[INTERNET OF THINGS]

Practical-8

-:AIM:-
Raspberry pi basic Programming.

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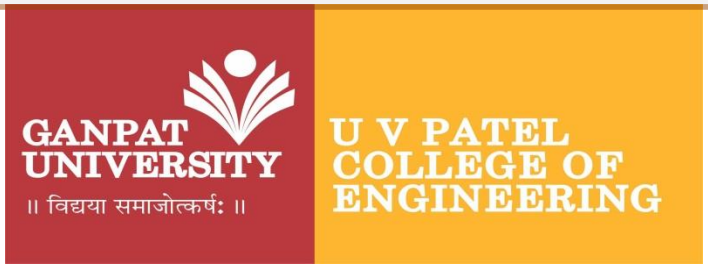
Enrollment No:17012011056



GANPAT UNIVERSITY

U. V. Patel College of Engineering

Computer Engineering Department

AIM:- Raspbian pi basic programming.

Raspberry pi 3 GPIO Header

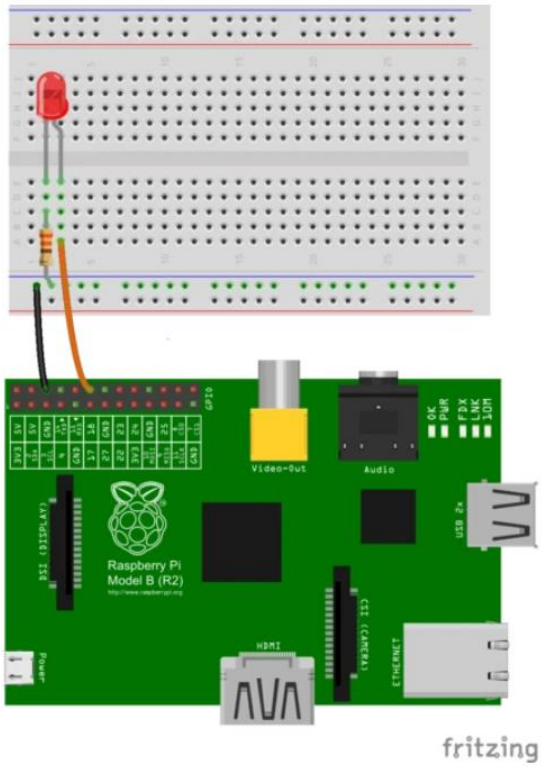
Pin#	NAME		NAME	Pin#
01	3.3v DC Power		DC Power 5v	02
03	GPIO02 (SDA1 , I²C)		DC Power 5v	04
05	GPIO03 (SCL1 , I²C)		Ground	06
07	GPIO04 (GPIO_GCLK)		(TXD0) GPIO14	08
09	Ground		(RXD0) GPIO15	10
11	GPIO17 (GPIO_GEN0)		(GPIO_GEN1) GPIO18	12
13	GPIO27 (GPIO_GEN2)		Ground	14
15	GPIO22 (GPIO_GEN3)		(GPIO_GEN4) GPIO23	16
17	3.3v DC Power		(GPIO_GEN5) GPIO24	18
19	GPIO10 (SPI_MOSI)		Ground	20
21	GPIO09 (SPI_MISO)		(GPIO_GEN6) GPIO25	22
23	GPIO11 (SPI_CLK)		(SPI_CE0_N) GPIO08	24
25	Ground		(SPI_CE1_N) GPIO07	26
27	ID_SD (I²C ID EEPROM)		(I²C ID EEPROM) ID_SC	28
29	GPIO05		Ground	30
31	GPIO06		GPIO12	32
33	GPIO13		Ground	34
35	GPIO19		GPIO16	36
37	GPIO26		GPIO20	38
39	Ground		GPIO21	40

