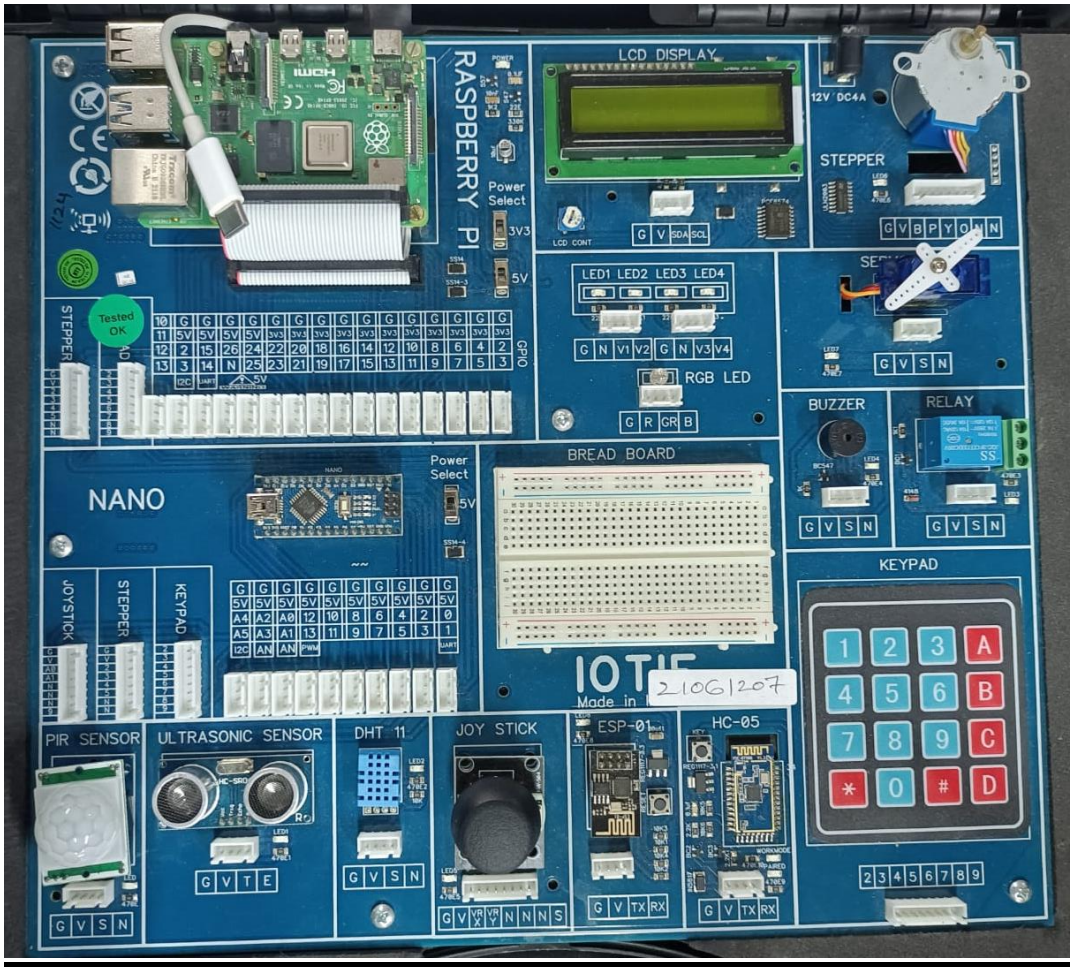
IoT Lab Manual



INDEX

WEEK-1

Install IDE of Arduino and write a program using Arduino IDE to blink LED.

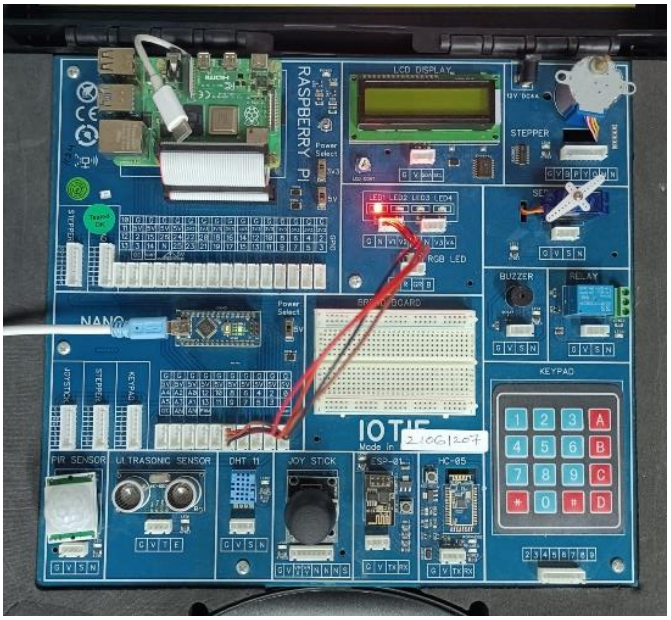
1.

AIM: To implement a program to blink LED every second.

PROGRAM:

```
void setup(){
  pinMode(8,OUTPUT);
}
void loop(){
  digitalWrite(8,1);
  delay(1000);
  digitalWrite(8,0);
  delay(1000);
}
```

CIRCUIT:



2.

AIM: To implement a program to blink 2 LEDs every second alternatively.

PROGRAM:

```
void setup(){
  pinMode(8,OUTPUT);
```

```
  pinMode(9,OUTPUT);
}
void loop(){
  digitalWrite(8,1);
  digitalWrite(9,0);
  delay(1000);
  digitalWrite(8,0);
  digitalWrite(9,1);
  delay(1000);
}
```

CIRCUIT:

3.

AIM: To implement a program to blink 2 LEDs every second alternatively for 10 times.

PROGRAM:

```
void setup(){
  pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
  int i=0;
}
void loop(){
  while(i<10){
  digitalWrite(8,1);
  digitalWrite(9,0);
  delay(1000);
```

```
  digitalWrite(8,0);
  digitalWrite(9,1);
  delay(1000);
  i++;
  }
}
```

CIRCUIT:

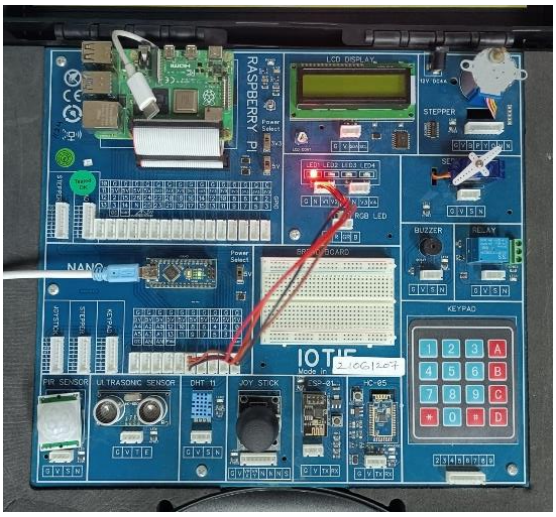
4.

AIM: To implement a program to change the intensity of LED.

PROGRAM:

```
void setup()
{
  pinMode(8,OUTPUT);
}

void loop()
{
  for(int i=0;i<=255;i++)
  {
    analogWrite(8,i);
    delay(100);
  }
  for(int i=255;i>0;i--)
  {
    analogWrite(8,i);
    delay(100);
  }

}
```

CIRCUIT:



WEEK-2

Interface LED and buzzer with Arduino to buzz for a period of time.

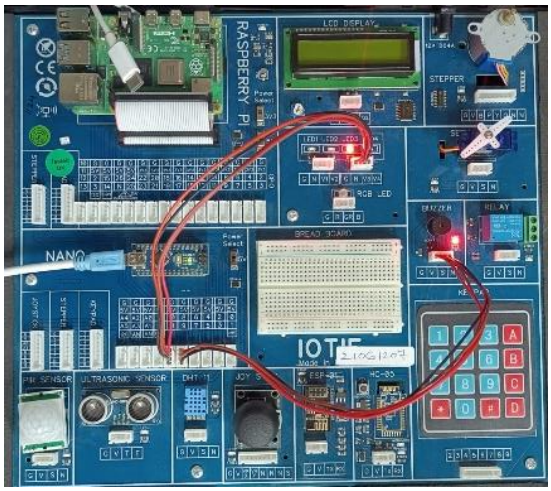
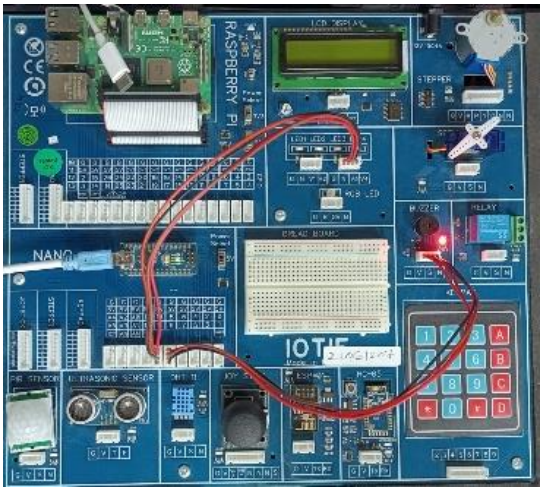
1.

AIM: To implement a program to switch LED and buzzer ON every second.

PROGRAM:

```
void setup(){
  pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
}
void loop(){
  digitalWrite(8,1);
  digitalWrite(9,1);
  delay(1000);
  digitalWrite(8,0);
  digitalWrite(9,0);
  delay(1000);
}
```

CIRCUIT:

WEEK-3

Interface RGB LED with Arduino to obtain different colours and brightness using PWM

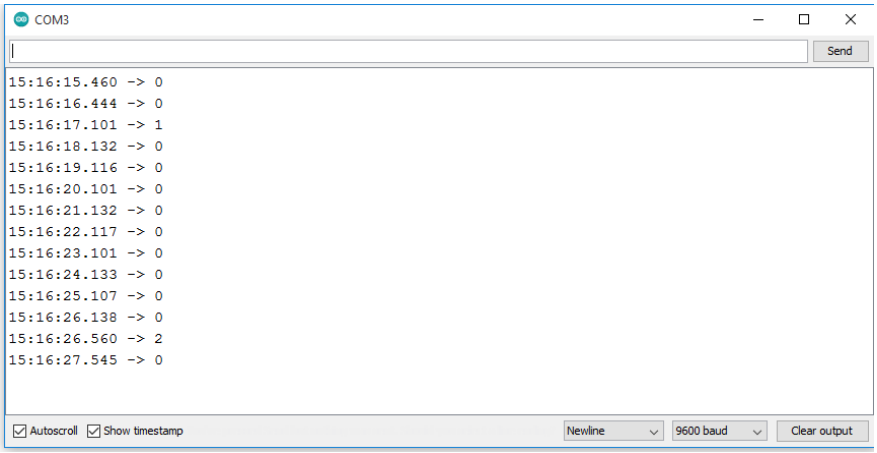
1.

AIM: To implement a program to obtain red, blue and green colors of RGB LED with user input.

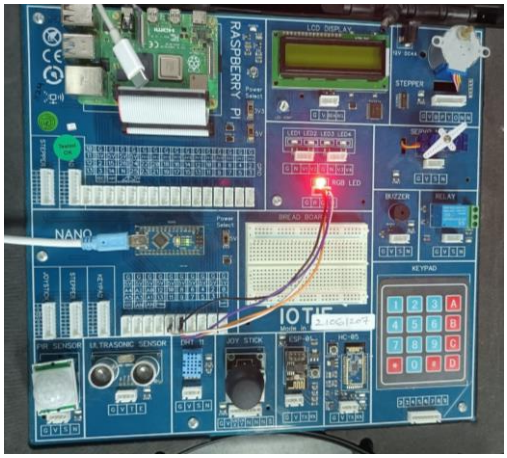
PROGRAM:

```
int c;
void setup() {
  Serial.begin(9600);
  pinMode(10,OUTPUT);
  pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
}

void loop()
{
  c = Serial.parseInt();
  if(c==1) {
    digitalWrite(8,1);
    digitalWrite(9,0);
    digitalWrite(10,0);
  }
  else if(c==2) {
    digitalWrite(9,1);
    digitalWrite(8,0);
    digitalWrite(10,0);
```

```
  }
  else if(c==3) {
    digitalWrite(10,1);
    digitalWrite(8,0);
    digitalWrite(9,0);
  }
  Serial.println(c);
}
```



CIRCUIT:



2.

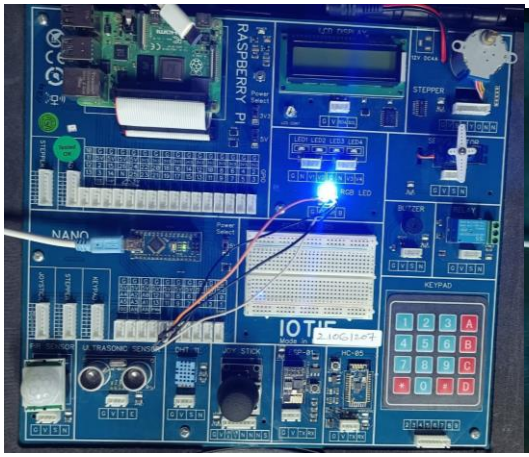
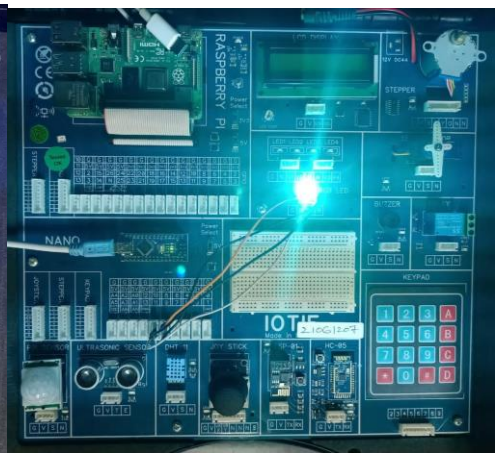
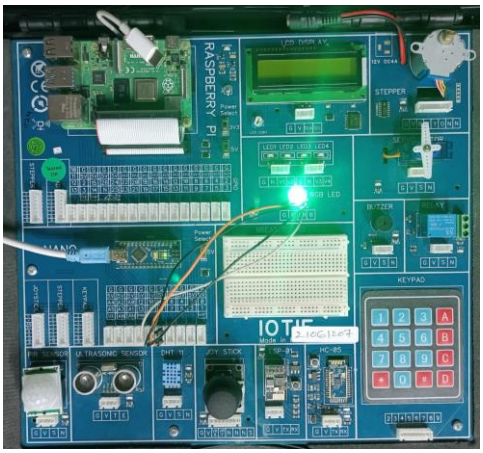
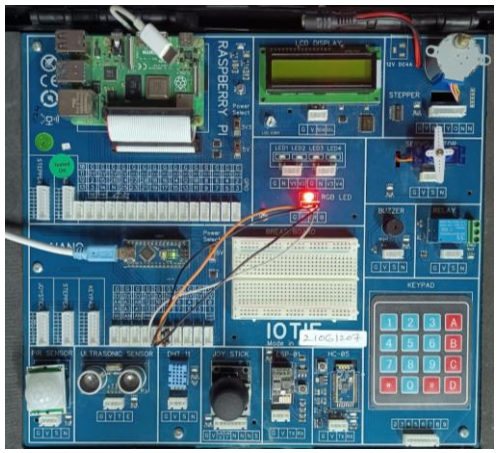
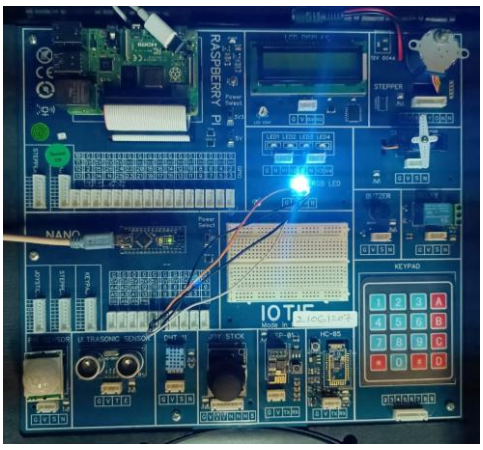
AIM: To implement a program to obtain different colors from RGB LED through user input.

PROGRAM:

```
String color = "";
void setup()
{
  Serial.begin(9600);
  pinMode(9,OUTPUT);
  pinMode(10,OUTPUT);
  pinMode(11,OUTPUT);
}
void loop()
{
  color = Serial.readString();
  color.trim();

  if(color == "red" || color == "RED") {
    rgb(255,0,0);
  }
  if(color == "green" || color == "GREEN") {
    rgb(0,0,255);
  }
  if(color == "blue" || color == "BLUE") {
    rgb(0,255,0);
  }
  if(color == "yellow" || color == "YELLOW") {
    rgb(255,0,255);
  }
  if(color == "cyan" || color == "CYAN") {
    rgb(0,255,255);
  }
  if(color == "magenta" || color == "MAGENTA") {
    rgb(255,255,0);
  }
  if(color == "purple" || color == "PURPLE") {
    rgb(128,128,0);
  }
  if(color == "navyblue" || color == "NAVYBLUE") {
    rgb(0,128,0);
  }
  if(color == "brown" || color == "BROWN") {
    rgb(165,42,42);
  }
  if(color == "sage" || color == "SAGE") {
    rgb(178,136,172);
```

```
  }
}

void rgb(int x, int y, int z)
{
  analogWrite(9,x);
  analogWrite(10,y);
  analogWrite(11,z);
}
```

CIRCUIT:

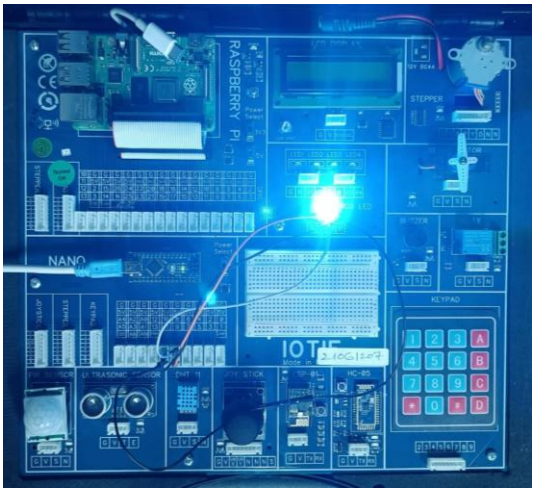
3.

AIM: To implement a program to change the intensity of RGB LED.

PROGRAM:

```
void setup()
{
   pinMode(9,OUTPUT);
   pinMode(10,OUTPUT);
   pinMode(11,OUTPUT);

}


void loop()
{
  for(int i = 0; i <=255; i++)
  {
   analogWrite(9,i);
   analogWrite(10,i);
   analogWrite(11,i);
   delay(100);
  }
  for(int i = 255; i >=0; i--)
  {
   analogWrite(9,i);
   analogWrite(10,i);
   analogWrite(11,i);
   delay(100);
  }

}
```

CIRCUIT:



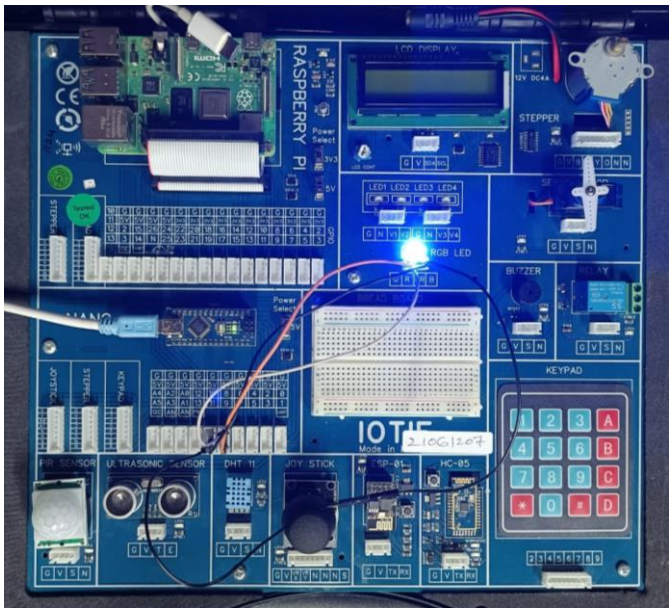
4.

AIM: To implement a program to increase the intensity of RGB LED.

