/Nalaiya Thiran/Assi...". The window contains a Python script for a traffic light simulation. The script imports the RPi.GPIO library and the sleep function from the time module. It defines three pins: red (17), yellow (22), and green (27). It sets the GPIO mode to BCM and configures the pins as outputs. A while loop runs indefinitely, turning the red light on for 60 seconds, then turning it off and the yellow light on for 5 seconds, then turning the yellow light off and the green light on for 30 seconds, and repeating the cycle. The script 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
```