

IOT - REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM

ASSIGNMENT - 3

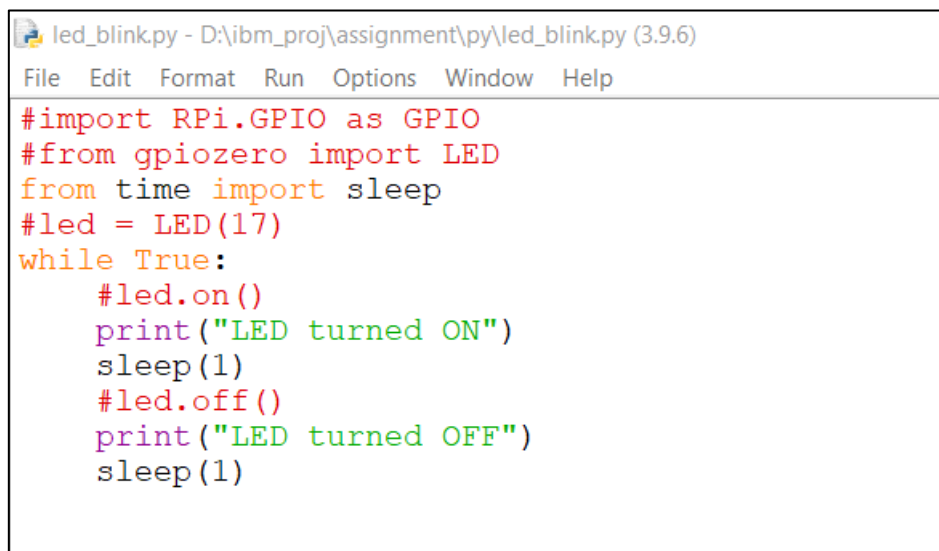
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Write a python code for blinking LED and Traffic Lights for Raspberry Pi.

(i) Python Code for Blinking LED:

```
#import RPi.GPIO as GPIO
#from gpiozero import LED
from time import sleep
#led = LED(17)
while True:
    #led.on()
    print("LED turned ON")
    sleep(1)
    #led.off()
    print("LED turned OFF")
    sleep(1)
```

Editor Window:

A screenshot of a Python IDE window titled 'led_blink.py - D:\ibm_proj\assignment\py\led_blink.py (3.9.6)'. The window has a menu bar with 'File', 'Edit', 'Format', 'Run', 'Options', 'Window', and 'Help'. The code is written in a monospaced font with syntax highlighting: keywords are in red, comments are in red, strings are in green, and function names are in purple. The code is identical to the one provided in the previous block.

```
led_blink.py - D:\ibm_proj\assignment\py\led_blink.py (3.9.6)
File Edit Format Run Options Window Help
#import RPi.GPIO as GPIO
#from gpiozero import LED
from time import sleep
#led = LED(17)
while True:
    #led.on()
    print("LED turned ON")
    sleep(1)
    #led.off()
    print("LED turned OFF")
    sleep(1)
```

Output Window:

A screenshot of an IDLE Shell 3.9.6 window. The window has a menu bar with 'File', 'Edit', 'Shell', 'Debug', 'Options', 'Window', and 'Help'. The main text area displays a list of 18 lines of text, all in blue font, alternating between 'LED turned ON' and 'LED turned OFF'. The sequence starts with 'LED turned ON' and ends with 'LED turned OFF'.

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
LED turned ON
LED turned OFF
```

(ii) Python Code for Traffic Lights:

```
import RPi.GPIO as GPIO

import time

import signal

import sys

#setup

GPIO.setmode(GPIO.BCM)

GPIO.setup(9, GPIO.OUT)

GPIO.setup(10, GPIO.OUT)

GPIO.setup(11, GPIO.OUT)

#Turn off all lights

def allLightOff(signal, frame):

    GPIO.output(9,False)

    GPIO.output(10,False)

    GPIO.output(11,False)

    GPIO.cleanup()

    sys.exit(0)

signal.signal(signal.SIGINT, allLightsOff)

#Forever Loop

while True:

    #Red
```

```
GPIO.output(9, True)
time.sleep(3)
GPIO.output(10, True)
time.sleep(1)
#Green
GPIO.output(9,False)
GPIO.output(10,False)
GPIO.output(11,True)
time.sleep(5)
#Amber
GPIO.output(11,False)
GPIO.output(10,True)
time.sleep(2)
#Amber off
GPIO.output(10,False)
```

Editor Window:

```
import RPi.GPIO as GPIO
import time
import signal
import sys
#setup
GPIO.setmode(GPIO.BCM)
GPIO.setup(9, GPIO.OUT)
GPIO.setup(10, GPIO.OUT)
GPIO.setup(11, GPIO.OUT)
#Turn off all lights
def allLightOff(signal, frame):
    GPIO.output(9,False)
    GPIO.output(10,False)
    GPIO.output(11,False)
    GPIO.cleanup()
    sys.exit(0)
signal.signal(signal.SIGINT, allLightsOff)
#Forever Loop
while True:
    #Red
    GPIO.output(9, True)
    time.sleep(3)
    GPIO.output(10, True)
    time.sleep(1)
    #Green
    GPIO.output(9,False)
    GPIO.output(10,False)
    GPIO.output(11,True)
    time.sleep(5)
    #Amber
    GPIO.output(11,False)
    GPIO.output(10,True)
    time.sleep(2)
    #Amber off
    GPIO.output(10,False)
```