PROGRAM:

```
void setup(){}
void loop()
{
  for(i=0;i<=255;i++)
  {
    for(j=0;j<=255;j++)
    {
      for(k=0;k<=255;k++)
      {
        RGB(i,j,k);
        delay(100);
      }
    }
  }
}
void RGB(int R, int G, int B)
{
  analogWrite(9, R);
  analogWrite(10,G);
  analogWrite(11,B);
}
```

CIRCUIT:



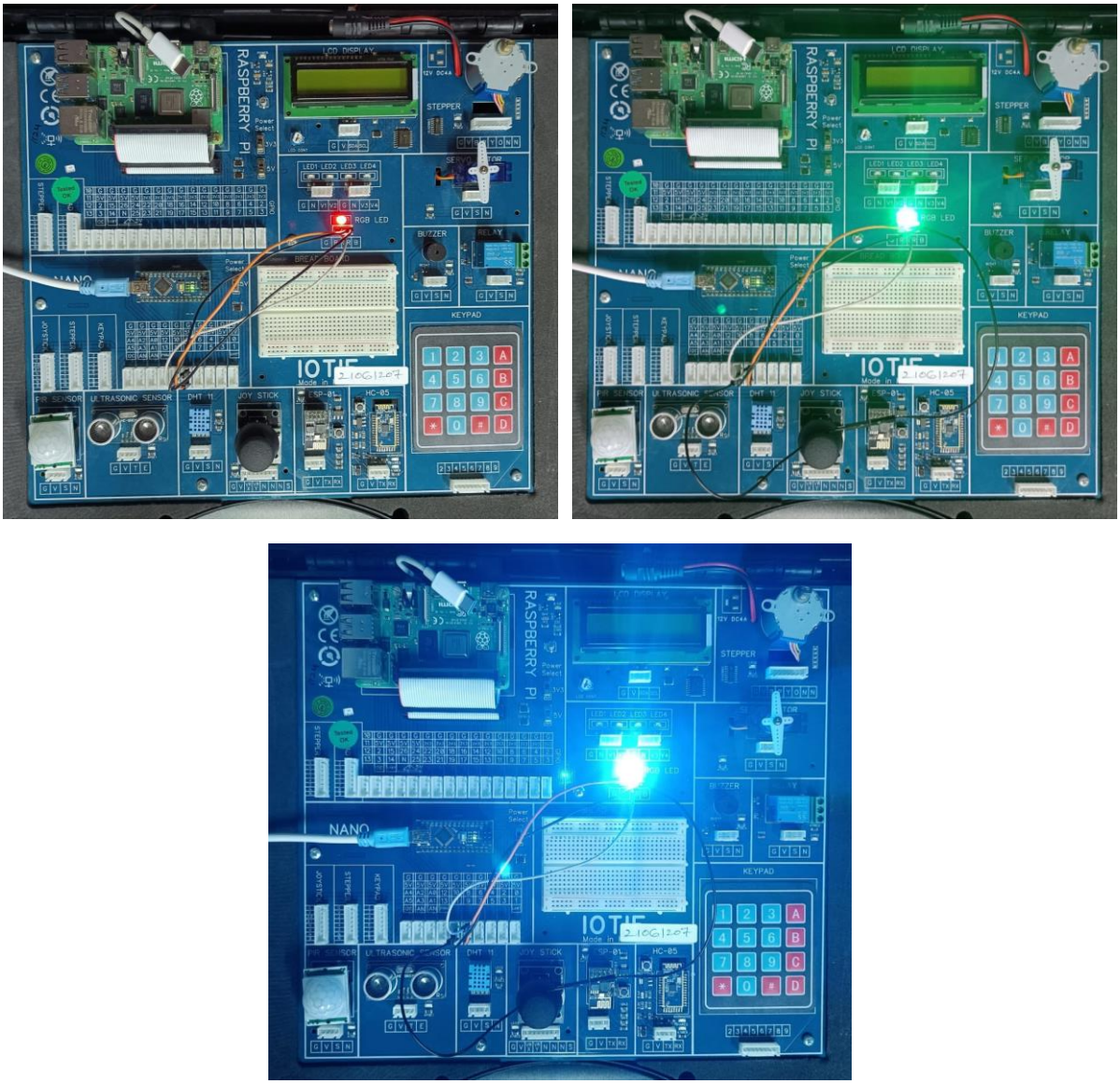
5.

AIM: To implement a program to first increase the intensity of RGB LED in the order - green, red and blue.

PROGRAM:

```
int i;
void setup() {}
void loop()
{
  for(int i=0;i<=255;i++)
  {
    RGB(0,i,0);
    delay(100);
  }
  for(int i=0;i<=255;i++)
  {
    RGB(i,0,0);
    delay(100);
  }
  for(int i=0;i<=255;i++)
  {
    RGB(0,0,i);
    delay(100);
  }
}

void RGB()
{
  analogWrite(9,R);
  analogWrite(10,G);
  analogWrite(11,B);
}
```

CIRCUIT:



6.

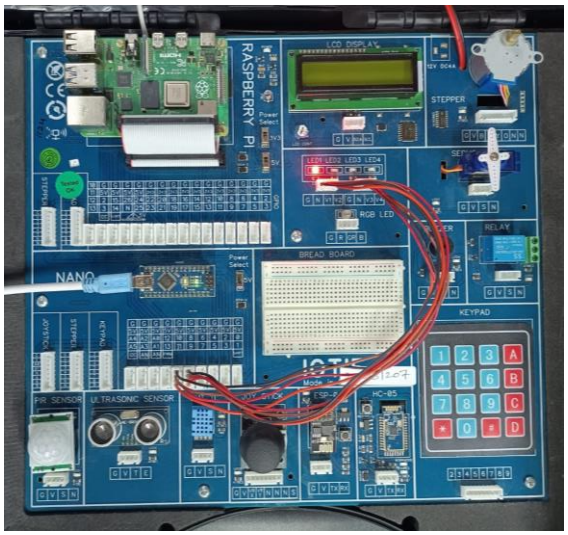
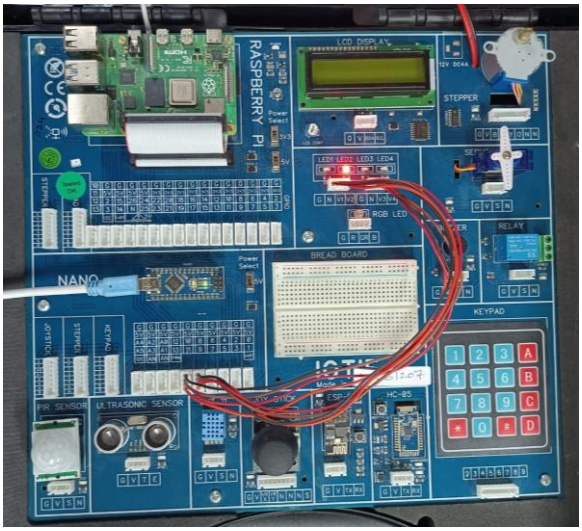
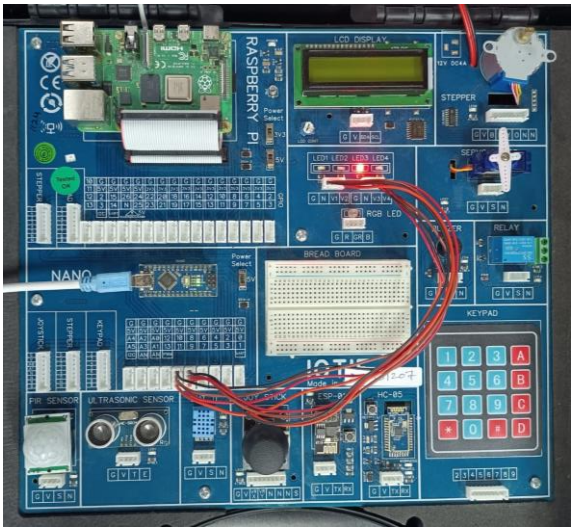
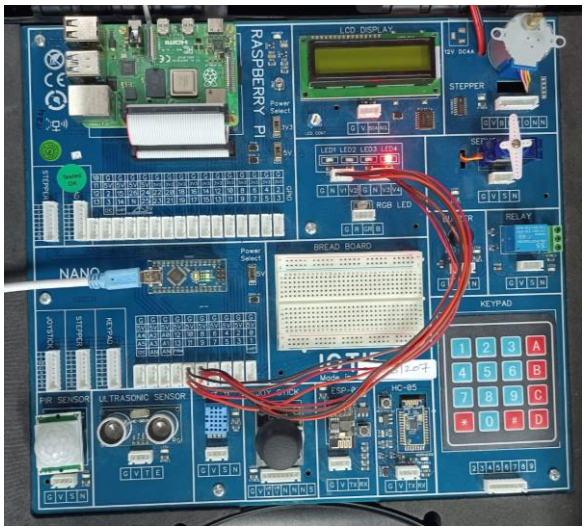
AIM: To implement a program to switch ON any one of the 4 LEDs

PROGRAM:

```
int c;
void setup(){
  Serial.begin(9600);
  pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
  pinMode(10,OUTPUT);
  pinMode(11,OUTPUT);
```

```
}
void loop(){
  c=Serial.parseInt();
  if(c==1){
    digitalWrite(8,1);
    digitalWrite(9,0);
    digitalWrite(10,0);
    digitalWrite(11,0);
  }
  else if(c==2){
    digitalWrite(8,0);
    digitalWrite(9,1);
    digitalWrite(10,0);
    digitalWrite(11,0);
  }
  else if(c==3){
    digitalWrite(8,0);
    digitalWrite(9,0);
    digitalWrite(10,1);
    digitalWrite(11,0);
  }
  else if(c==4){
    digitalWrite(8,0);
    digitalWrite(9,0);
    digitalWrite(10,0);
    digitalWrite(11,1);
  }
}
```

CIRCUIT:

WEEK-4

a) Control a servo motor using Arduino with an input given through a push button (e.g: When the push button is pressed the servo motor has to rotate by 15 degrees). b) Rotate Stepper motor either clockwise or anti clockwise at 'n' number of steps using Arduino.

1.

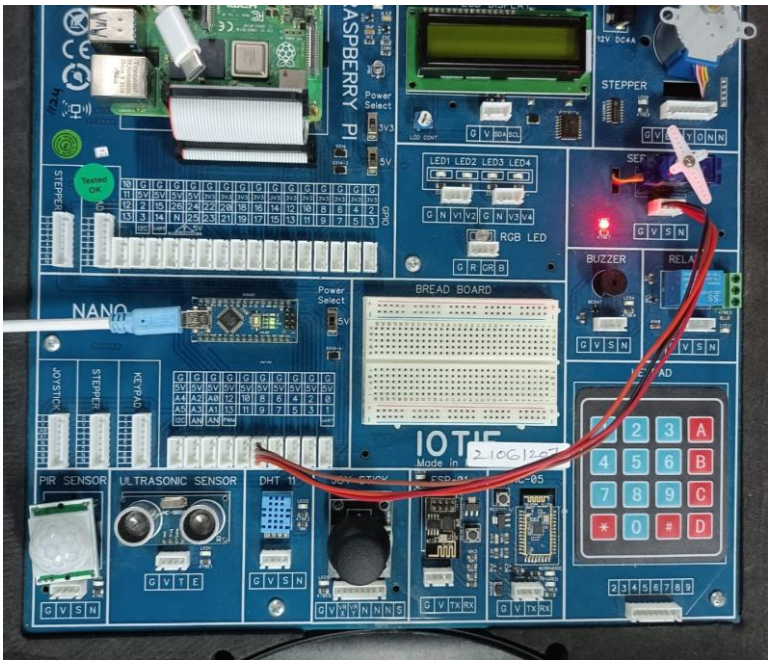
AIM: To implement a program to rotate servo motor 90^0 for every 500ms.

PROGRAM:

```
#include<Servo.h>
Servo s1;
int servopin=8;
```

```
void setup(){
  s1.attach(servopin);
}
void loop(){
  s1.write(90);
  delay(500);
}
```

CIRCUIT:



2.

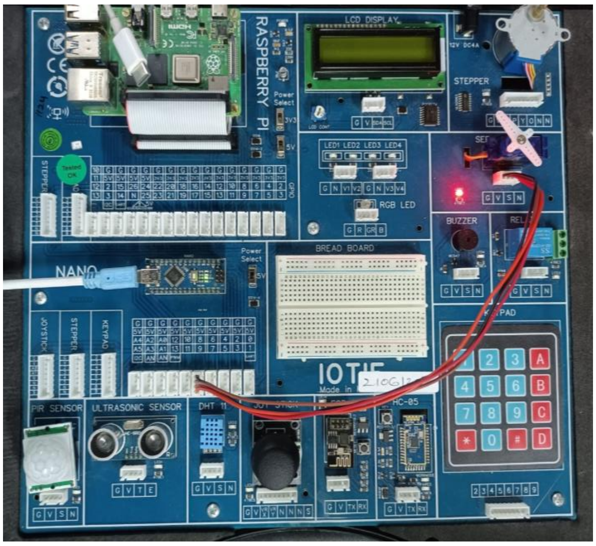
AIM: To implement a program to rotate servo motor 180^0 in clockwise direction.

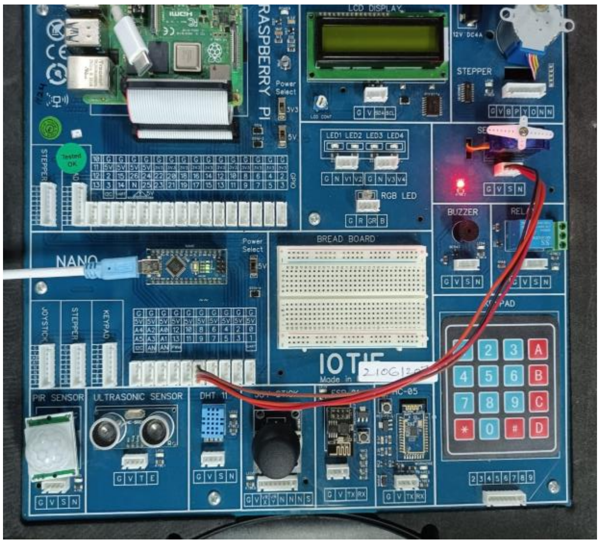
PROGRAM:

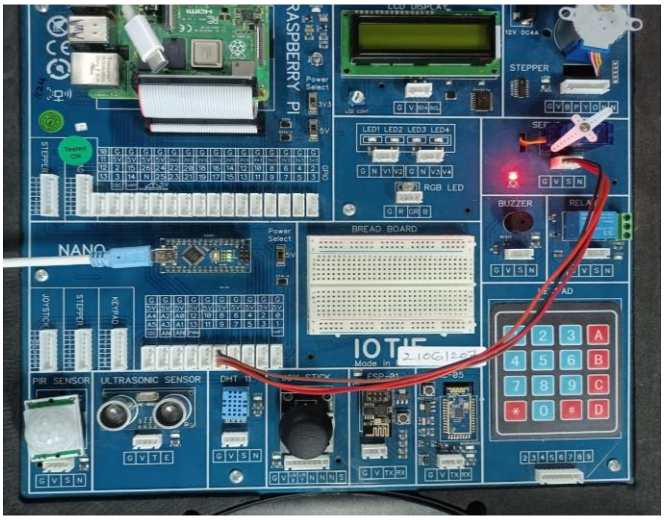
```
#include<Servo.h>
Servo s1;
int servopin=8;
void setup(){
  s1.attach(servopin);
}
void loop(){
  for(i=0;i<=180;i+=45){
  s1.write(i);
  delay(500);
```

```
    }
}
```

CIRCUIT:







3.

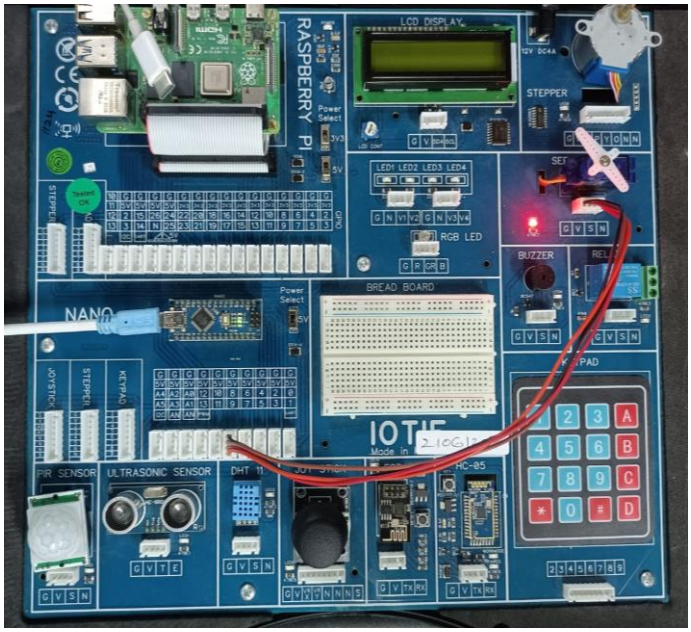
AIM: To implement a program to rotating servo motor 180^0 in anti-clockwise direction.

PROGRAM:

```
#include<Servo.h>
Servo s1;
int servopin=8;
void setup(){
    s1.attach(servopin);
}
```

```
void loop(){
for(i=180;i>=0;i--){
   s1.write(i);
   delay(500);
   }
}
```

CIRCUIT:



4.

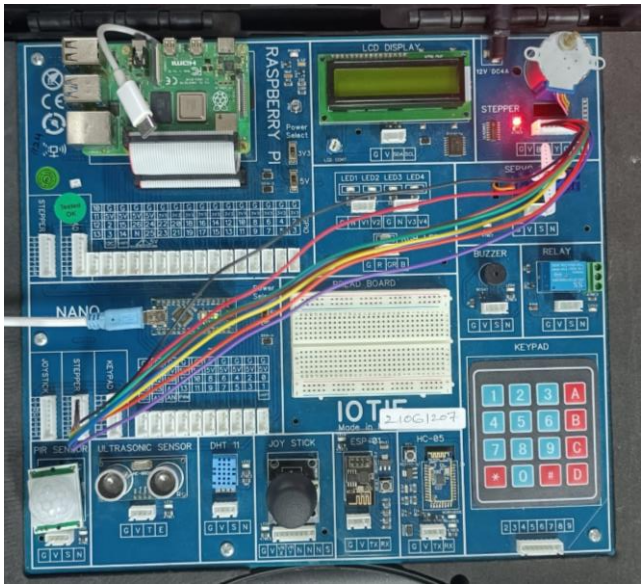
AIM: To implement a program to rotate stepper motor 360^0 in clockwise and then in anti-clockwise direction.

PROGRAM:

```
#include<Stepper.h>
int steps_per_rev=32;
int gear_reduction=64;
int steps_req=gear_reduction*steps_per_rev;
Stepper motor(steps_per_rev,2,4,3,5);
void setup(){
   Serial.begin(9600);
}
void loop(){
   Serial.println(steps_req);
```

```
  motor.setSpeed(900);
  motor.step(steps_req);
  delay(1000);
  Serial.println(steps_req);
  motor.setSpeed(900);
  motor.step(-steps_req);
  delay(1000);
}
```

CIRCUIT:



5.

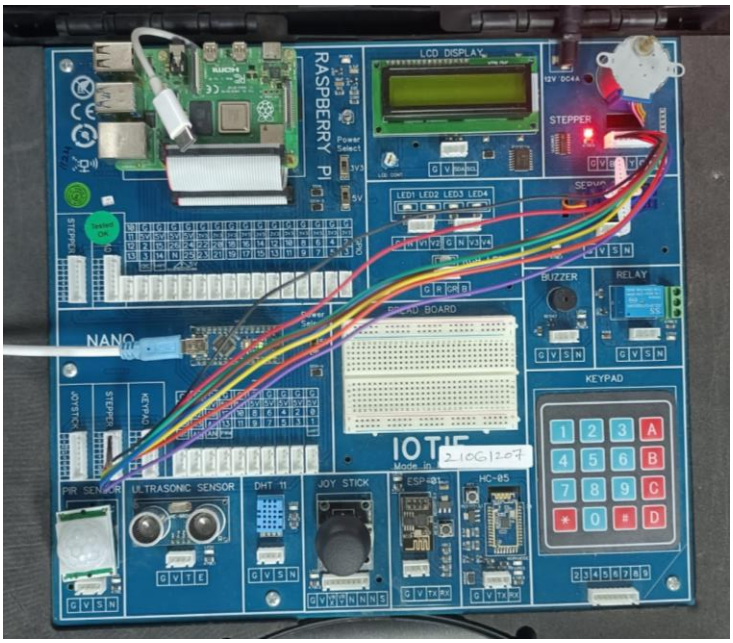
AIM: To implement a program to rotate stepper motor 180^0 in clockwise and then 90^0 in anti-clockwise direction.

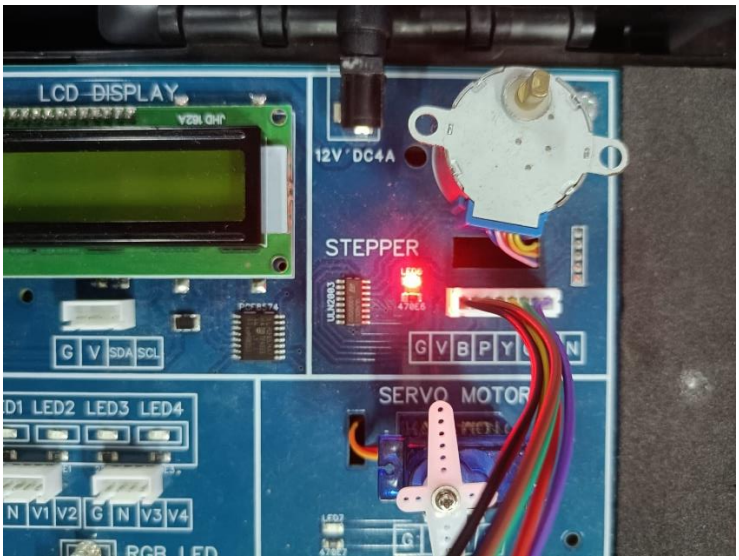
PROGRAM:

```
#include<Stepper.h>
int steps_per_rev=32;
int gear_reduction=64;
int steps_req=gear_reduction*steps_per_rev;
Stepper motor(steps_per_rev,2,4,3,5);
void setup(){
  Serial.begin(9600);
}
void loop(){
```

```
  Serial.println(steps_req);
  motor.setSpeed(900);
  motor.step(steps_req/2);
  delay(1000);
  Serial.println(steps_req);
  motor.setSpeed(900);
  motor.step(-steps_req/4);
  delay(1000);
}
```

CIRCUIT:





WEEK-5

Control any two actuators connected to the Arduino using Bluetooth/Wifi.

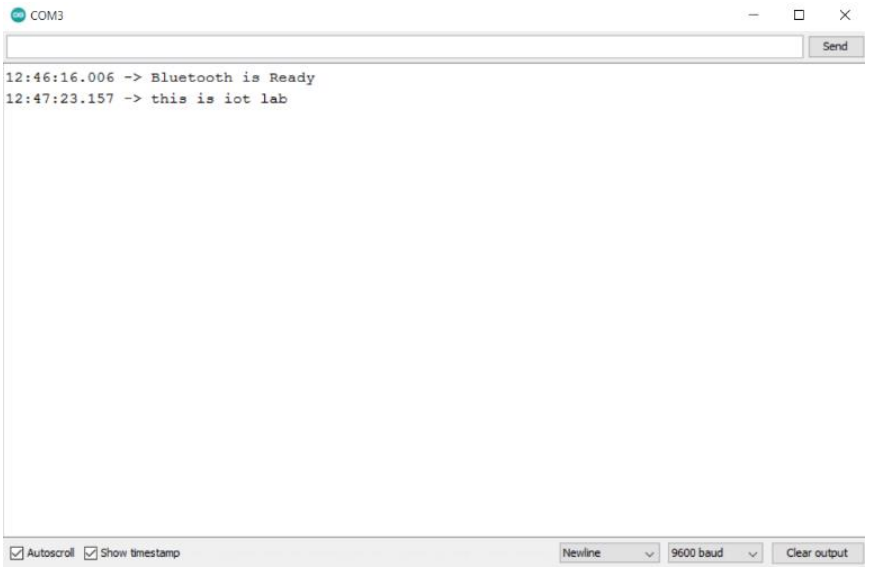
1.