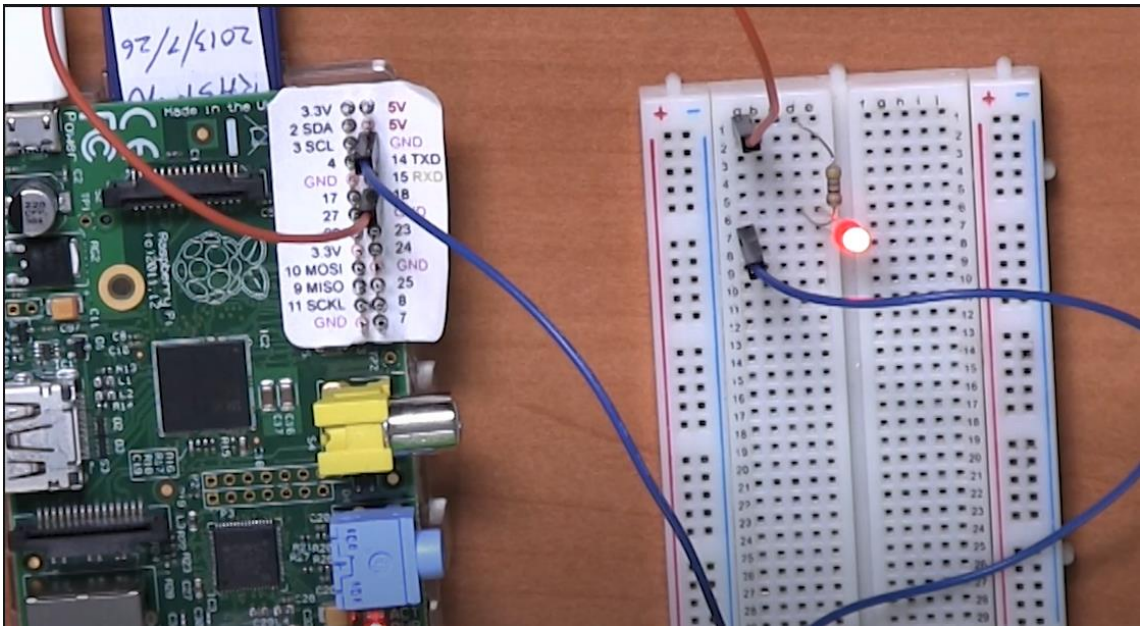
Experiments

1. LED ON

Components used : Breadboard , LED , 330 Ohm Resistor , Raspberry pi , USB Cable SD Card & Adapter , Jumper Wire

Circuit:





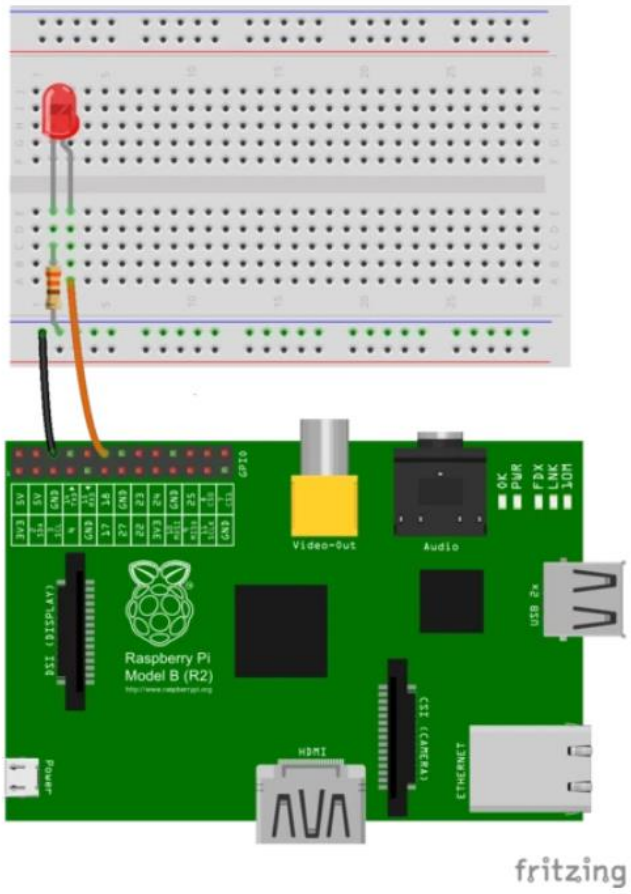
Code : Ledon.py

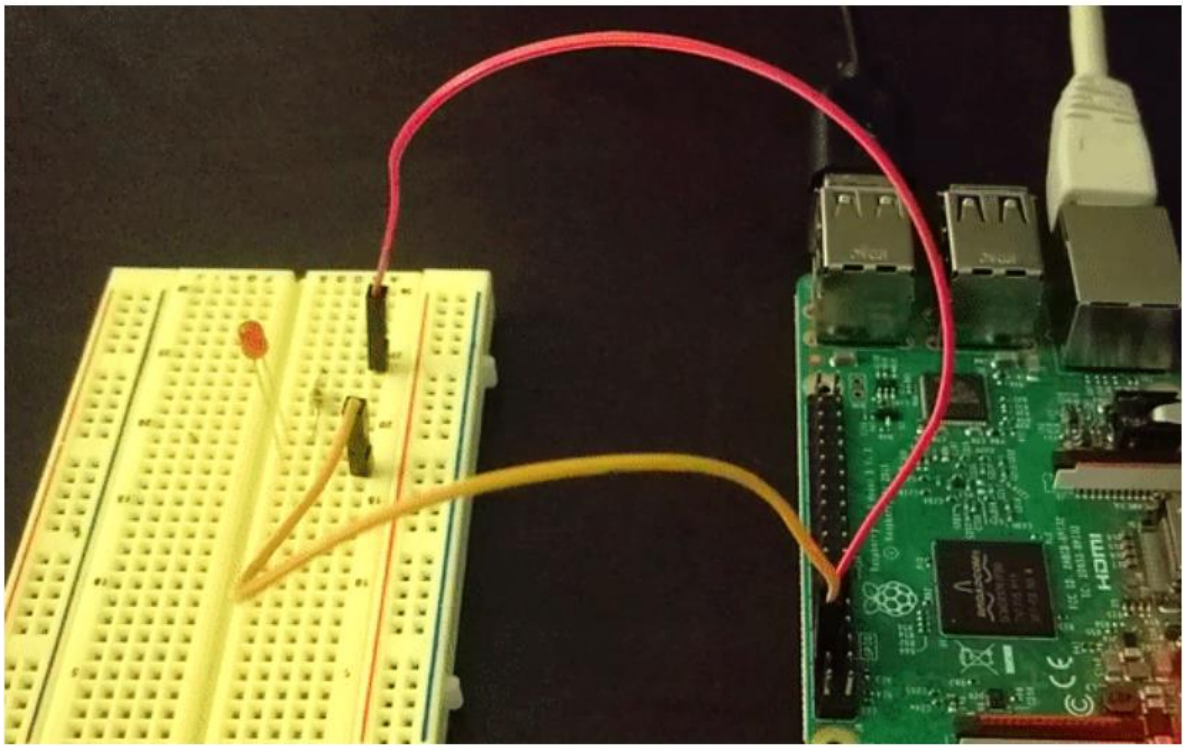
```
import RPi.GPIO as GPIO
GPIO.setmode(GPIO.BCM)
GPIO.setup(18,GPIO.OUT)
GPIO.output(18,GPIO.HIGH)
```