AIM: To implement a program to send and receive messages using Bluetooth module with Arduino.

PROGRAM:

```
#include <SoftwareSerial.h>
SoftwareSerial EEBLUE(10,11);
void setup()
{
  Serial.begin(9600);
  EEBLUE.begin(9600);
  Serial.println("Bluetooth is ready ");
}
void loop()
{
  if(EEBLUE.available())
  Serial.write(EEBLUE.read());
  if(Serial.available())
  EEBLUE.write(Serial.read());
}
```

OUTPUT:



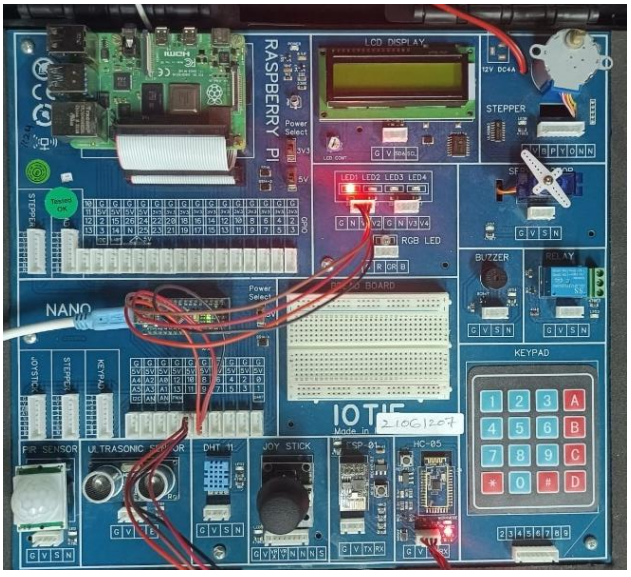
2.

AIM: To implement a program using Bluetooth to interface LED based on Bluetooth terminal input.

PROGRAM:

```
#include <SoftwareSerial.h>
SoftwareSerial EEBLUE(10,11);
int input;
void setup()
{
  Serial.begin(9600);
  EEBLUE.begin(9600);
  Serial.println("BLUETOOTH IS READY");
  pinMode(8,OUTPUT);
}
void loop()
{
  if(EEBLUE.available()){
    input=EEBLUE.parseInt();
    if(input==1)
      digitalWrite(8,1);
    if(input==0)
      digitalWrite(8,0);

  }
}
```

CIRCUIT:



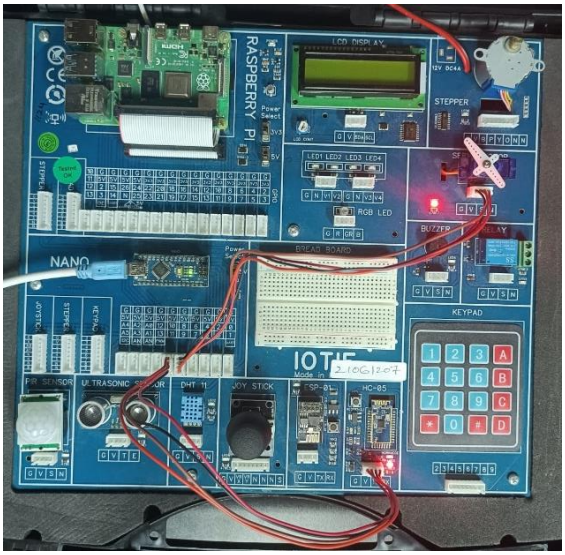
3.

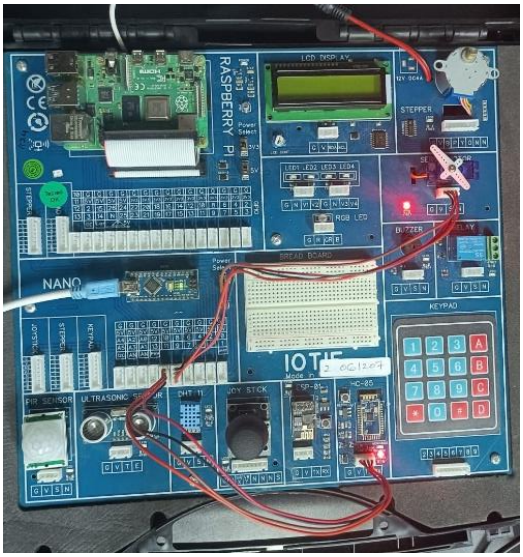
AIM: To interface a servo motor using Bluetooth terminal.

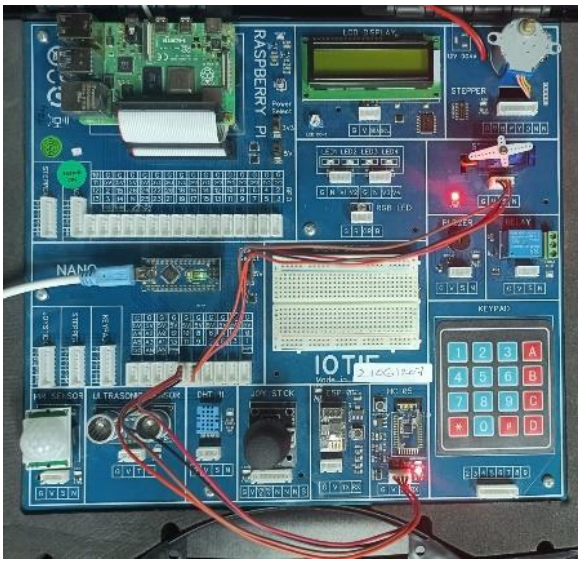
PROGRAM:

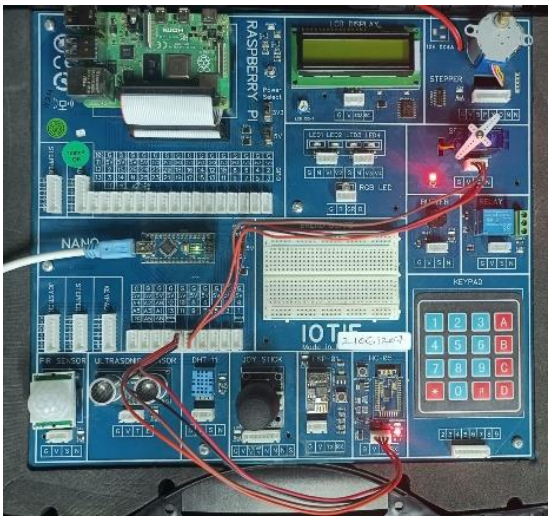
```
#include <SoftwareSerial.h>
#include<Servo.h>
SoftwareSerial EEBLUE(10,11);
Servo s1;
int angle;
void setup()
{
   Serial.begin(9600);
   EEBLUE.begin(9600);
   Serial.println("BLUETOOTH IS READY");
   s1.attach(8);
}
void loop()
{
   if(EEBLUE.available()){
     angle=EEBLUE.parseInt();
     for(int i=0;i<=angle;i+=20){
       s1.write(i);
       delay(500);
     }
   }
}
```

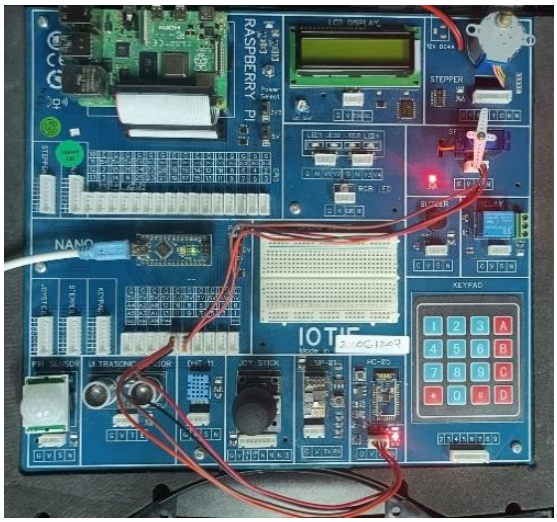
CIRCUIT:


RASPBERRY PI
NANO
STEPPER
KEYPAD
BREAD BOARD


RASPBERRY PI
NANO
STEPPER
KEYPAD
BREAD BOARD


RASPBERRY PI
NANO
STEPPER
KEYPAD


RASPBERRY PI
NANO
STEPPER
KEYPAD


RASPBERRY PI
NANO
STEPPER
KEYPAD

WEEK-6

Interface analog/digital sensors with Arduino and analyse the corresponding readings. (Sensors like temperature, alcohol, humidity, pressure, gas, sound pollution, level, weight, flow, proximity, LDR, PIR, pulse, vibration, sound etc..)

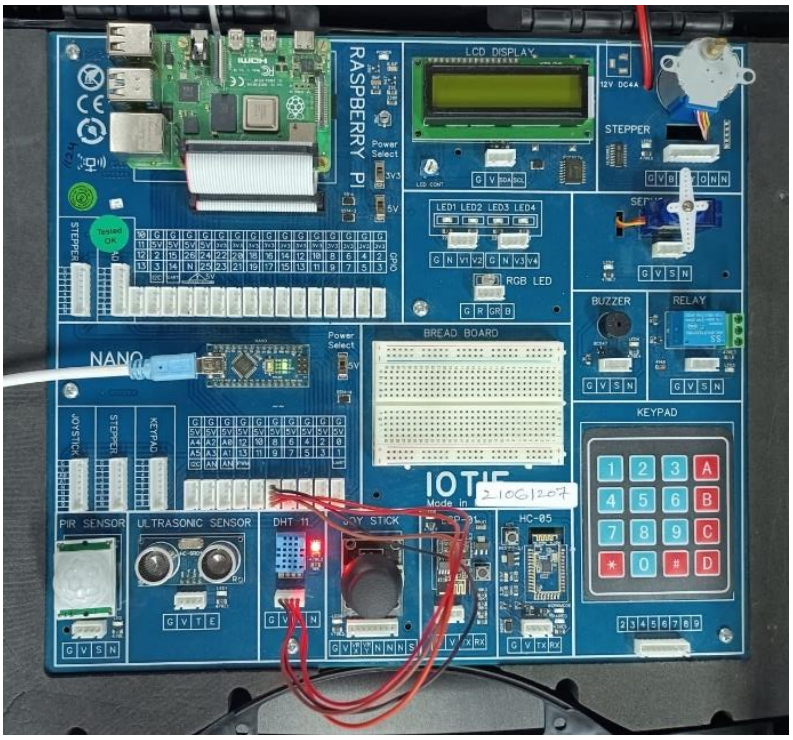
1.

AIM: To interface DHT11 sensor for measuring humidity and temperature.

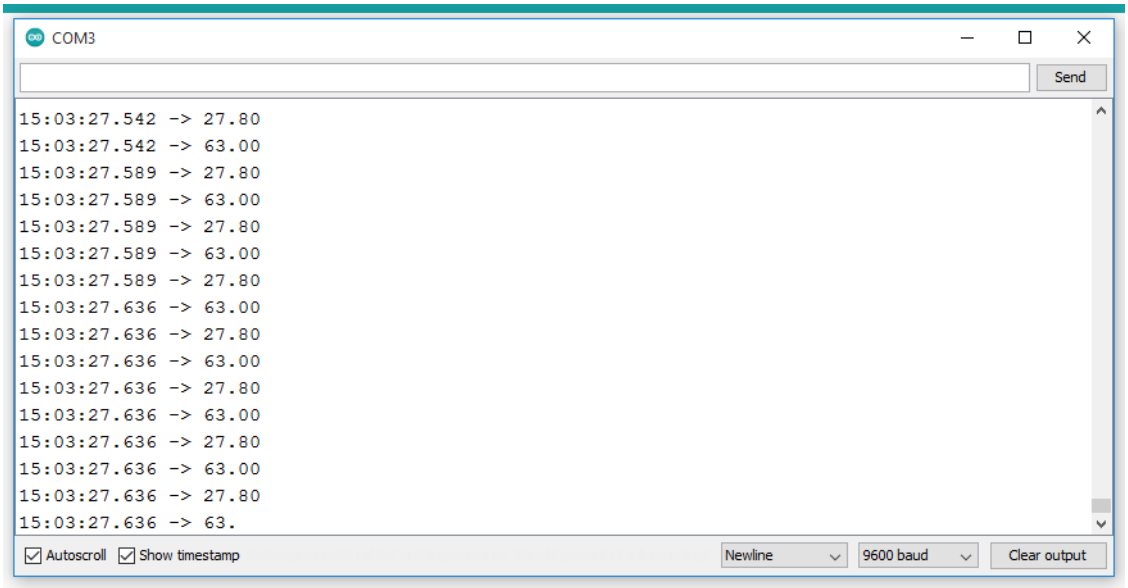
PROGRAM:

```
#include<DHT.h>
DHT dht(8,DHT11)
float t,h;
void setup(){
  Serial.begin(9600);
  dht.begin();
  Serial.println("Starting DHT Test");
  delay(2000);
}
void loop(){
  h=dht.readHumidity();
  t=dht.readTemperature();
  if(isnan(h)||isnan(t)){
    Serial.println("Failed to read");
  }
  else{
    Serial.println(h);
    Serial.println(t);
  }
}
```

CIRCUIT:



OUTPUT:



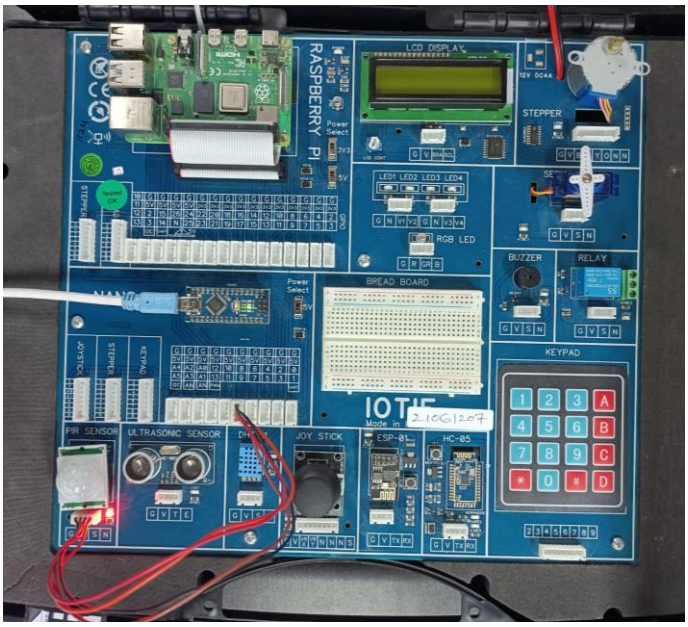
2.

AIM: To interface PIR sensor for detecting motion of an object.

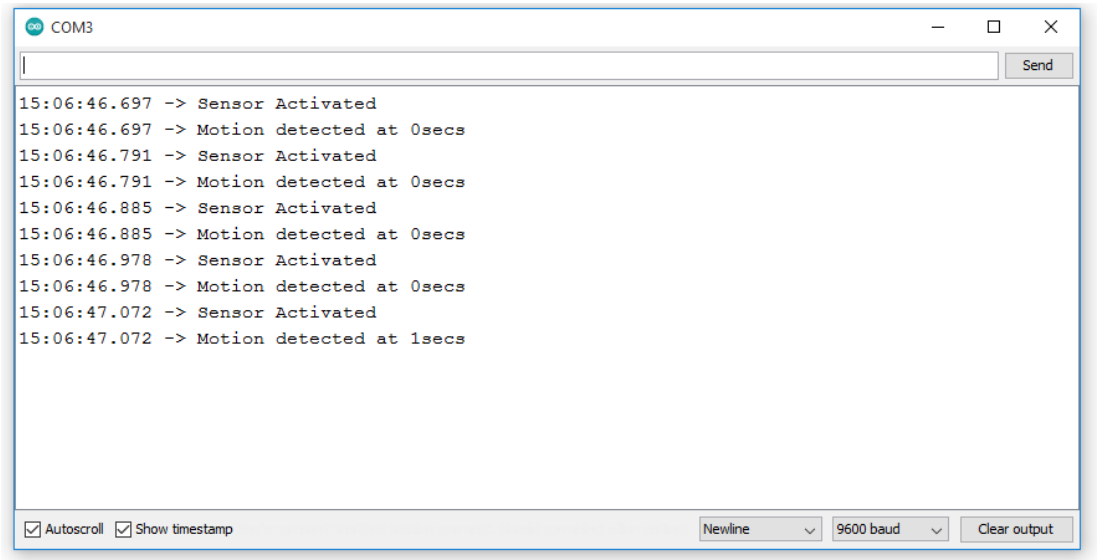
PROGRAM:

```
int sensordata;
void setup(){
   Serial.begin(9600);
   pinMode(13,OUTPUT);
   pinMode(8,INPUT);
}
void loop(){
   sesnsordata=digitalRead(8);
   if(sensordata==HIGH){
      digitalWrite(13,HIGH);
      Serial.println("Sensor Activated");
      Serial.print("Motion detected at");
      Serial.print(millis()/1000);
      Serial.println("secs");
      delay(50);
   }
   else{
      digitalWrite(13,LOW);
   }
   delay(50);
}
```

CIRCUIT:



OUTPUT:



3.

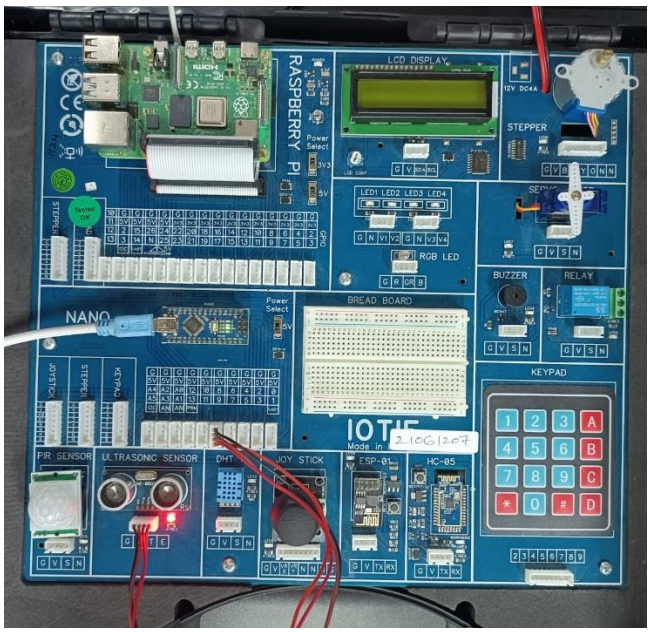
AIM: To interface ultrasonic sensor for detecting the presence and measuring the distance of an object.

PROGRAM:

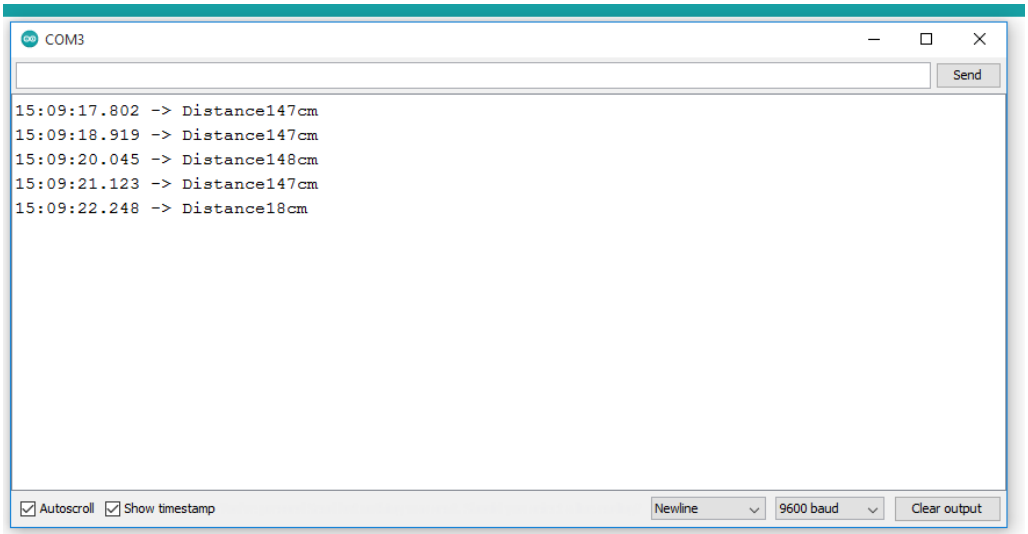
```
int distance,duration;
void setup(){
  Serial.begin(9600);
  pinMode(8,OUTPUT);
  pinMode(9,INPUT);
}
void loop(){
  digitalWrite(8,HIGH);
  delay(100);
  digitalWrite(8,LOW);
  duration=pulseIn(9,1);
  distance=duration*0.032/2;
  Serial.print("Distance");
  Serial.print(distance);
  Serial.println("cm");
```

```
  delay(1000);
}
```

CIRCUIT:



OUTPUT:



4.

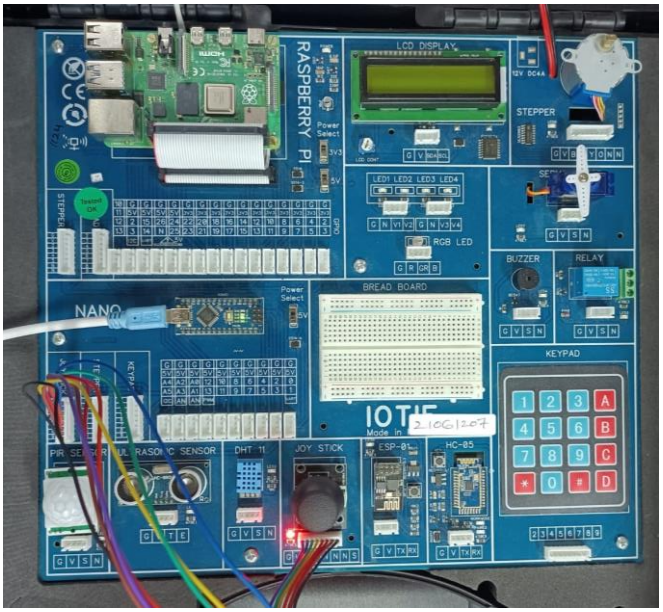
AIM: To implement a program to use joystick with serial monitor.

PROGRAM:

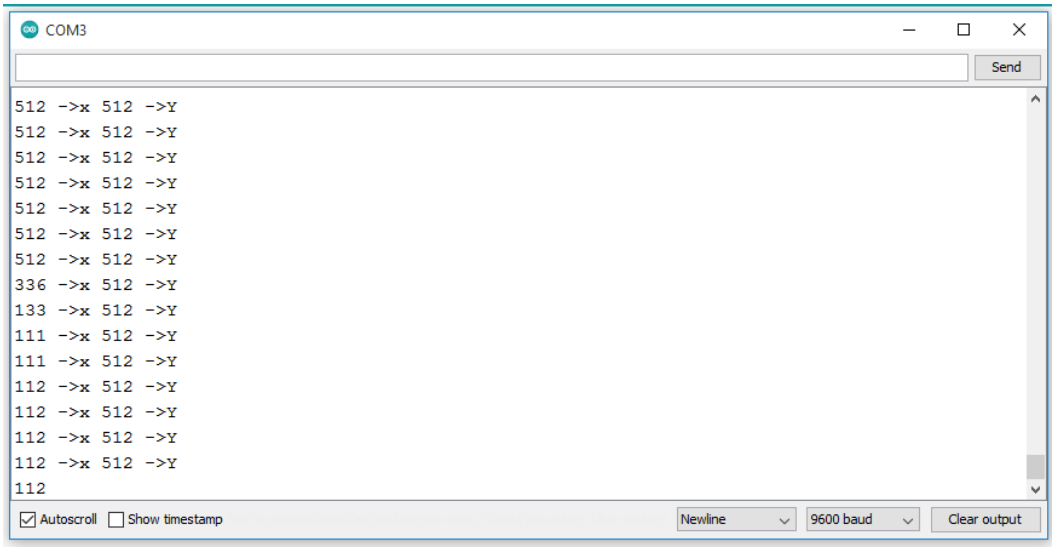
```
int VRx = A0;
int VRy = A1;
```

```
int xPosition = 0;
int yPosition = 0;
int SW_state = 0;
int mapX = 0;
int mapY = 0;

void setup() {
  Serial.begin(9600);
  pinMode(VRx, INPUT);
  pinMode(VRy, INPUT);
}

void loop() {
  xPosition = analogRead(VRx);
  yPosition = analogRead(VRy);
  mapX = map(xPosition, 0, 1023, -512, 512);
  mapY = map(yPosition, 0, 1023, -512, 512);

  Serial.print("X: ");
  Serial.print(mapX);
  Serial.print(" | Y: ");
  Serial.print(mapY);
  delay(100);

}
```

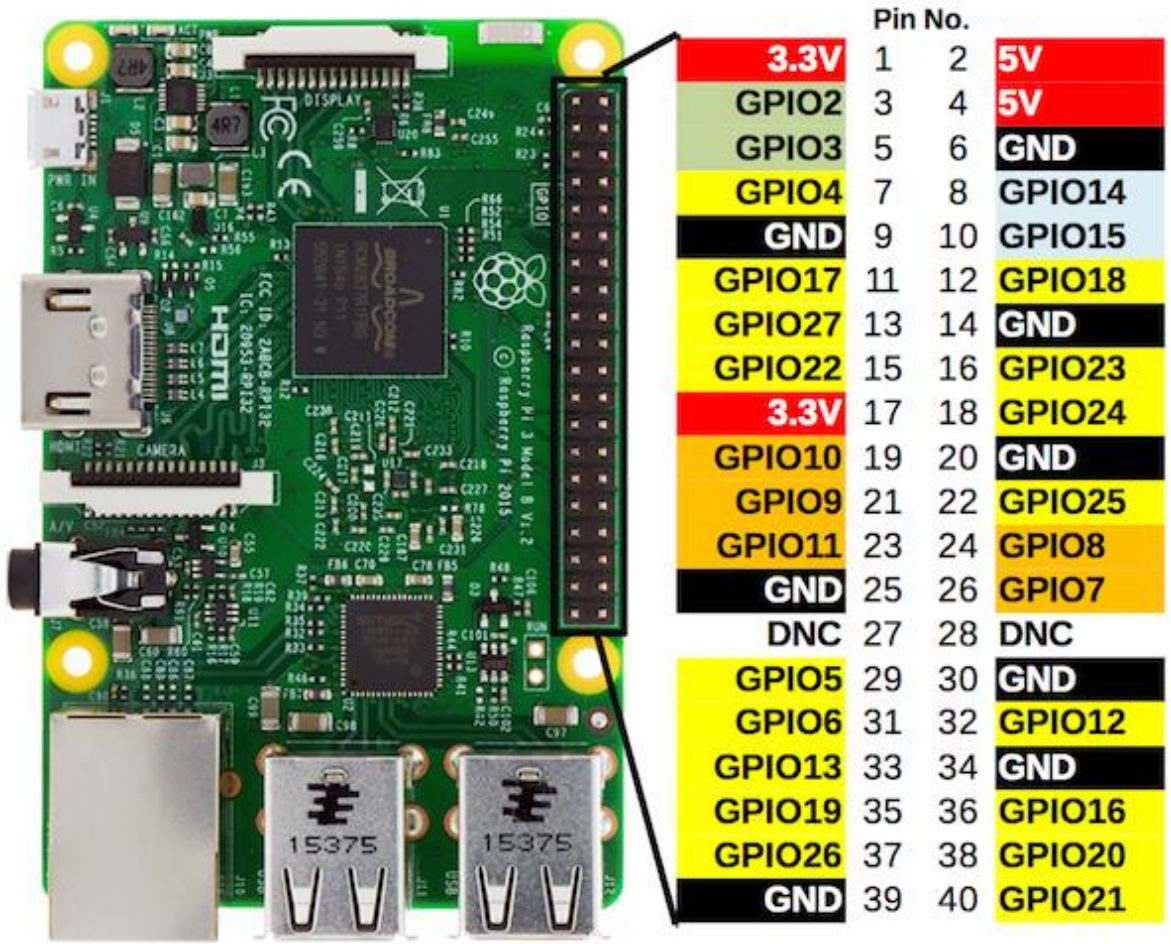
CIRCUIT:



OUTPUT:



RASPBERRY PI

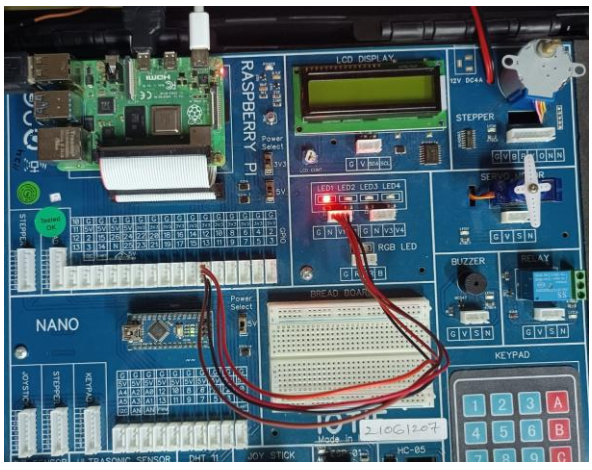


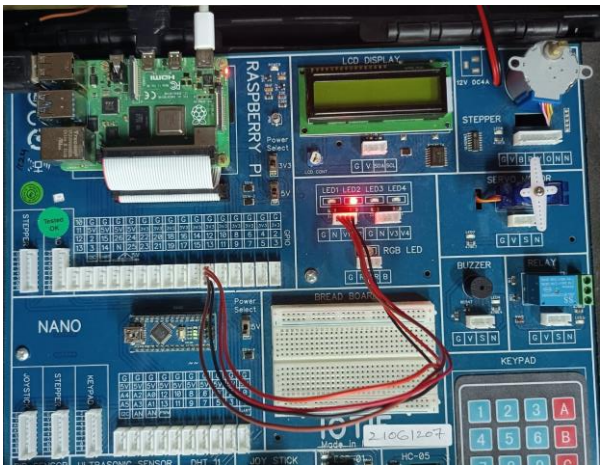
AIM: To implement a program to blink LED with raspberry pi.

PROGRAM:

```
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

ledPinOne = 12
ledPinTwo = 13

GPIO.setup(ledPinOne, GPIO.OUT)
GPIO.setup(ledPinTwo, GPIO.OUT)

try:
   while True:
         GPIO.output(ledPinOne,HIGH)
         GPIO.output(ledPinTwo,LOW)
         time.sleep(100)
         GPIO.output(ledPinOne,LOW)
         GPIO.output(ledPinTwo,HIGH)
         time.sleep(100)
except KeyboardInterrupt:
   print("\nExiting Program\n")
   GPIO.cleanup()
   exit()
```

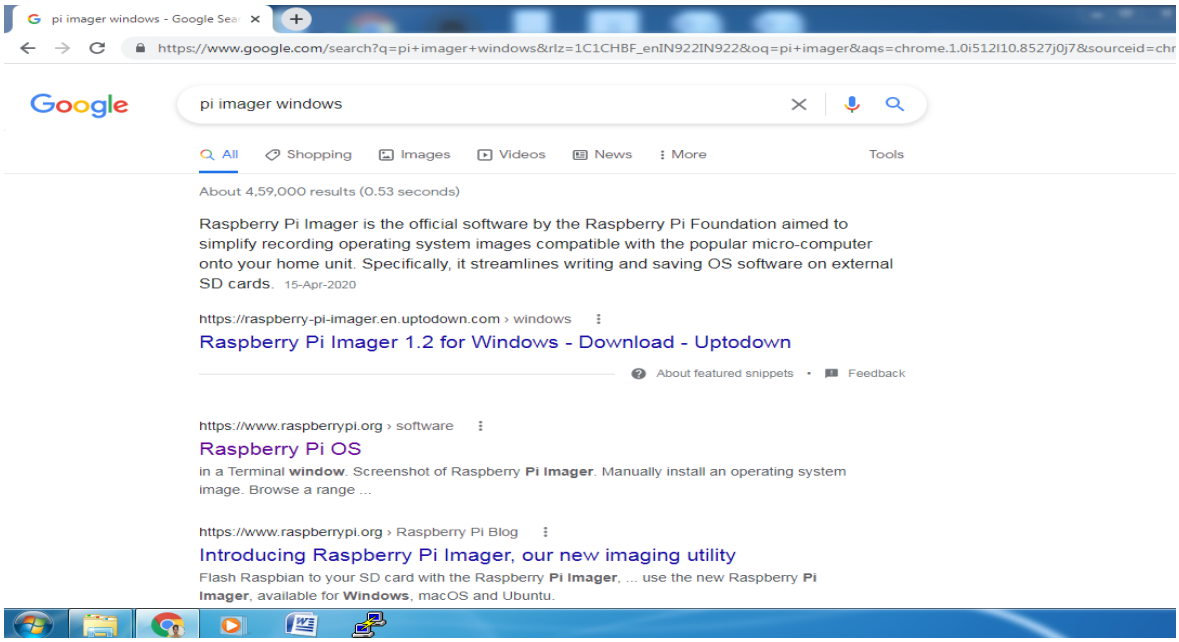
CIRCUIT:

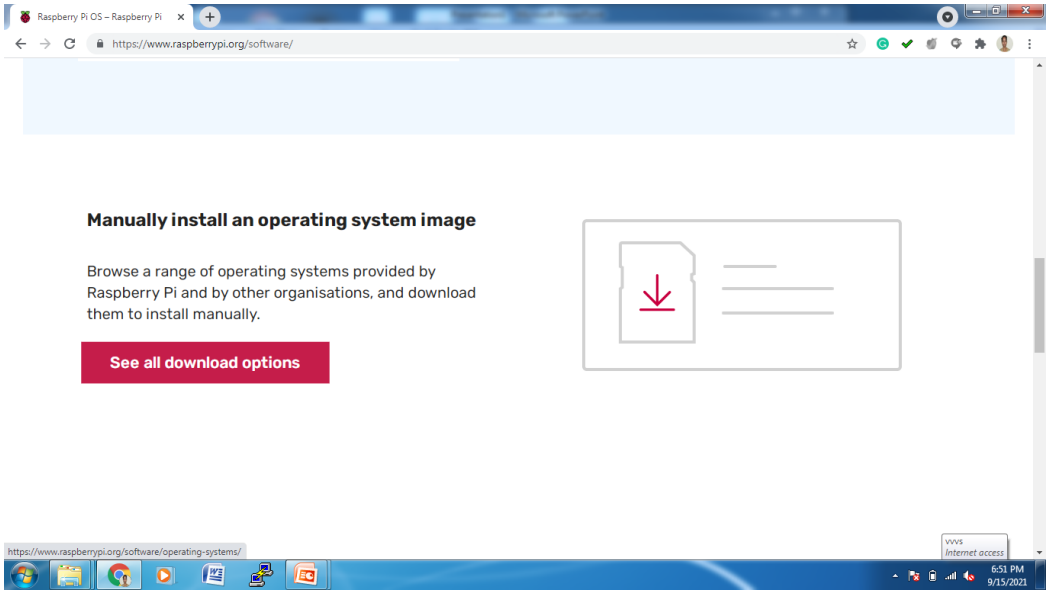


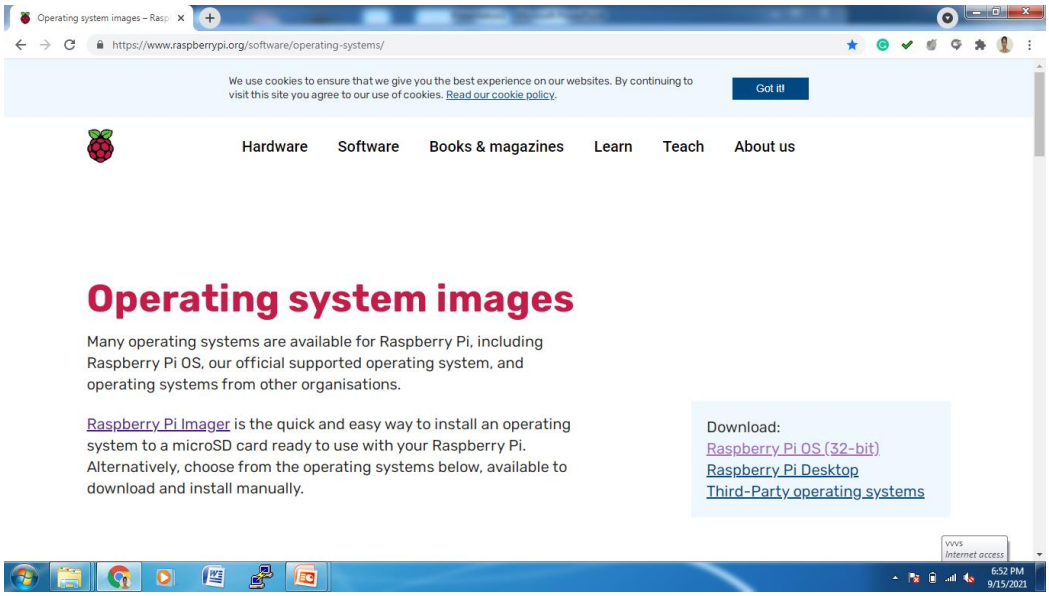


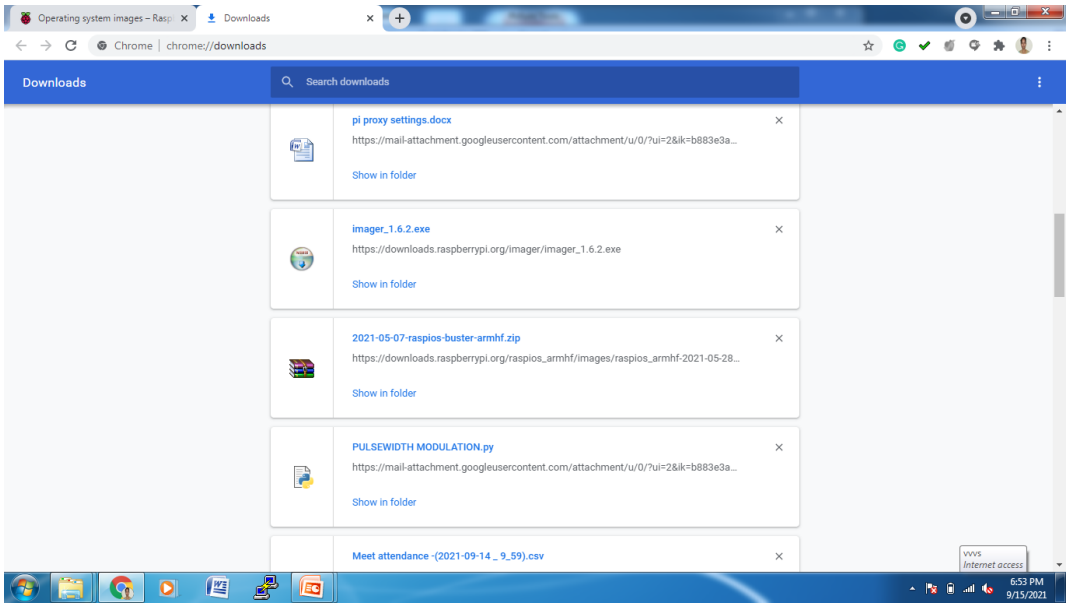
WEEK-7

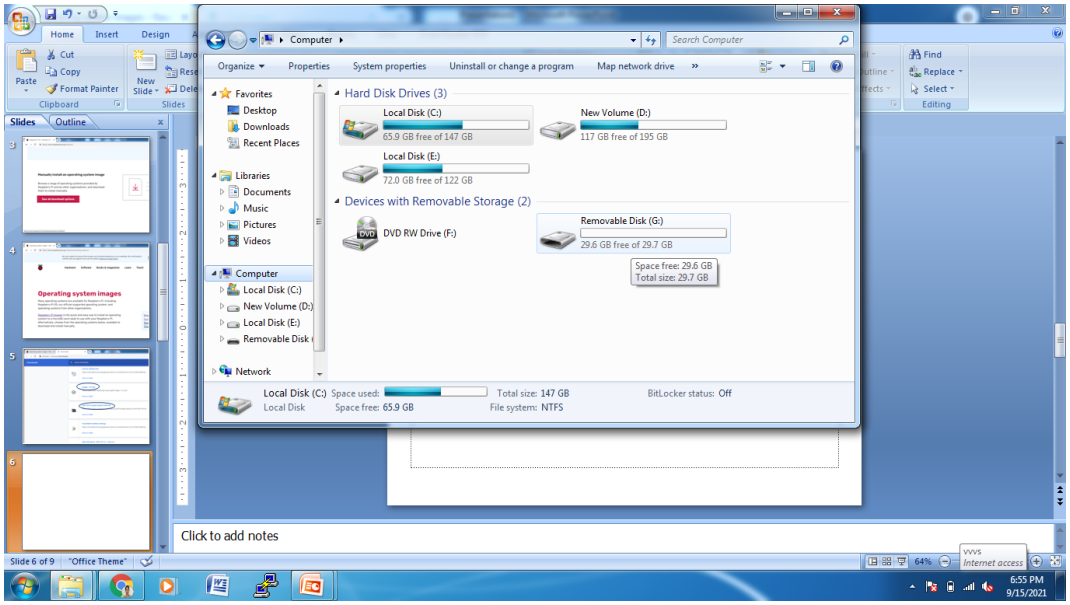
Installation and setup of Raspberry Pi.