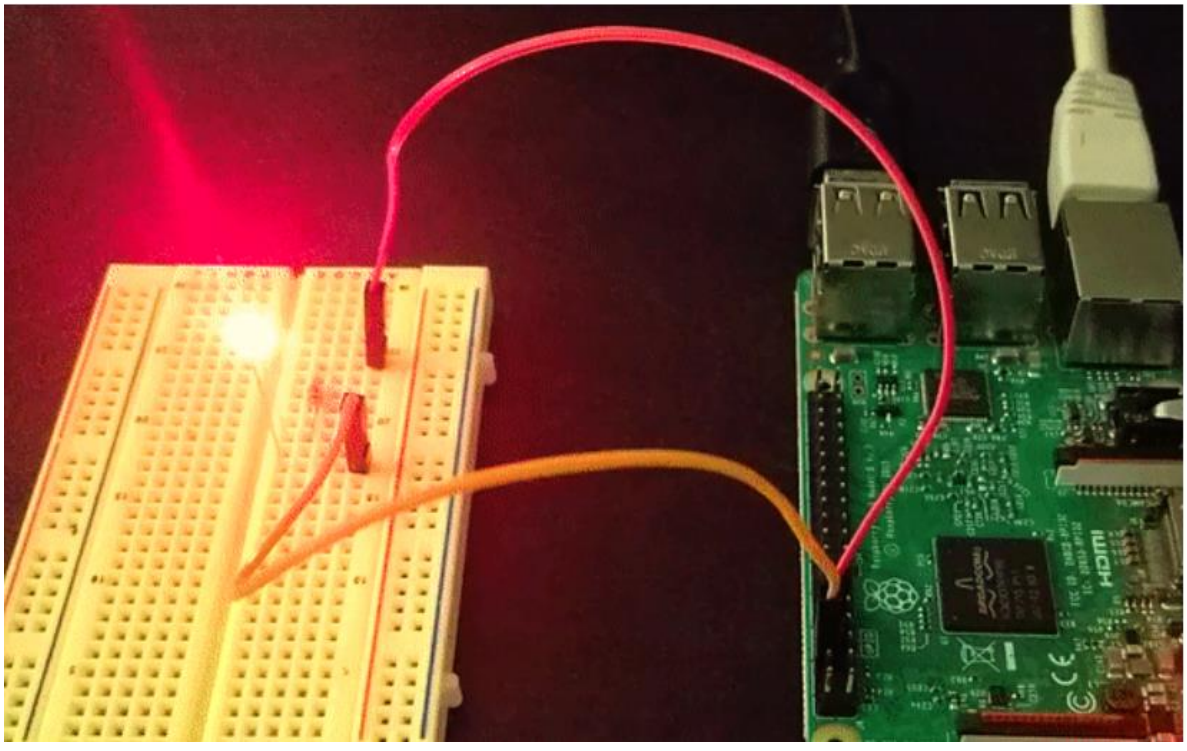
2. LED Blinking

Components used : Breadboard , LED , 330 Ohm Resistor , Raspberry pi , USB Cable SD Card & Adapter , Jumper Wire