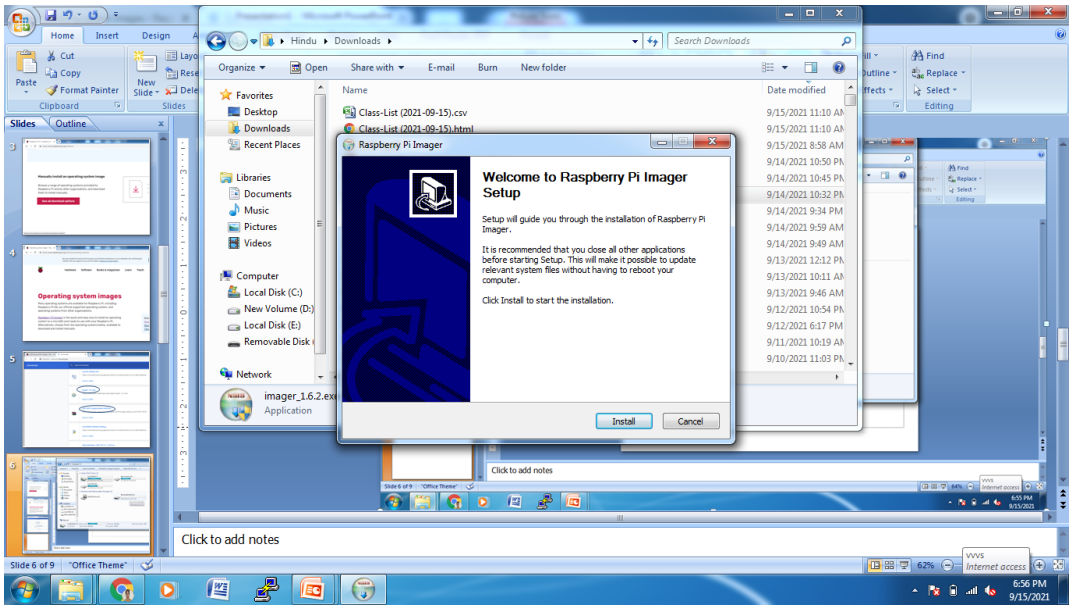


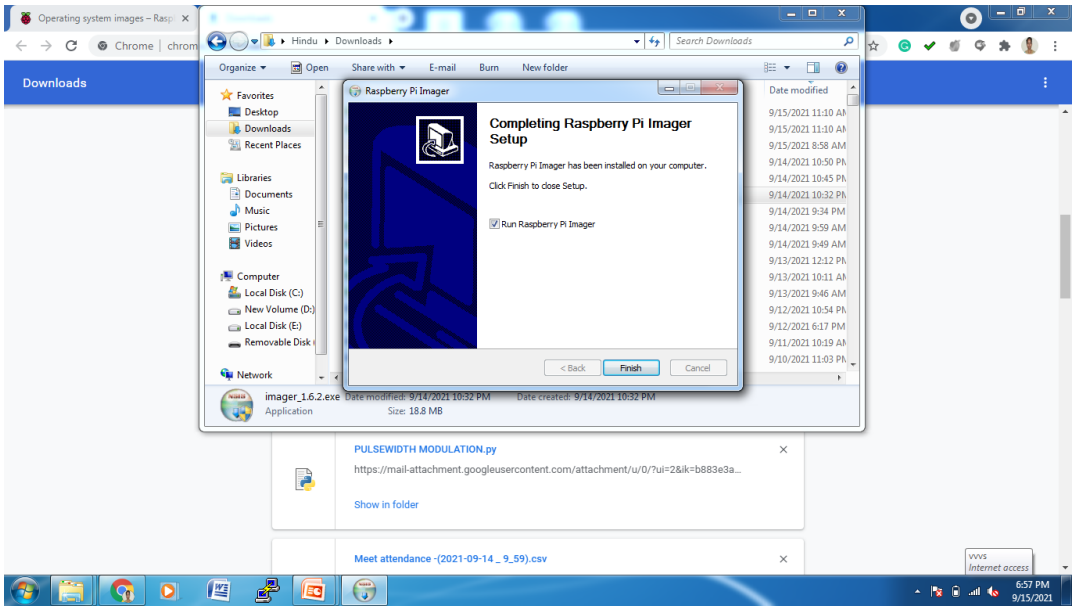

Raspberry Pi OS – Raspberry Pi
https://www.raspberrypi.org/software/
Manually install an operating system image
Browse a range of operating systems provided by Raspberry Pi and by other organisations, and download them to install manually.
See all download options
https://www.raspberrypi.org/software/operating-systems/
6:51 PM
9/15/2021

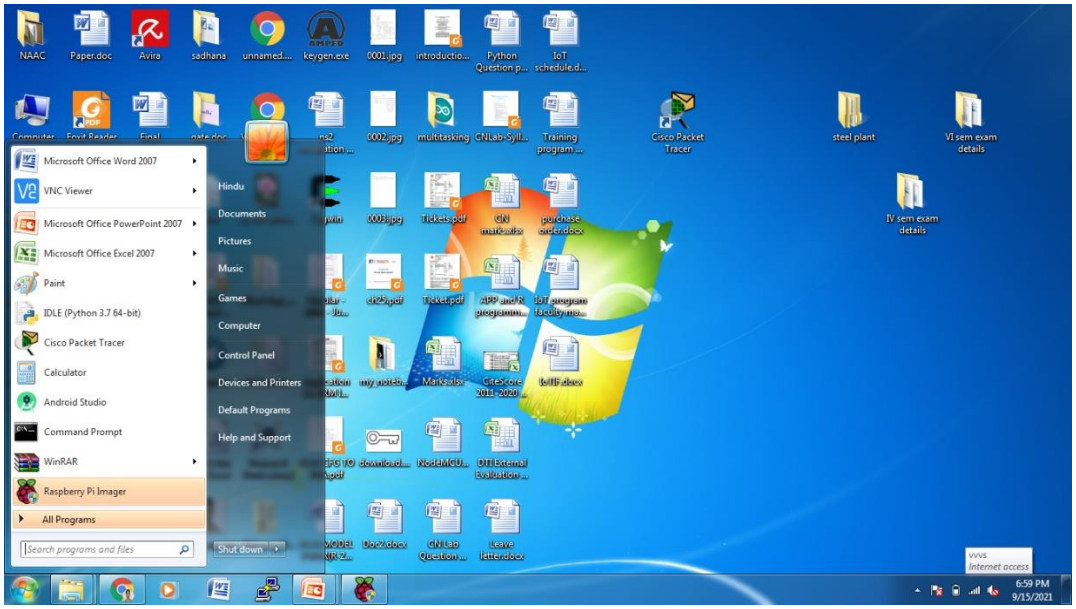

Operating system images – Rasp
https://www.raspberrypi.org/software/operating-systems/
We use cookies to ensure that we give you the best experience on our websites. By continuing to visit this site you agree to our use of cookies. Read our cookie policy.
Got it!
Hardware
Software
Books & magazines
Learn
Teach
About us
Operating system images
Many operating systems are available for Raspberry Pi, including Raspberry Pi OS, our official supported operating system, and operating systems from other organisations.
Raspberry Pi Imager is the quick and easy way to install an operating system to a microSD card ready to use with your Raspberry Pi. Alternatively, choose from the operating systems below, available to download and install manually.
Download:
Raspberry Pi OS (32-bit)
Raspberry Pi Desktop
Third-Party operating systems
6:52 PM
9/15/2021


Operating system images – Rasp
Downloads
Chrome | chrome://downloads
Downloads
Search downloads
pi proxy settings.docx
https://mail-attachment.googleusercontent.com/attachment/u/0/?ui=2&ik=b883e3a...
Show in folder
imager_1.6.2.exe
https://downloads.raspberrypi.org/imager/imager_1.6.2.exe
Show in folder
2021-05-07-raspios-buster-armhf.zip
https://downloads.raspberrypi.org/raspios_armhf/images/raspios_armhf-2021-05-28...
Show in folder
PULSEWIDTH MODULATION.py
https://mail-attachment.googleusercontent.com/attachment/u/0/?ui=2&ik=b883e3a...
Show in folder
Meet attendance -(2021-09-14 _ 9_59).csv
6:53 PM
9/15/2021

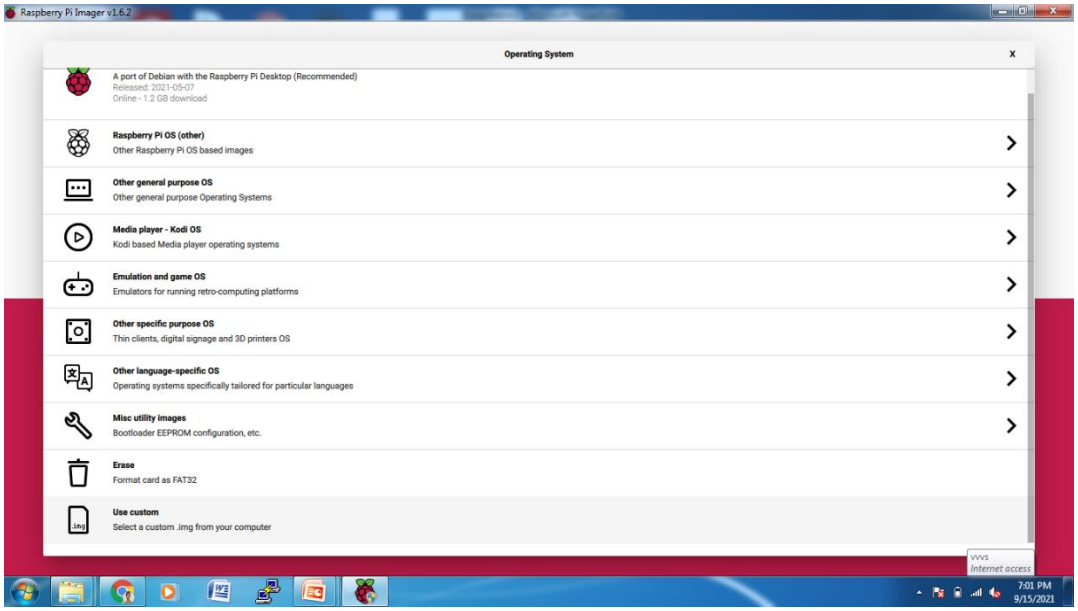

Computer
Search Computer
Organize
Properties
System properties
Uninstall or change a program
Map network drive
Hard Disk Drives (3)
Local Disk (C:)
65.9 GB free of 147 GB
New Volume (D:)
117 GB free of 195 GB
Local Disk (E:)
72.0 GB free of 122 GB
Devices with Removable Storage (2)
DVD RW Drive (F:)
Removable Disk (G:)
29.6 GB free of 29.7 GB
Space free: 29.6 GB
Total size: 29.7 GB
Local Disk (C:) Space used:
Space free: 65.9 GB
Total size: 147 GB
File system: NTFS
BitLocker status: Off
Click to add notes
6:55 PM
9/15/2021

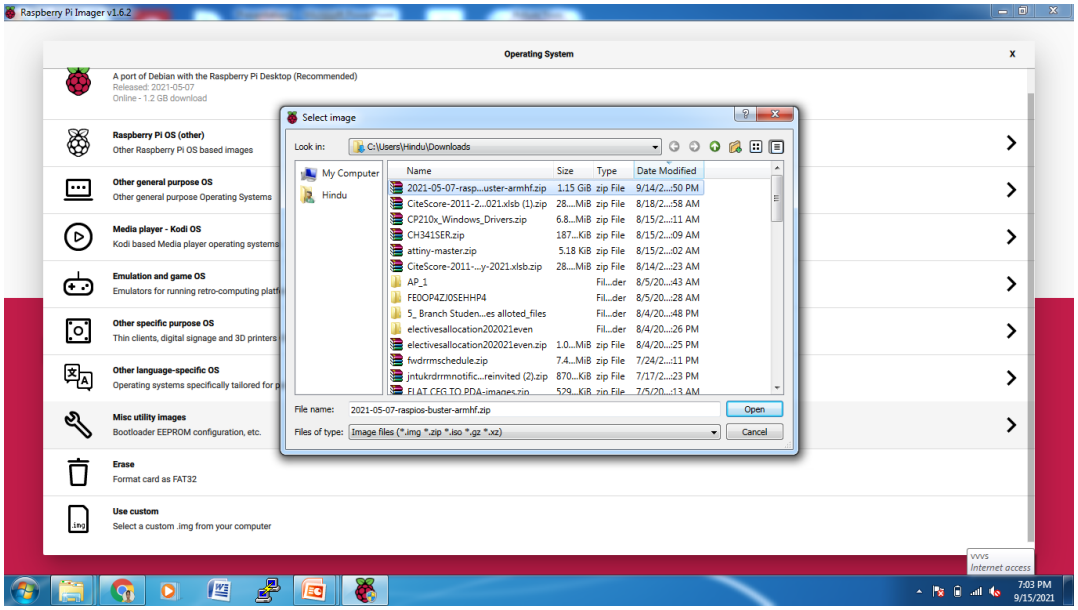

Raspberry Pi Imager
Welcome to Raspberry Pi Imager Setup
Setup will guide you through the installation of Raspberry Pi Imager.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Install to start the installation.
Install
Cancel
Click to add notes
6:56 PM
9/15/2021

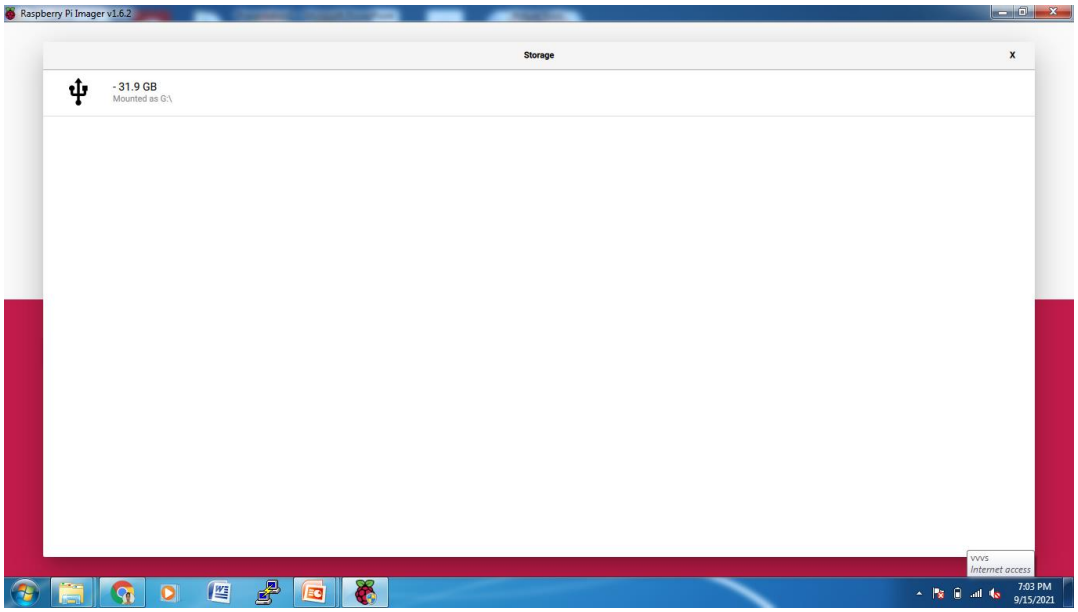

Raspberry Pi Imager
Completing Raspberry Pi Imager Setup
Raspberry Pi Imager has been installed on your computer.
Click Finish to close Setup.
Run Raspberry Pi Imager
< Back
Finish
Cancel
PULSEWIDTH MODULATION.py
Show in folder
Meet attendance -(2021-09-14 _ 9_59).csv
6:57 PM
9/15/2021


Microsoft Office Word 2007
VNC Viewer
Microsoft Office PowerPoint 2007
Microsoft Office Excel 2007
Paint
IDLE (Python 3.7 64-bit)
Cisco Packet Tracer
Calculator
Android Studio
Command Prompt
WinRAR
Raspberry Pi Imager
All Programs
Search programs and files
Hindu
Documents
Pictures
Music
Games
Computer
Control Panel
Devices and Printers
Default Programs
Help and Support
Shut down
6:59 PM
9/15/2021

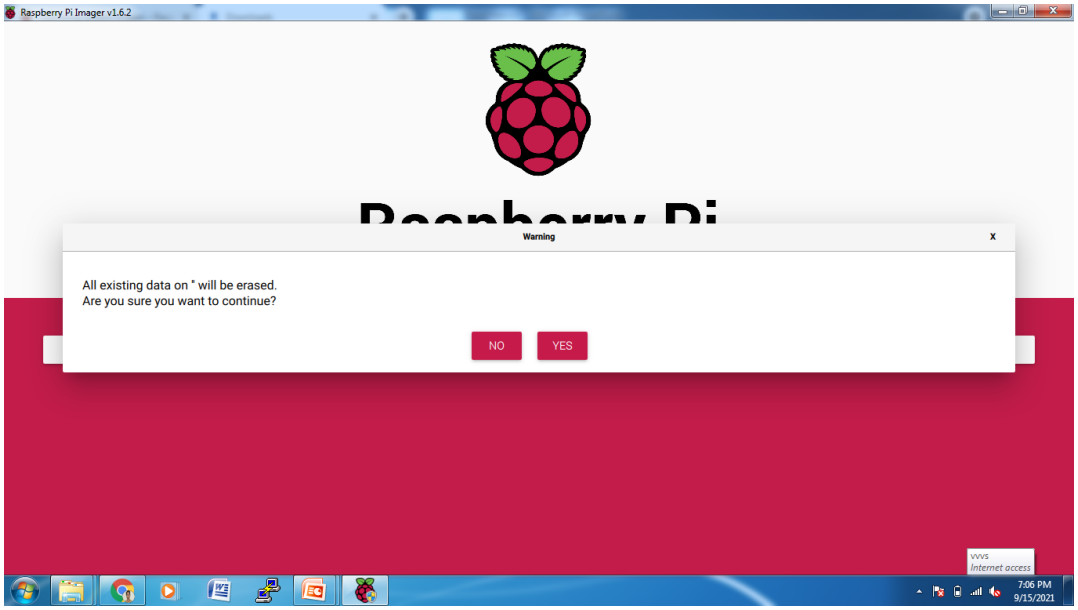

Raspberry Pi Imager v1.6.2
Raspberry Pi
Operating System
CHOOSE OS
Storage
CHOOSE STORAGE
WRITE
7:00 PM
9/15/2021

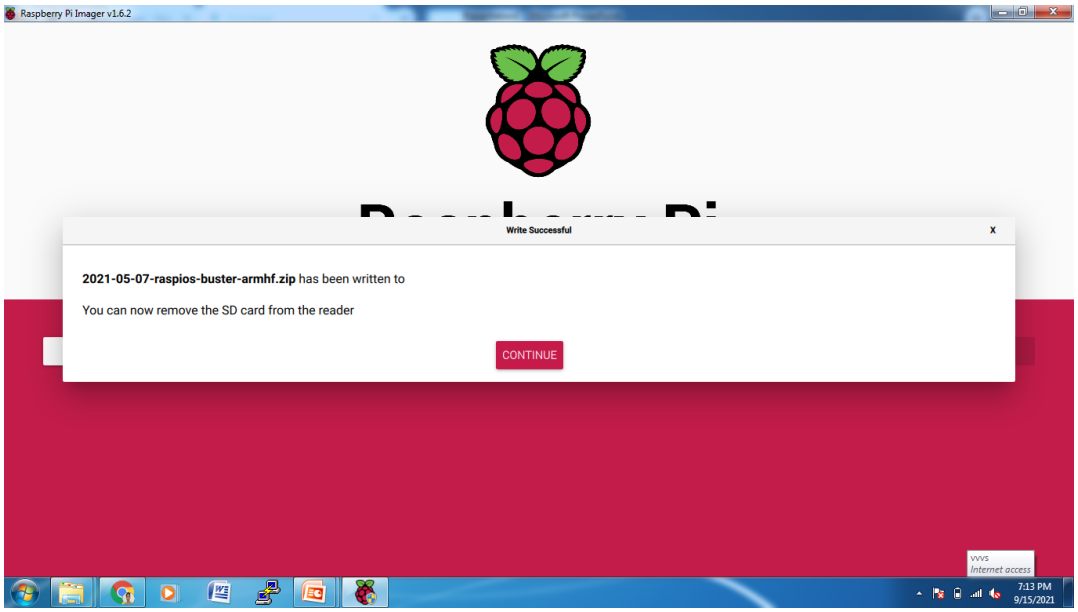

Raspberry Pi Imager v1.6.2
Operating System
A port of Debian with the Raspberry Pi Desktop (Recommended)
Released: 2021-05-07
Online - 1.2 GB download
Raspberry Pi OS (other)
Other Raspberry Pi OS based images
Other general purpose OS
Other general purpose Operating Systems
Media player - Kodi OS
Kodi based Media player operating systems
Emulation and game OS
Emulators for running retro-computing platforms
Other specific purpose OS
Thin clients, digital signage and 3D printers OS
Other language-specific OS
Operating systems specifically tailored for particular languages
Misc utility images
Bootloader EEPROM configuration, etc.
Erase
Format card as FAT32
Use custom
Select a custom .img from your computer
7:01 PM
9/15/2021


Raspberry Pi Imager v1.6.2
Operating System
A port of Debian with the Raspberry Pi Desktop (Recommended)
Released: 2021-05-07
Online - 1.2 GB download
Raspberry Pi OS (other)
Other Raspberry Pi OS based images
Other general purpose OS
Other general purpose Operating Systems
Media player - Kodi OS
Kodi based Media player operating systems
Emulation and game OS
Other specific purpose OS
Thin clients, digital signage and 3D printers
Other language-specific OS
Misc utility images
Bootloader EEPROM configuration, etc.
Erase
Format card as FAT32
Use custom
Select a custom .img from your computer
Select image
Look in:
C:\Users\Hindu\Downloads
My Computer
Hindu
Name
Size
Type
Date Modified
2021-05-07-rasp...uster-armhf.zip
CiteScore-2011-2...021.xlsb (1).zip
CP210x_Windows_Drivers.zip
CH341SER.zip
attiny-master.zip
CiteScore-2011-...y-2021.xlsb.zip
AP_1
FE0OP4ZJ0SEHHP4
5_ Branch Studen...es alloted_files
electivesallocation202021even
electivesallocation202021even.zip
fwdrrmschedule.zip
jntukrdrrmnotific...reinvited (2).zip
File name:
2021-05-07-raspios-buster-armhf.zip
Open
Files of type:
Image files (*.img *.zip *.iso *.gz *.xz)
Cancel
7:03 PM
9/15/2021

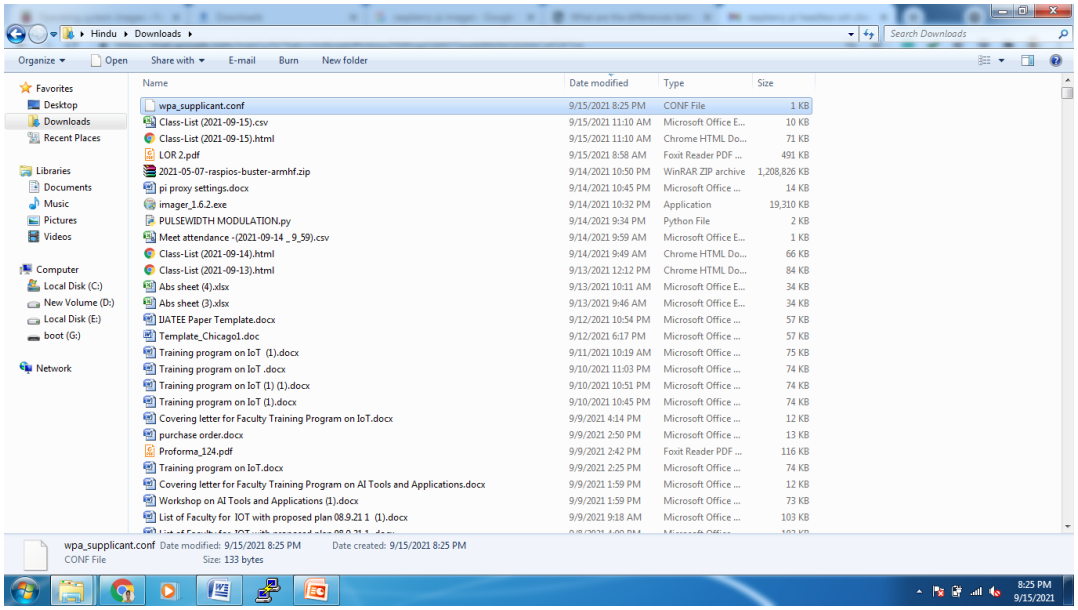

Raspberry Pi Imager v1.6.2
Storage
- 31.9 GB
Mounted as G:\
7:03 PM
9/15/2021

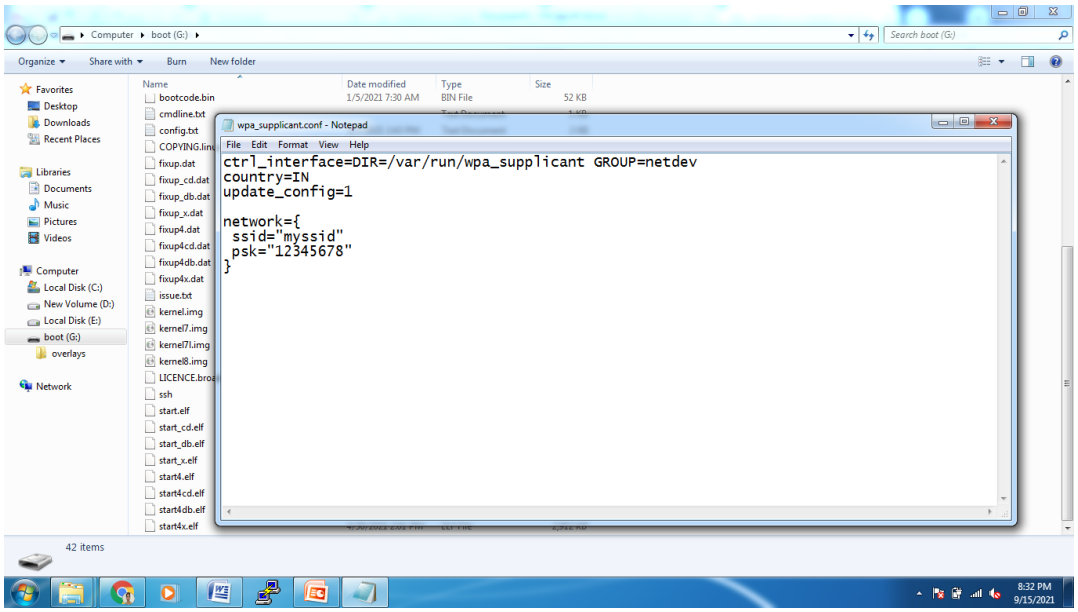

Raspberry Pi Imager v1.6.2
Raspberry Pi
Operating System
2021-05-07-RASPIOS-BUSTER-ARMHF.ZIP
Storage
WRITE
7:04 PM
9/15/2021

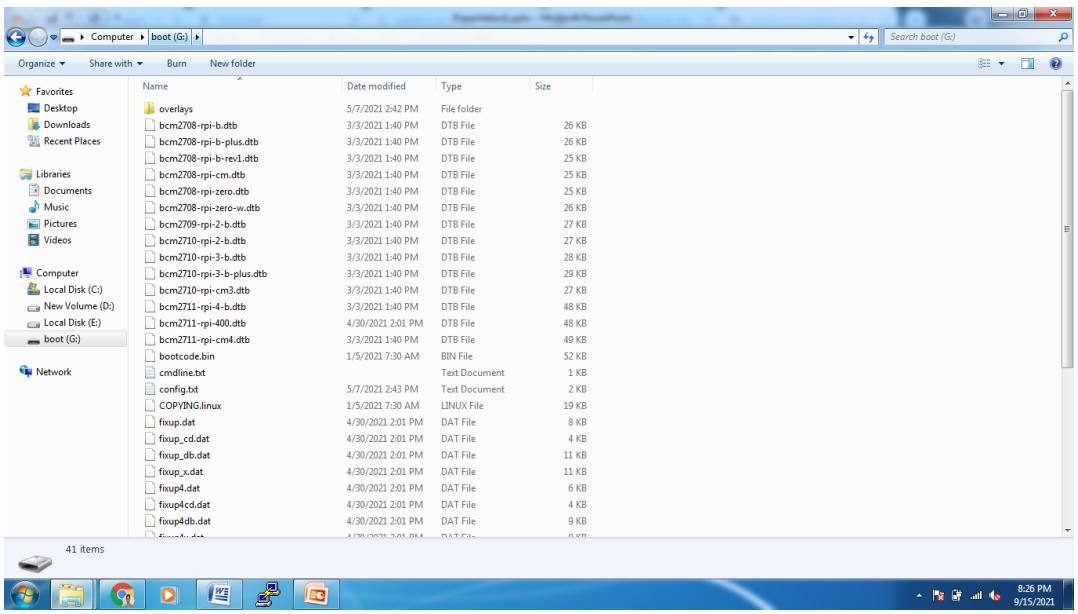


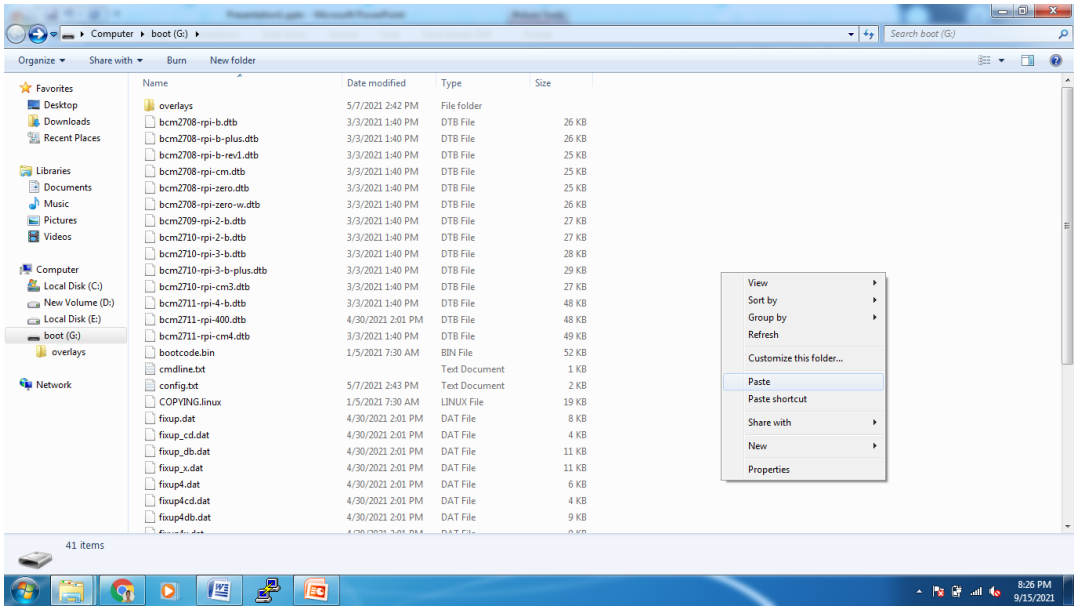


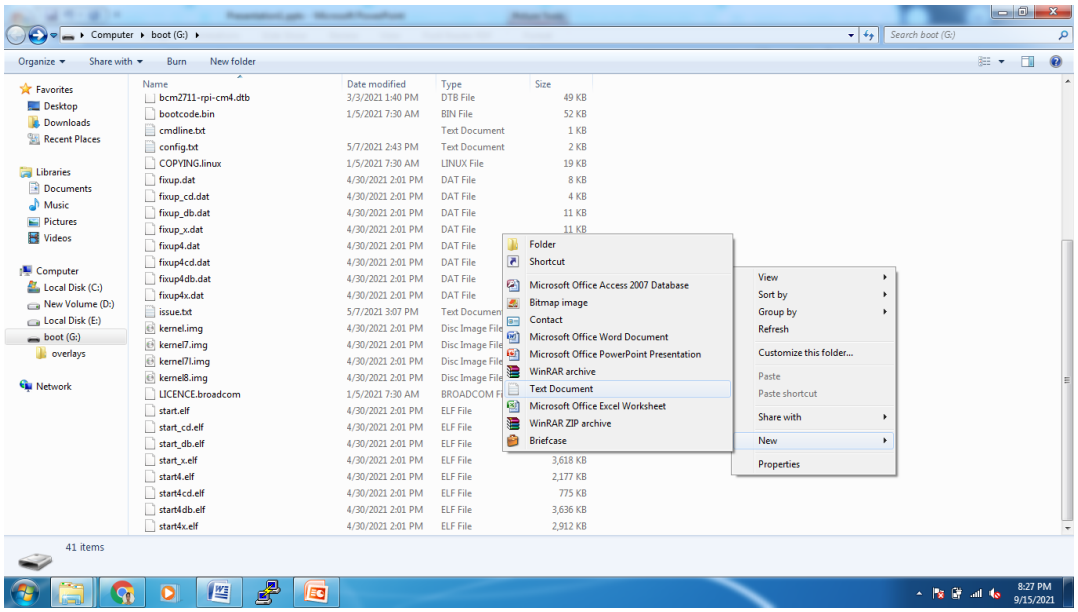
Connecting to WiFi

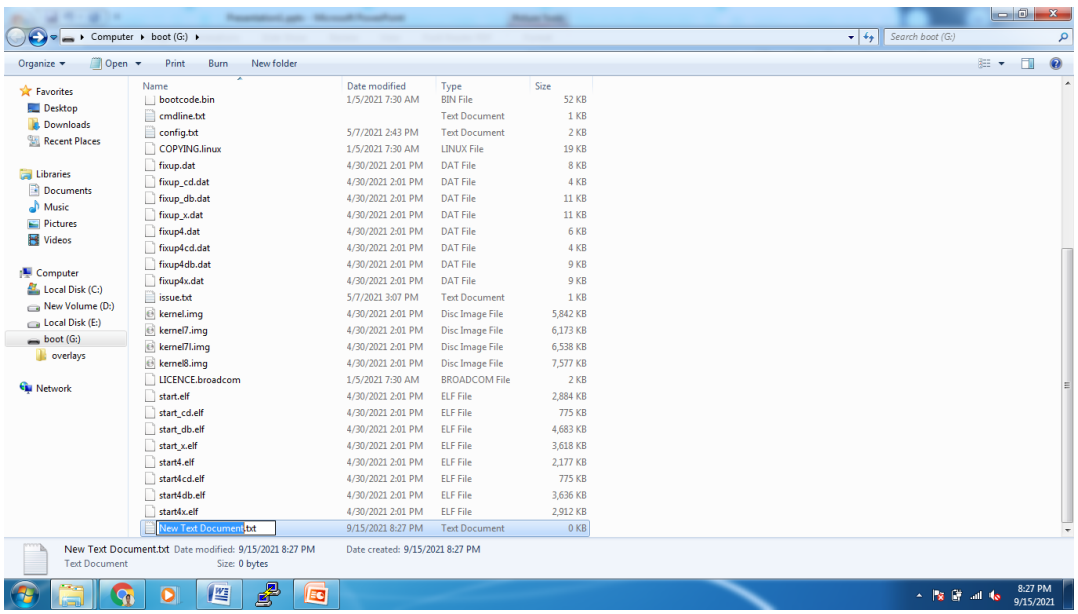

Hindu ▸ Downloads ▸
Search Downloads
Organize
Open
Share with
E-mail
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
Network
Name
Date modified
Type
Size
wpa_supplicant.conf 9/15/2021 8:25 PM CONF File 1 KB
Class-List (2021-09-15).csv 9/15/2021 11:10 AM Microsoft Office E... 10 KB
Class-List (2021-09-15).html 9/15/2021 11:10 AM Chrome HTML Do... 71 KB
LOR 2.pdf 9/15/2021 8:58 AM Foxit Reader PDF ... 491 KB
2021-05-07-raspios-buster-armhf.zip 9/14/2021 10:50 PM WinRAR ZIP archive 1,208,826 KB
pi proxy settings.docx 9/14/2021 10:45 PM Microsoft Office ... 14 KB
imager_1.6.2.exe 9/14/2021 10:32 PM Application 19,310 KB
PULSEWIDTH MODULATION.py 9/14/2021 9:34 PM Python File 2 KB
Meet attendance -(2021-09-14 _ 9_59).csv 9/14/2021 9:59 AM Microsoft Office E... 1 KB
Class-List (2021-09-14).html 9/14/2021 9:49 AM Chrome HTML Do... 66 KB
Class-List (2021-09-13).html 9/13/2021 12:12 PM Chrome HTML Do... 84 KB
Abs sheet (4).xlsx 9/13/2021 10:11 AM Microsoft Office E... 34 KB
Abs sheet (3).xlsx 9/13/2021 9:46 AM Microsoft Office E... 34 KB
IJATEE Paper Template.docx 9/12/2021 10:54 PM Microsoft Office ... 57 KB
Template_Chicago1.doc 9/12/2021 6:17 PM Microsoft Office ... 57 KB
Training program on IoT (1).docx 9/11/2021 10:19 AM Microsoft Office ... 75 KB
Training program on IoT .docx 9/10/2021 11:03 PM Microsoft Office ... 74 KB
Training program on IoT (1) (1).docx 9/10/2021 10:51 PM Microsoft Office ... 74 KB
Training program on IoT (1).docx 9/10/2021 10:45 PM Microsoft Office ... 74 KB
Covering letter for Faculty Training Program on IoT.docx 9/9/2021 4:14 PM Microsoft Office ... 12 KB
purchase order.docx 9/9/2021 2:50 PM Microsoft Office ... 13 KB
Proforma_124.pdf 9/9/2021 2:42 PM Foxit Reader PDF ... 116 KB
Training program on IoT.docx 9/9/2021 2:25 PM Microsoft Office ... 74 KB
Covering letter for Faculty Training Program on AI Tools and Applications.docx 9/9/2021 1:59 PM Microsoft Office ... 12 KB
Workshop on AI Tools and Applications (1).docx 9/9/2021 1:59 PM Microsoft Office ... 73 KB
List of Faculty for IOT with proposed plan 08.9.21 1 (1).docx 9/9/2021 9:18 AM Microsoft Office ... 103 KB
wpa_supplicant.conf Date modified: 9/15/2021 8:25 PM Date created: 9/15/2021 8:25 PM
CONF File Size: 133 bytes
8:25 PM
9/15/2021

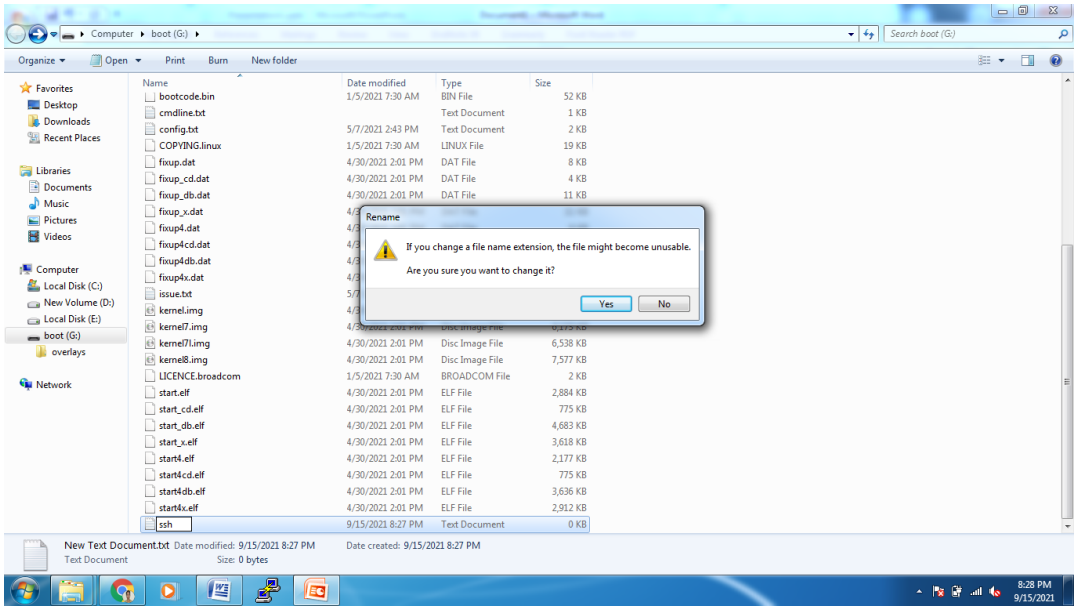

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Share with
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
overlays
Network
Name
Date modified
Type
Size
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt
config.txt
COPYING.linux
fixup.dat
fixup_cd.dat
fixup_db.dat
fixup_x.dat
fixup4.dat
fixup4cd.dat
fixup4db.dat
fixup4x.dat
issue.txt
kernel.img
kernel7.img
kernel7l.img
kernel8.img
LICENCE.broadcom
ssh
start.elf
start_cd.elf
start_db.elf
start_x.elf
start4.elf
start4cd.elf
start4db.elf
start4x.elf
wpa_supplicant.conf - Notepad
File Edit Format View Help
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
country=IN
update_config=1
network={
ssid="myssid"
psk="12345678"
}
42 items
8:32 PM
9/15/2021

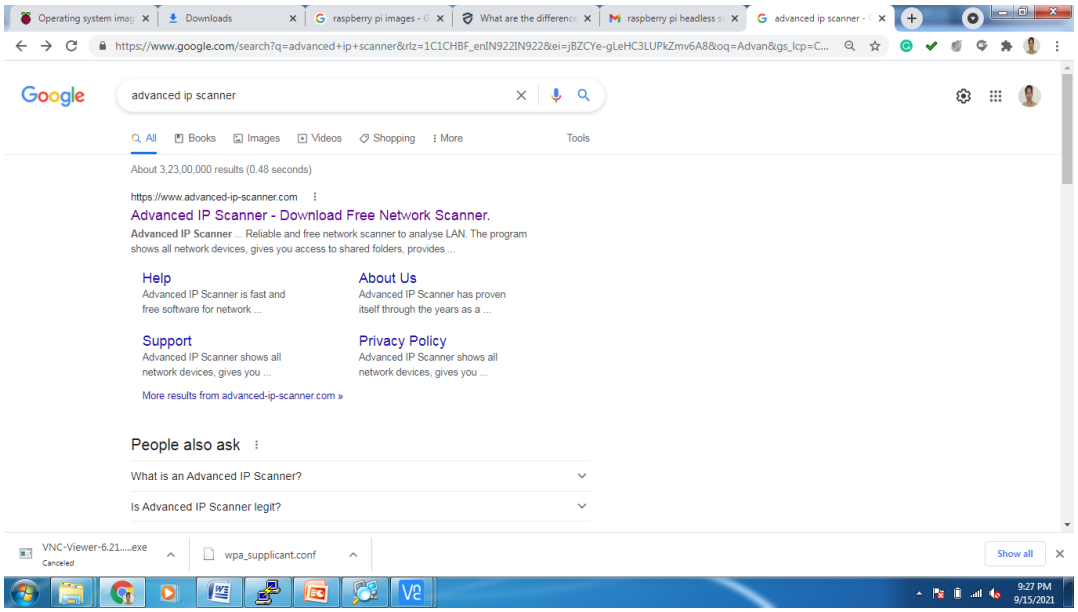

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Share with
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
Network
Name
Date modified
Type
Size
overlays 5/7/2021 2:42 PM File folder
bcm2708-rpi-b.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2708-rpi-b-plus.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2708-rpi-b-rev1.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-cm.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-zero.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-zero-w.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2709-rpi-2-b.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2710-rpi-2-b.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2710-rpi-3-b.dtb 3/3/2021 1:40 PM DTB File 28 KB
bcm2710-rpi-3-b-plus.dtb 3/3/2021 1:40 PM DTB File 29 KB
bcm2710-rpi-cm3.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2711-rpi-4-b.dtb 3/3/2021 1:40 PM DTB File 48 KB
bcm2711-rpi-400.dtb 4/30/2021 2:01 PM DTB File 48 KB
bcm2711-rpi-cm4.dtb 3/3/2021 1:40 PM DTB File 49 KB
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt Text Document 1 KB
config.txt 5/7/2021 2:43 PM Text Document 2 KB
COPYING.linux 1/5/2021 7:30 AM LINUX File 19 KB
fixup.dat 4/30/2021 2:01 PM DAT File 8 KB
fixup_cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup_db.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup_x.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup4.dat 4/30/2021 2:01 PM DAT File 6 KB
fixup4cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup4db.dat 4/30/2021 2:01 PM DAT File 9 KB
41 items
8:26 PM
9/15/2021

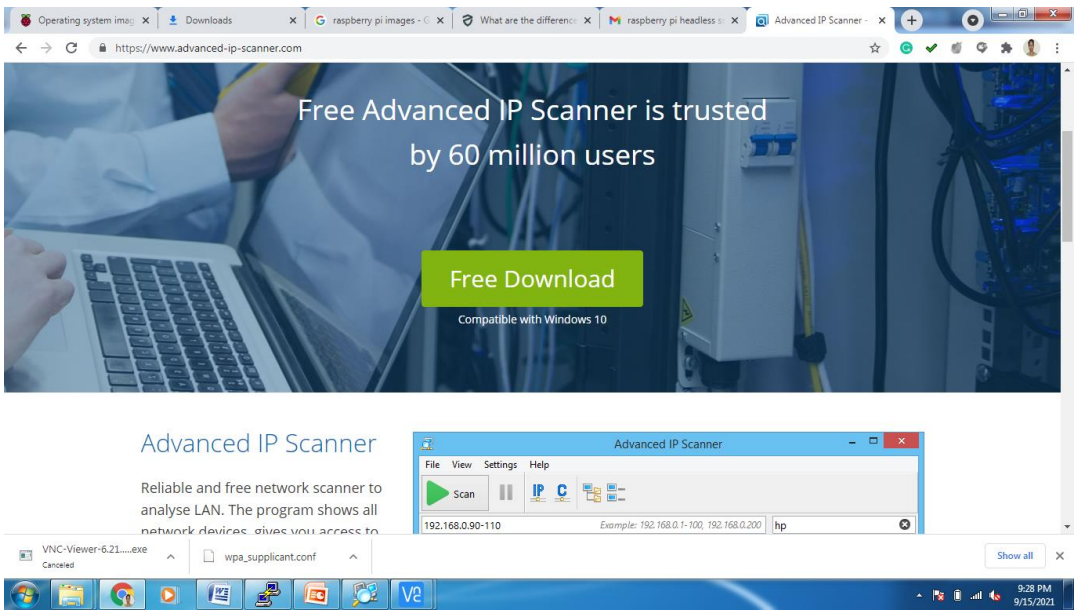

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Share with
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
overlays
Network
Name
Date modified
Type
Size
overlays 5/7/2021 2:42 PM File folder
bcm2708-rpi-b.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2708-rpi-b-plus.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2708-rpi-b-rev1.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-cm.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-zero.dtb 3/3/2021 1:40 PM DTB File 25 KB
bcm2708-rpi-zero-w.dtb 3/3/2021 1:40 PM DTB File 26 KB
bcm2709-rpi-2-b.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2710-rpi-2-b.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2710-rpi-3-b.dtb 3/3/2021 1:40 PM DTB File 28 KB
bcm2710-rpi-3-b-plus.dtb 3/3/2021 1:40 PM DTB File 29 KB
bcm2710-rpi-cm3.dtb 3/3/2021 1:40 PM DTB File 27 KB
bcm2711-rpi-4-b.dtb 3/3/2021 1:40 PM DTB File 48 KB
bcm2711-rpi-400.dtb 4/30/2021 2:01 PM DTB File 48 KB
bcm2711-rpi-cm4.dtb 3/3/2021 1:40 PM DTB File 49 KB
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt Text Document 1 KB
config.txt 5/7/2021 2:43 PM Text Document 2 KB
COPYING.linux 1/5/2021 7:30 AM LINUX File 19 KB
fixup.dat 4/30/2021 2:01 PM DAT File 8 KB
fixup_cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup_db.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup_x.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup4.dat 4/30/2021 2:01 PM DAT File 6 KB
fixup4cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup4db.dat 4/30/2021 2:01 PM DAT File 9 KB
View
Sort by
Group by
Refresh
Customize this folder...
Paste
Paste shortcut
Share with
New
Properties
41 items
8:26 PM
9/15/2021