Circuit







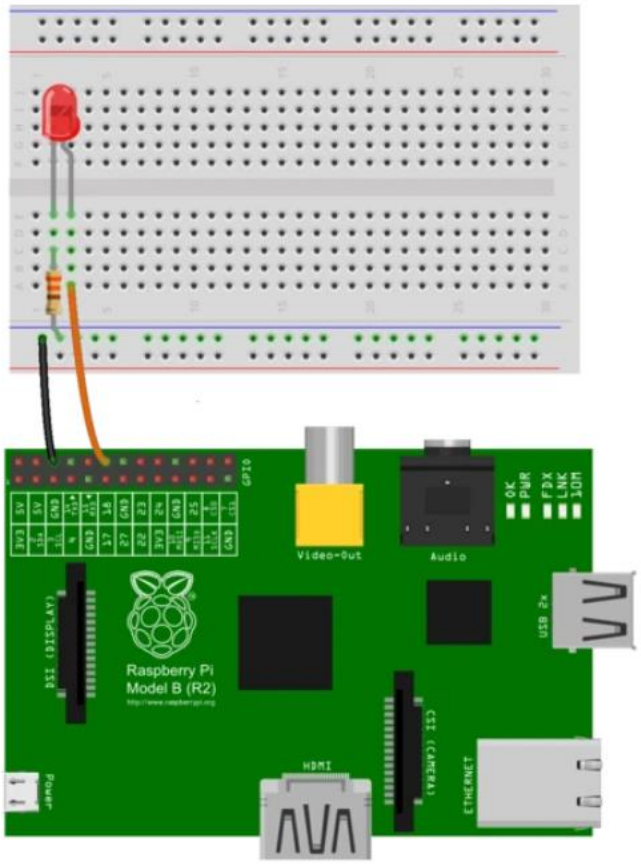
Code : Ledblink.py

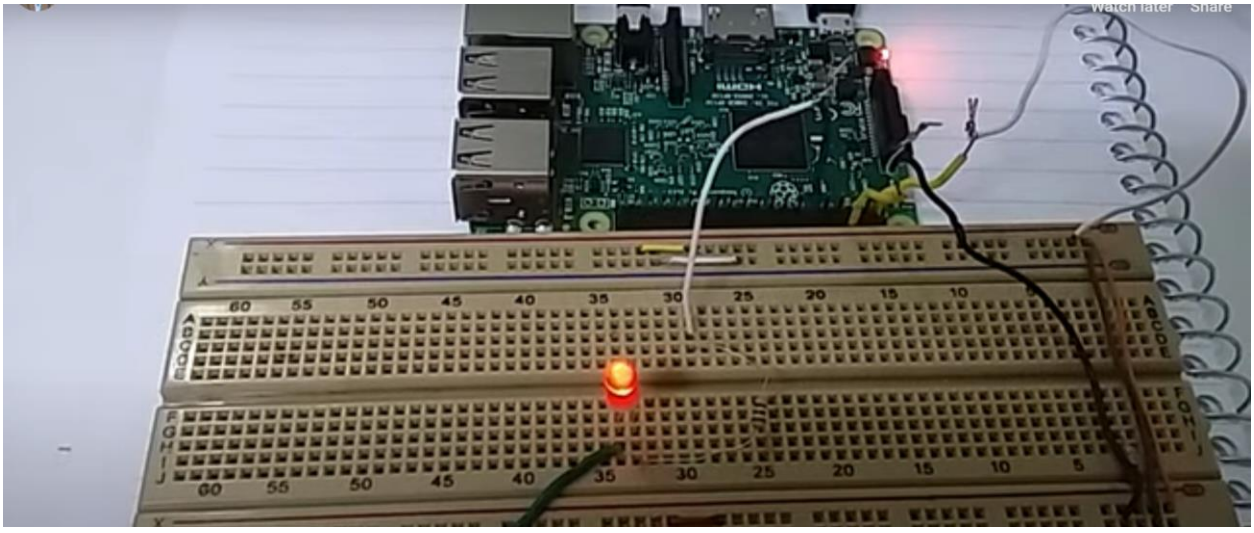
```
import RPi.GPIO as GPIO
# Import Raspberry Pi GPIO library
from time import sleep
# Import the sleep function from the time module
GPIO.setwarnings(False) # Ignore warning for now
GPIO.setmode(GPIO.BOARD) # Use physical pin numbering
GPIO.setup(8, GPIO.OUT, initial=GPIO.LOW)
# Set pin 8 to be an output pin and set initial
# value to low (off)
while True: # Run forever
    GPIO.output(8, GPIO.HIGH) # Turn on
    sleep(1) # Sleep for 1 second
    GPIO.output(8, GPIO.LOW) # Turn off
    sleep(1) # Sleep for 1 second
```

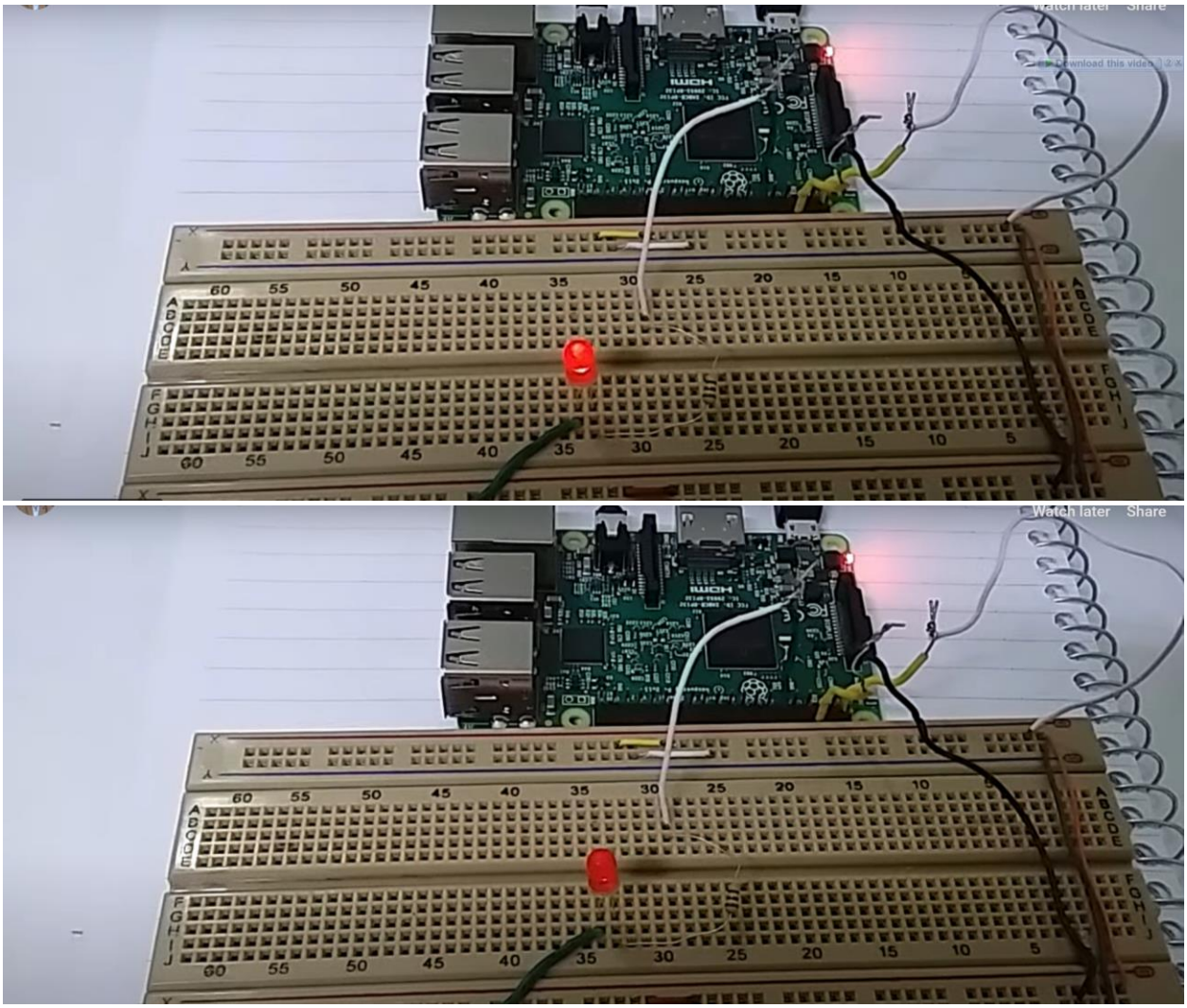
3. Increase and Decrease the Brightness of LED