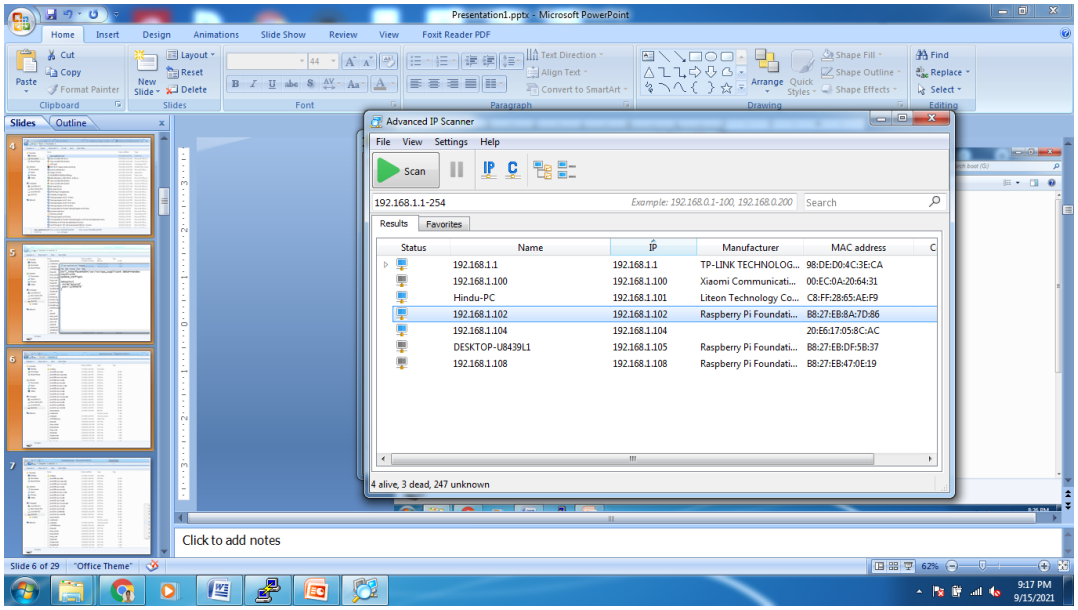

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Share with
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
overlays
Network
Name
Date modified
Type
Size
bcm2711-rpi-cm4.dtb 3/3/2021 1:40 PM DTB File 49 KB
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt Text Document 1 KB
config.txt 5/7/2021 2:43 PM Text Document 2 KB
COPYING.linux 1/5/2021 7:30 AM LINUX File 19 KB
fixup.dat 4/30/2021 2:01 PM DAT File 8 KB
fixup_cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup_db.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup_x.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup4.dat 4/30/2021 2:01 PM DAT File 6 KB
fixup4cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup4db.dat 4/30/2021 2:01 PM DAT File 9 KB
fixup4x.dat 4/30/2021 2:01 PM DAT File 9 KB
issue.txt 5/7/2021 3:07 PM Text Document 1 KB
kernel.img 4/30/2021 2:01 PM Disc Image File 5,842 KB
kernel7.img 4/30/2021 2:01 PM Disc Image File 6,173 KB
kernel7l.img 4/30/2021 2:01 PM Disc Image File 6,538 KB
kernel8.img 4/30/2021 2:01 PM Disc Image File 7,577 KB
LICENCE.broadcom 1/5/2021 7:30 AM BROADCOM File 2 KB
start.elf 4/30/2021 2:01 PM ELF File 2,884 KB
start_cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start_db.elf 4/30/2021 2:01 PM ELF File 4,683 KB
start_x.elf 4/30/2021 2:01 PM ELF File 3,618 KB
start4.elf 4/30/2021 2:01 PM ELF File 2,177 KB
start4cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start4db.elf 4/30/2021 2:01 PM ELF File 3,636 KB
start4x.elf 4/30/2021 2:01 PM ELF File 2,912 KB
Folder
Shortcut
Microsoft Office Access 2007 Database
Bitmap image
Contact
Microsoft Office Word Document
Microsoft Office PowerPoint Presentation
WinRAR archive
Text Document
Microsoft Office Excel Worksheet
WinRAR ZIP archive
Briefcase
View
Sort by
Group by
Refresh
Customize this folder...
Paste
Paste shortcut
Share with
New
Properties
41 items
8:27 PM
9/15/2021

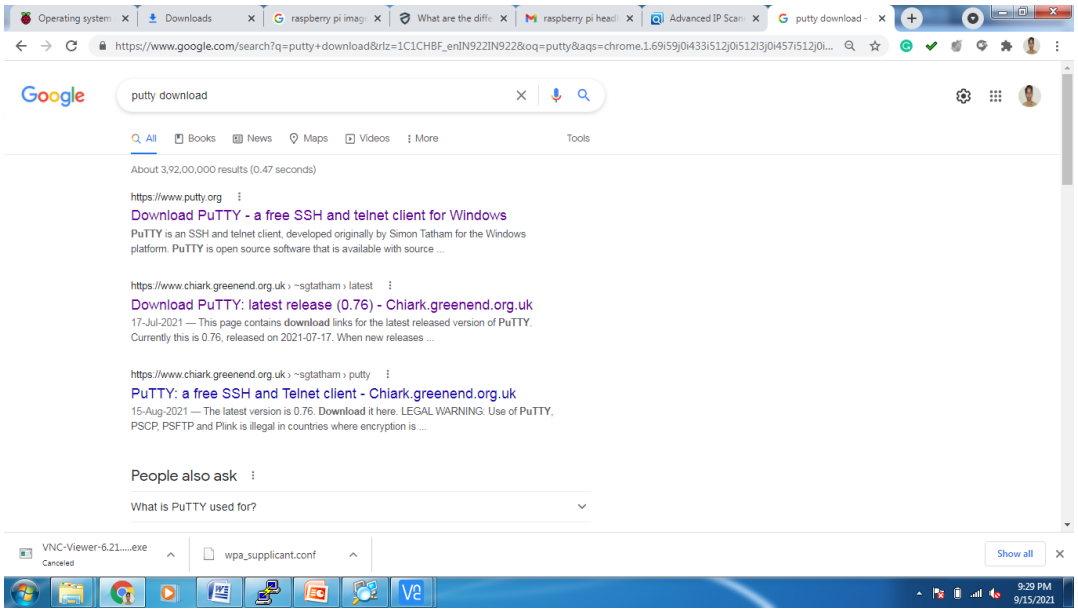

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Open
Print
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
overlays
Network
Name
Date modified
Type
Size
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt Text Document 1 KB
config.txt 5/7/2021 2:43 PM Text Document 2 KB
COPYING.linux 1/5/2021 7:30 AM LINUX File 19 KB
fixup.dat 4/30/2021 2:01 PM DAT File 8 KB
fixup_cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup_db.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup_x.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup4.dat 4/30/2021 2:01 PM DAT File 6 KB
fixup4cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup4db.dat 4/30/2021 2:01 PM DAT File 9 KB
fixup4x.dat 4/30/2021 2:01 PM DAT File 9 KB
issue.txt 5/7/2021 3:07 PM Text Document 1 KB
kernel.img 4/30/2021 2:01 PM Disc Image File 5,842 KB
kernel7.img 4/30/2021 2:01 PM Disc Image File 6,173 KB
kernel7l.img 4/30/2021 2:01 PM Disc Image File 6,538 KB
kernel8.img 4/30/2021 2:01 PM Disc Image File 7,577 KB
LICENCE.broadcom 1/5/2021 7:30 AM BROADCOM File 2 KB
start.elf 4/30/2021 2:01 PM ELF File 2,884 KB
start_cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start_db.elf 4/30/2021 2:01 PM ELF File 4,683 KB
start_x.elf 4/30/2021 2:01 PM ELF File 3,618 KB
start4.elf 4/30/2021 2:01 PM ELF File 2,177 KB
start4cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start4db.elf 4/30/2021 2:01 PM ELF File 3,636 KB
start4x.elf 4/30/2021 2:01 PM ELF File 2,912 KB
New Text Document.txt 9/15/2021 8:27 PM Text Document 0 KB
New Text Document.txt Date modified: 9/15/2021 8:27 PM Date created: 9/15/2021 8:27 PM
Text Document Size: 0 bytes
8:27 PM
9/15/2021

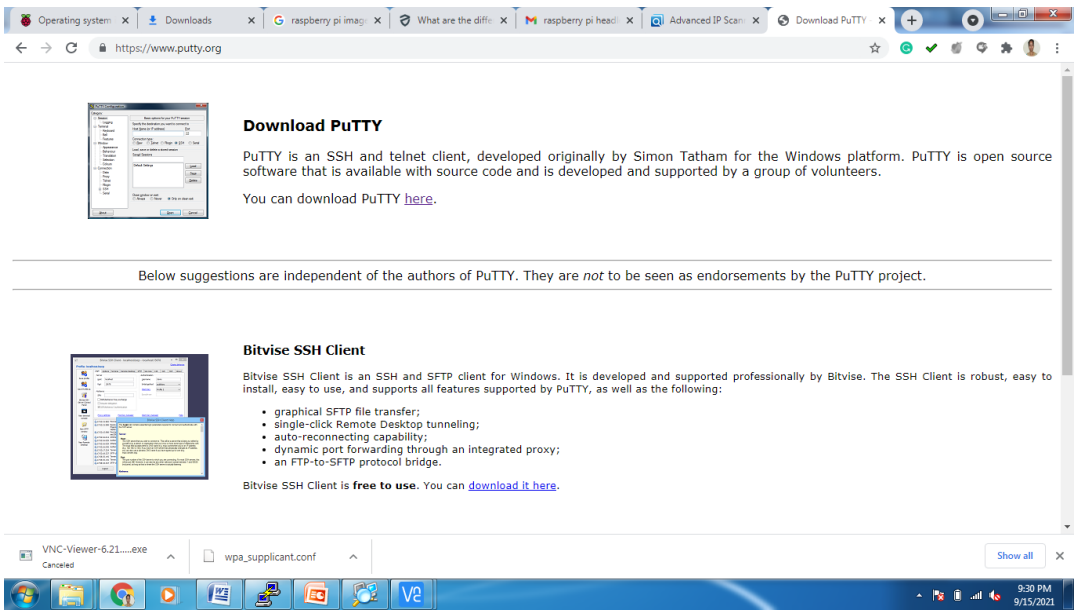

Computer ▸ boot (G:) ▸
Search boot (G:)
Organize
Open
Print
Burn
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
New Volume (D:)
Local Disk (E:)
boot (G:)
overlays
Network
Name
Date modified
Type
Size
bootcode.bin 1/5/2021 7:30 AM BIN File 52 KB
cmdline.txt Text Document 1 KB
config.txt 5/7/2021 2:43 PM Text Document 2 KB
COPYING.linux 1/5/2021 7:30 AM LINUX File 19 KB
fixup.dat 4/30/2021 2:01 PM DAT File 8 KB
fixup_cd.dat 4/30/2021 2:01 PM DAT File 4 KB
fixup_db.dat 4/30/2021 2:01 PM DAT File 11 KB
fixup_x.dat
fixup4.dat
fixup4cd.dat
fixup4db.dat
fixup4x.dat
issue.txt
kernel.img
kernel7.img
kernel7l.img 4/30/2021 2:01 PM Disc Image File 6,538 KB
kernel8.img 4/30/2021 2:01 PM Disc Image File 7,577 KB
LICENCE.broadcom 1/5/2021 7:30 AM BROADCOM File 2 KB
start.elf 4/30/2021 2:01 PM ELF File 2,884 KB
start_cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start_db.elf 4/30/2021 2:01 PM ELF File 4,683 KB
start_x.elf 4/30/2021 2:01 PM ELF File 3,618 KB
start4.elf 4/30/2021 2:01 PM ELF File 2,177 KB
start4cd.elf 4/30/2021 2:01 PM ELF File 775 KB
start4db.elf 4/30/2021 2:01 PM ELF File 3,636 KB
start4x.elf 4/30/2021 2:01 PM ELF File 2,912 KB
ssh 9/15/2021 8:27 PM Text Document 0 KB
Rename
If you change a file name extension, the file might become unusable.
Are you sure you want to change it?
Yes
No
New Text Document.txt Date modified: 9/15/2021 8:27 PM Date created: 9/15/2021 8:27 PM
Text Document Size: 0 bytes
8:28 PM
9/15/2021

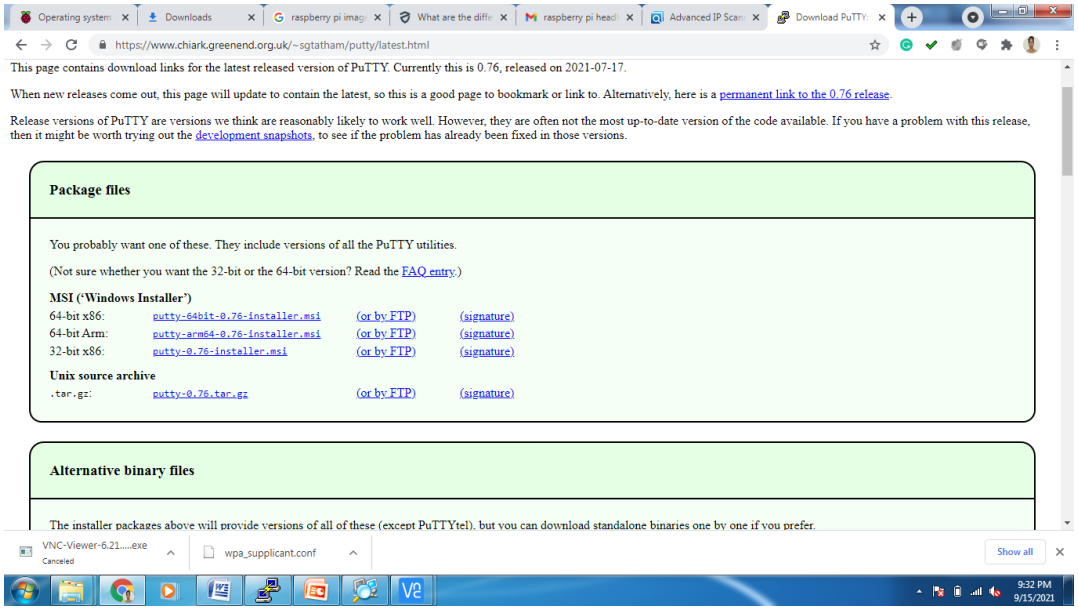

Operating system imag
Downloads
raspberry pi images -
What are the differenc
raspberry pi headless s
advanced ip scanner -
https://www.google.com/search?q=advanced+ip+scanner&rlz=1C1CHBF_enIN922IN922&ei=jBZCYe-gLeHC3LUPkZmv6A8&oq=Advan&gs_lcp=C...
Google
advanced ip scanner
All
Books
Images
Videos
Shopping
More
Tools
About 3,23,00,000 results (0.48 seconds)
https://www.advanced-ip-scanner.com
Advanced IP Scanner - Download Free Network Scanner.
Advanced IP Scanner ... Reliable and free network scanner to analyse LAN. The program shows all network devices, gives you access to shared folders, provides ...
Help
Advanced IP Scanner is fast and free software for network ...
About Us
Advanced IP Scanner has proven itself through the years as a ...
Support
Advanced IP Scanner shows all network devices, gives you ...
Privacy Policy
Advanced IP Scanner shows all network devices, gives you ...
More results from advanced-ip-scanner.com »
People also ask
What is an Advanced IP Scanner?
Is Advanced IP Scanner legit?
VNC-Viewer-6.21.....exe
Canceled
wpa_supplicant.conf
Show all
9:27 PM
9/15/2021

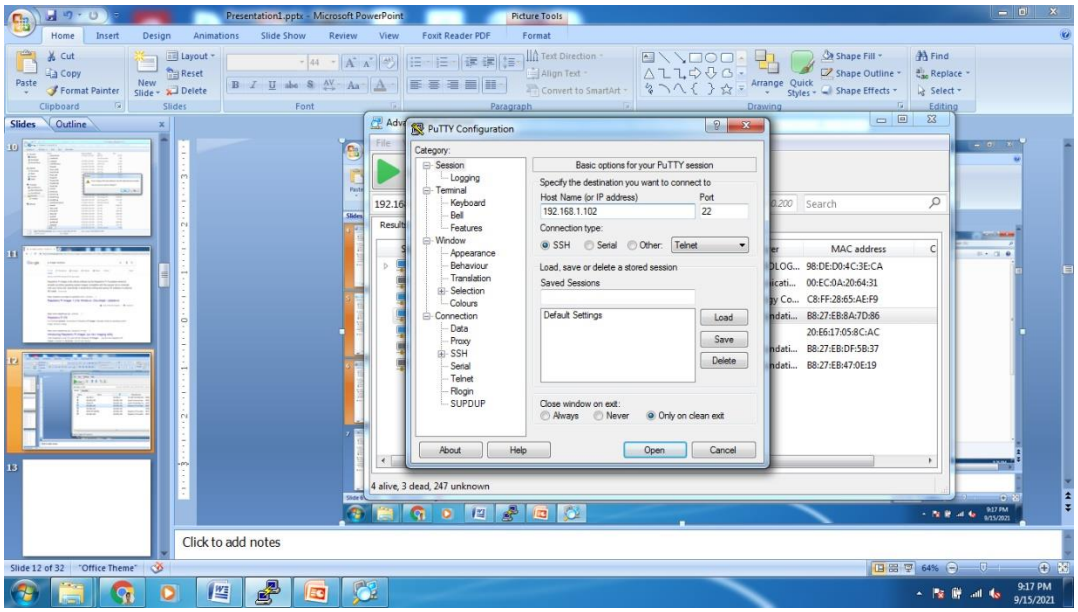

Operating system imag
Downloads
raspberry pi images -
What are the differenc
raspberry pi headless s
Advanced IP Scanner -
https://www.advanced-ip-scanner.com
Free Advanced IP Scanner is trusted by 60 million users
Free Download
Compatible with Windows 10
Advanced IP Scanner
Reliable and free network scanner to analyse LAN. The program shows all
Advanced IP Scanner
File
View
Settings
Help
Scan
192.168.0.90-110
Example: 192.168.0.1-100, 192.168.0.200
hp
VNC-Viewer-6.21.....exe
Canceled
wpa_supplicant.conf
Show all
9:28 PM
9/15/2021

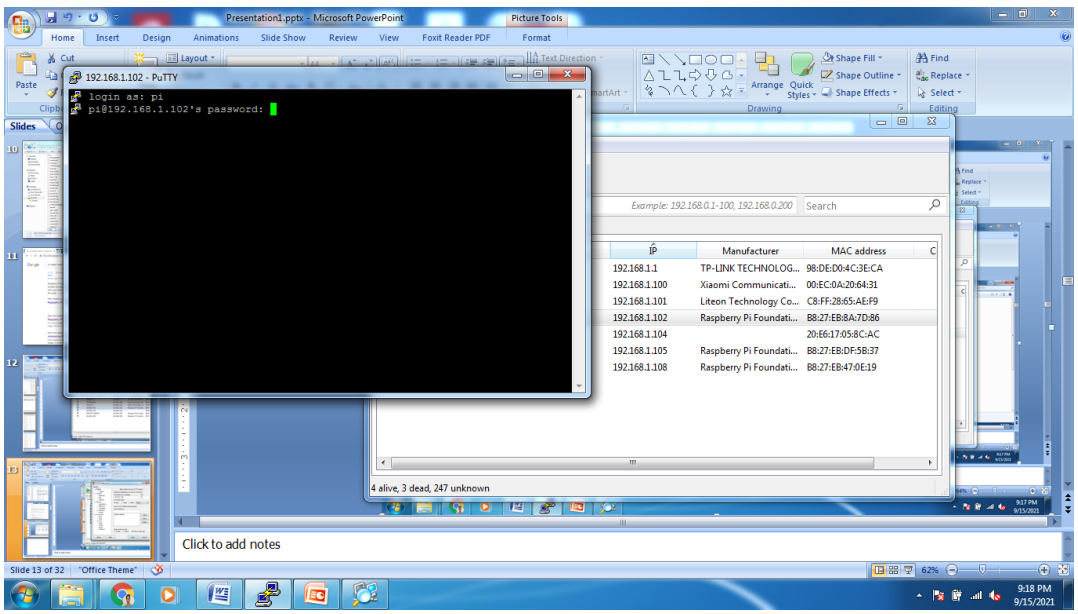

Presentation1.pptx - Microsoft PowerPoint
Advanced IP Scanner
Scan
192.168.1.1-254
Results
Favorites
Status
Name
IP
Manufacturer
MAC address
192.168.1.1 TP-LINK TECHNOLOG... 98:DE:D0:4C:3E:CA
192.168.1.100 Xiaomi Communicati... 00:EC:0A:20:64:31
Hindu-PC 192.168.1.101 Liteon Technology Co... C8:FF:28:65:AE:F9
192.168.1.102 Raspberry Pi Foundati... B8:27:EB:8A:7D:86
192.168.1.104 20:E6:17:05:8C:AC
DESKTOP-U8439L1 192.168.1.105 Raspberry Pi Foundati... B8:27:EB:DF:5B:37
192.168.1.108 Raspberry Pi Foundati... B8:27:EB:47:0E:19
4 alive, 3 dead, 247 unknown
Click to add notes
9:17 PM
9/15/2021