Components used : Breadboard , LED , 330 Ohm Resistor , Raspberry pi , USB Cable SD Card & Adapter , Jumper Wire

Circuit


GPIO
Video-Out
Audio
OK
PWR
FDX
LNK
100
USB 2x
DSI (DISPLAY)
Raspberry Pi
Model B (R2)
CSI (CAMERA)
ETHERNET
HDMI
Power
fritzing





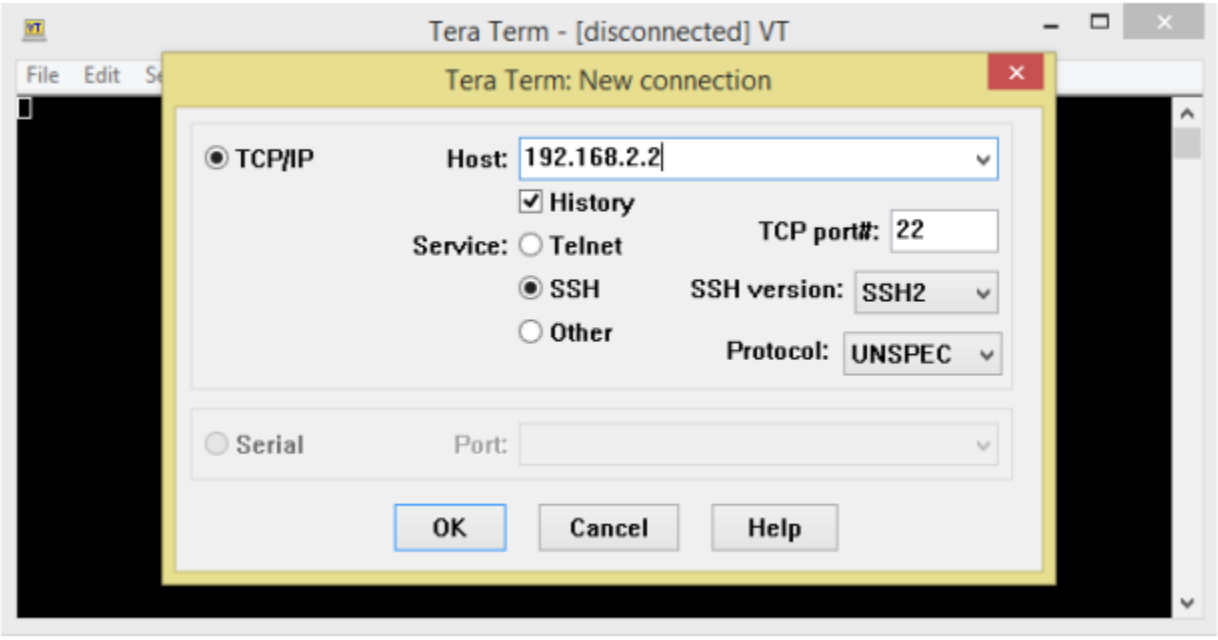
Code : Ledbrgtns.py

```
import RPi.GPIO as GPIO
import time
# Led1 on my Board
led = 11
GPIO.setmode(GPIO.BOARD)
GPIO.setup(led, GPIO.OUT)
# 50Hz PWM Frequency
pwm_led = GPIO.PWM(led, 50)
# Full Brightness, 100% Duty Cycle
pwm_led.start(100)
try:
  while True:
```

```
        for i in range(0,101,2):
            duty = int(i)
            pwm_led.ChangeDutyCycle(duty)
            time.sleep(0.5)
        for i in range(100,-1,2):
            duty = int(i)
            pwm_led.ChangeDutyCycle(duty)
            time.sleep(0.5)
    except KeyboardInterrupt:
      print "Exiting Program"
    except:
      print "Error Occurs, Exiting Program"
    finally:
      GPIO.cleanup()
```

Creating An SSH Connection With The Raspberry PI

1. Install TeraTerm
2. Click File --> New connection,
3. Select TCI/IP Connection
4. Then type in your Raspberry Pi's IP

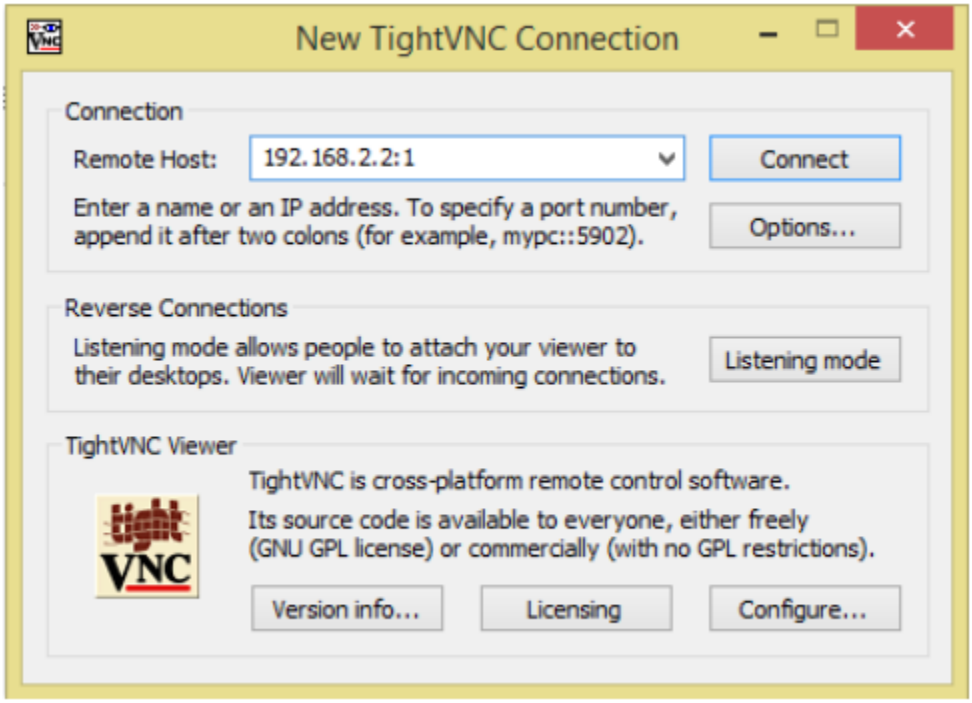


5. Click OK with the default settings
6. Click Continue for the Security Key Question
7. Enter the Username as pi

8. Enter the Password as raspberry 9. Click OK to login in to the Raspberry Pi SHELL

Creating An SSH Connection With The Raspberry PI

1. Install TightVNC viewer in your system



2. Open your TightVNC Viewer
3. Type in the IP of your raspberry Pi followed by the Display Number
4. The default display Number is 1
5. Click Connect with the Default settings
6. When asked for password enter the default password “password”
7. It would open a VNC connection with the raspberry Pi