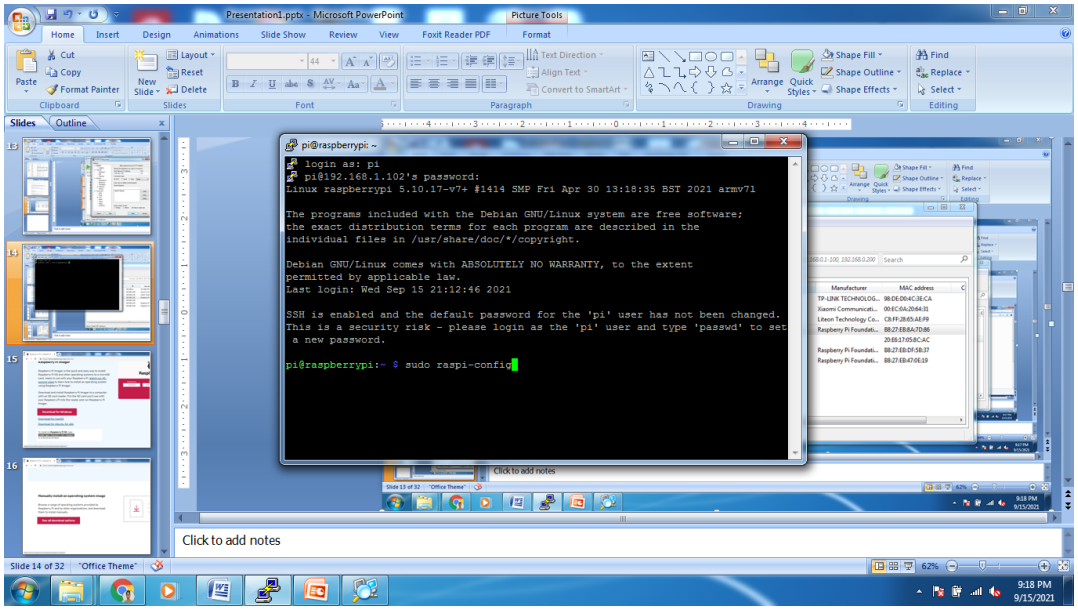

putty download
About 3,92,00,000 results (0.47 seconds)
https://www.putty.org
Download PuTTY - a free SSH and telnet client for Windows
PuTTY is an SSH and telnet client, developed originally by Simon Tatham for the Windows platform. PuTTY is open source software that is available with source ...
https://www.chiark.greenend.org.uk › ~sgtatham › latest
Download PuTTY: latest release (0.76) - Chiark.greenend.org.uk
17-Jul-2021 — This page contains download links for the latest released version of PuTTY. Currently this is 0.76, released on 2021-07-17. When new releases ...
https://www.chiark.greenend.org.uk › ~sgtatham › putty
PuTTY: a free SSH and Telnet client - Chiark.greenend.org.uk
15-Aug-2021 — The latest version is 0.76. Download it here. LEGAL WARNING: Use of PuTTY, PSCP, PSFTP and Plink is illegal in countries where encryption is ...
People also ask
What is PuTTY used for?
VNC-Viewer-6.21....exe
Canceled
wpa_supplicant.conf
Show all
9:29 PM
9/15/2021

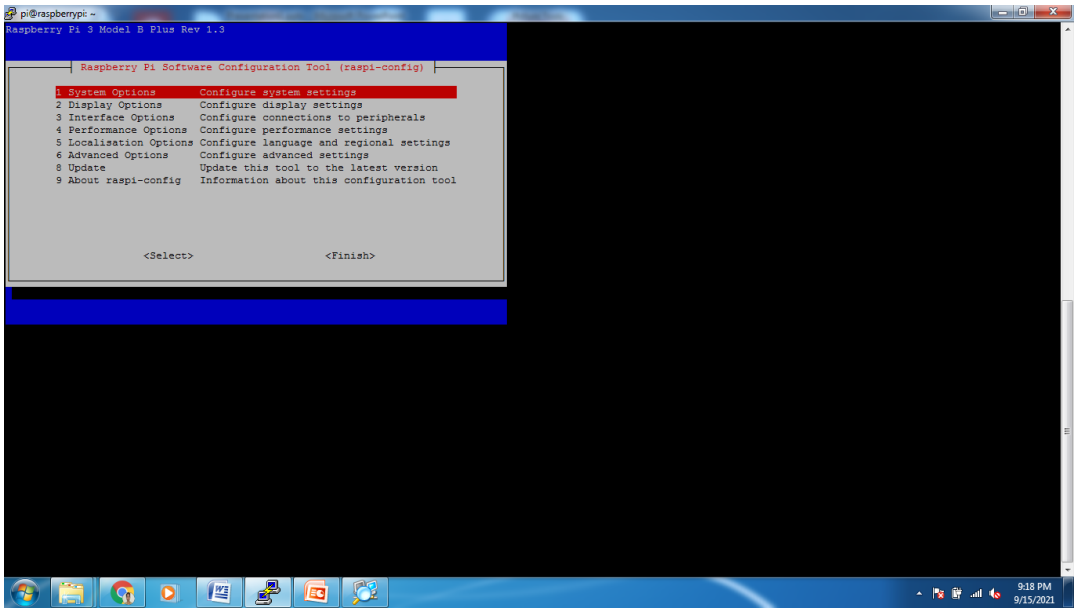

https://www.putty.org
Download PuTTY
PuTTY is an SSH and telnet client, developed originally by Simon Tatham for the Windows platform. PuTTY is open source software that is available with source code and is developed and supported by a group of volunteers.
You can download PuTTY here.
Below suggestions are independent of the authors of PuTTY. They are not to be seen as endorsements by the PuTTY project.
Bitvise SSH Client
Bitvise SSH Client is an SSH and SFTP client for Windows. It is developed and supported professionally by Bitvise. The SSH Client is robust, easy to install, easy to use, and supports all features supported by PuTTY, as well as the following:
graphical SFTP file transfer;
single-click Remote Desktop tunneling;
auto-reconnecting capability;
dynamic port forwarding through an integrated proxy;
an FTP-to-SFTP protocol bridge.
Bitvise SSH Client is free to use. You can download it here.
VNC-Viewer-6.21....exe
Canceled
wpa_supplicant.conf
Show all
9:30 PM
9/15/2021

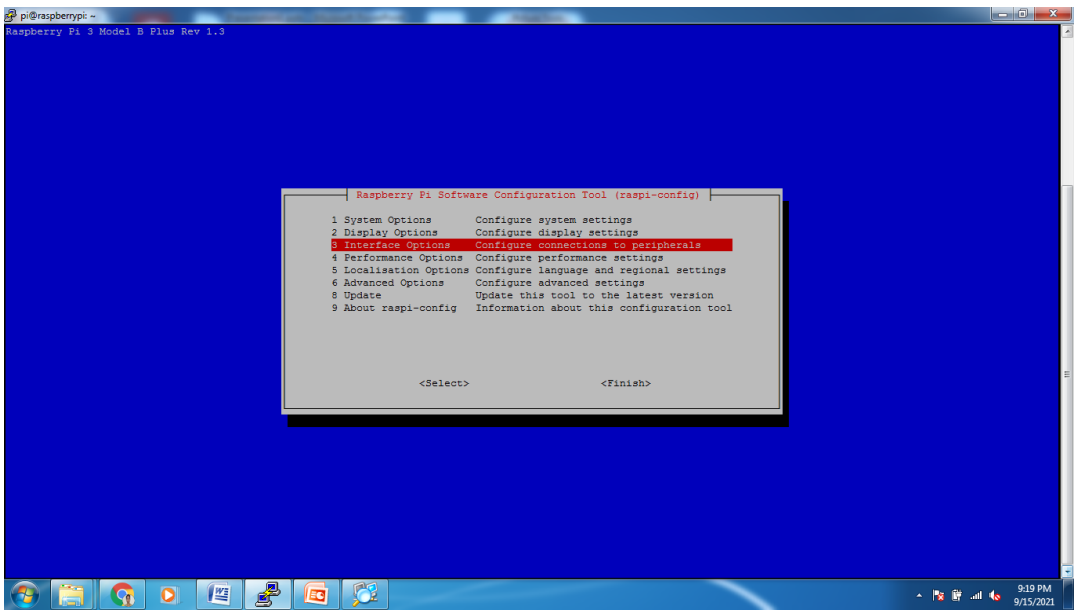

Operating system
Downloads
raspberry pi imag
What are the diffe
raspberry pi headl
Advanced IP Scan
Download PuTTY:
https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html
This page contains download links for the latest released version of PuTTY. Currently this is 0.76, released on 2021-07-17.
When new releases come out, this page will update to contain the latest, so this is a good page to bookmark or link to. Alternatively, here is a permanent link to the 0.76 release.
Release versions of PuTTY are versions we think are reasonably likely to work well. However, they are often not the most up-to-date version of the code available. If you have a problem with this release, then it might be worth trying out the development snapshots, to see if the problem has already been fixed in those versions.
Package files
You probably want one of these. They include versions of all the PuTTY utilities.
(Not sure whether you want the 32-bit or the 64-bit version? Read the FAQ entry.)
MSI ('Windows Installer')
64-bit x86: putty-64bit-0.76-installer.msi (or by FTP) (signature)
64-bit Arm: putty-arm64-0.76-installer.msi (or by FTP) (signature)
32-bit x86: putty-0.76-installer.msi (or by FTP) (signature)
Unix source archive
.tar.gz: putty-0.76.tar.gz (or by FTP) (signature)
Alternative binary files
The installer packages above will provide versions of all of these (except PuTTYtel), but you can download standalone binaries one by one if you prefer.
VNC-Viewer-6.21.....exe
Canceled
wpa_supplicant.conf
Show all
9:32 PM
9/15/2021

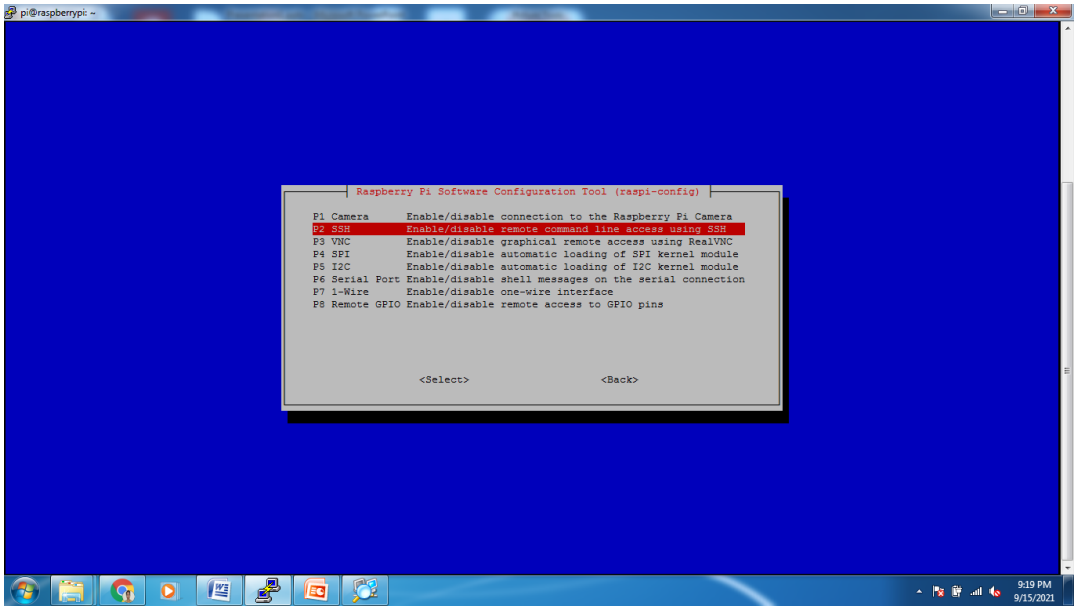

Presentation1.pptx - Microsoft PowerPoint
Picture Tools
PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
SSH
Serial
Telnet
Rlogin
SUPDUP
Basic options for your PuTTY session
Specify the destination you want to connect to
Host Name (or IP address)
Port
192.168.1.102
22
Connection type:
SSH
Serial
Other:
Telnet
Load, save or delete a stored session
Saved Sessions
Default Settings
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Help
Open
Cancel
4 alive, 3 dead, 247 unknown
Click to add notes
9:17 PM
9/15/2021

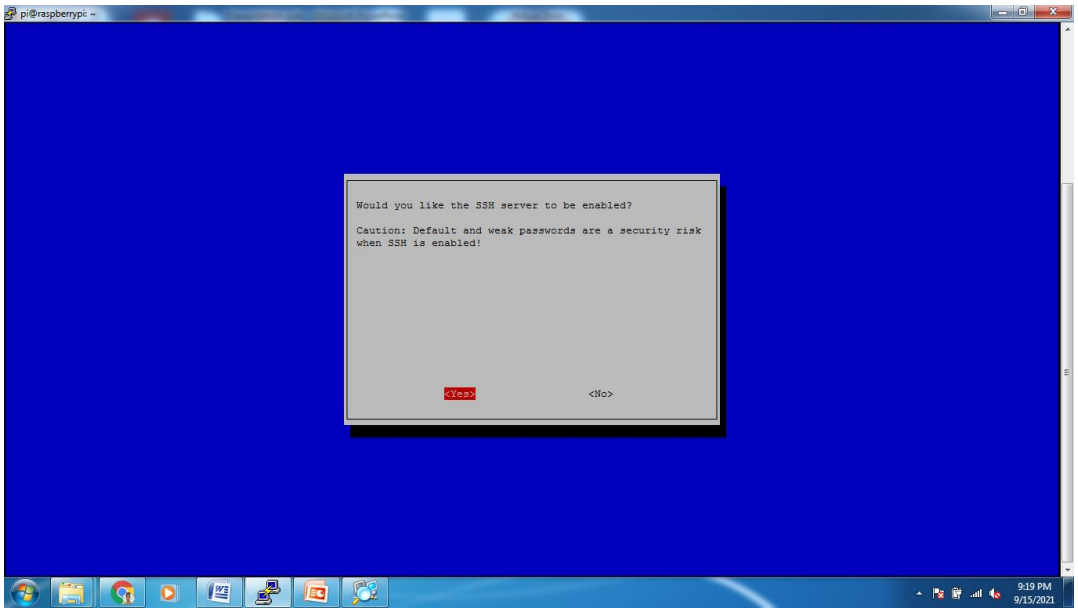

Presentation1.pptx - Microsoft PowerPoint
Picture Tools
192.168.1.102 - PuTTY
login as: pi
pi@192.168.1.102's password:
IP
Manufacturer
MAC address
192.168.1.1 TP-LINK TECHNOLOG... 98:DE:D0:4C:3E:CA
192.168.1.100 Xiaomi Communicati... 00:EC:0A:20:64:31
192.168.1.101 Liteon Technology Co... C8:FF:28:65:AE:F9
192.168.1.102 Raspberry Pi Foundati... B8:27:EB:8A:7D:86
192.168.1.104 20:E6:17:05:8C:AC
192.168.1.105 Raspberry Pi Foundati... B8:27:EB:DF:5B:37
192.168.1.108 Raspberry Pi Foundati... B8:27:EB:47:0E:19
4 alive, 3 dead, 247 unknown
Click to add notes
9:18 PM
9/15/2021

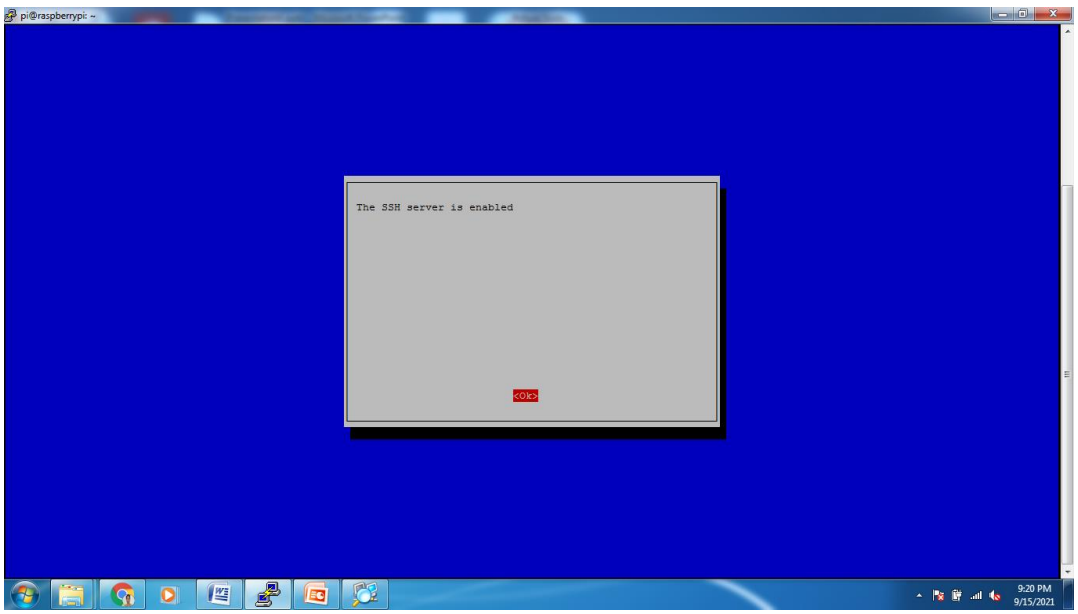

Presentation1.pptx - Microsoft PowerPoint
Picture Tools
pi@raspberrypi: ~
login as: pi
pi@192.168.1.102's password:
Linux raspberrypi 5.10.17-v7+ #1414 SMP Fri Apr 30 13:18:35 BST 2021 armv7l
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Sep 15 21:12:46 2021
SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set
a new password.
pi@raspberrypi:~ $ sudo raspi-config
Click to add notes
Slide 14 of 32
"Office Theme"
62%
9:18 PM
9/15/2021

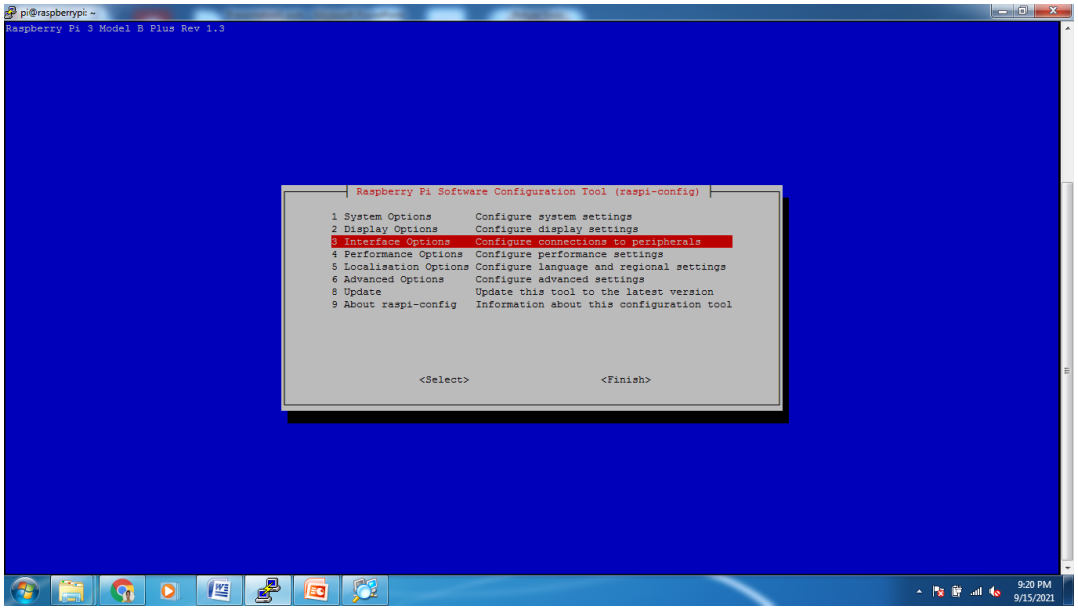

pi@raspberrypi: ~
Raspberry Pi 3 Model B Plus Rev 1.3
Raspberry Pi Software Configuration Tool (raspi-config)
1 System Options Configure system settings
2 Display Options Configure display settings
3 Interface Options Configure connections to peripherals
4 Performance Options Configure performance settings
5 Localisation Options Configure language and regional settings
6 Advanced Options Configure advanced settings
8 Update Update this tool to the latest version
9 About raspi-config Information about this configuration tool
<Select>
<Finish>
9:18 PM
9/15/2021

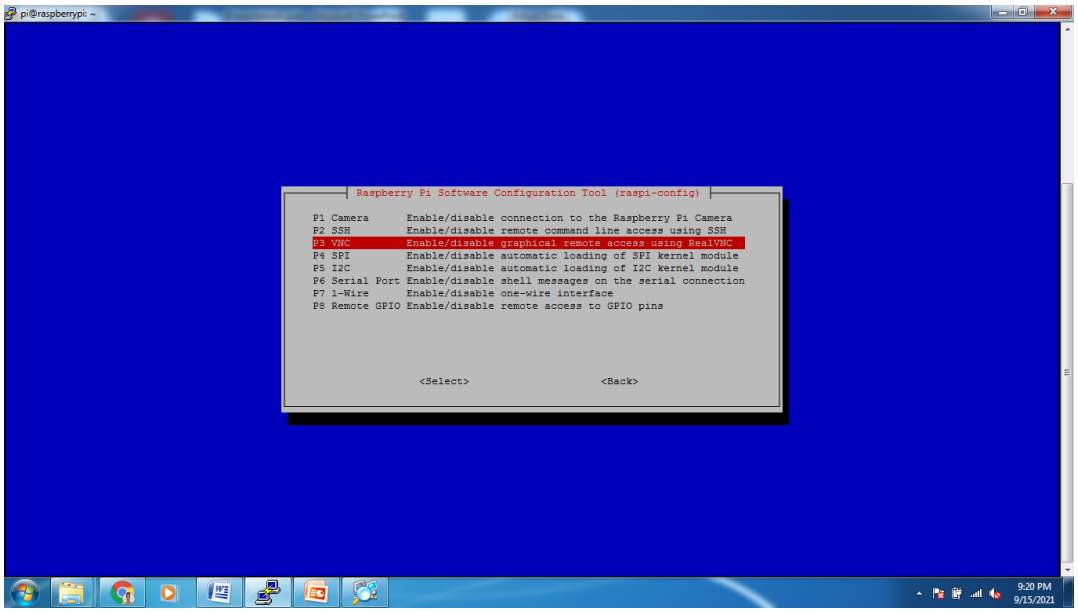

pi@raspberrypi: ~
Raspberry Pi 3 Model B Plus Rev 1.3
Raspberry Pi Software Configuration Tool (raspi-config)
1 System Options Configure system settings
2 Display Options Configure display settings
3 Interface Options Configure connections to peripherals
4 Performance Options Configure performance settings
5 Localisation Options Configure language and regional settings
6 Advanced Options Configure advanced settings
8 Update Update this tool to the latest version
9 About raspi-config Information about this configuration tool
<Select>
<Finish>
9:19 PM
9/15/2021

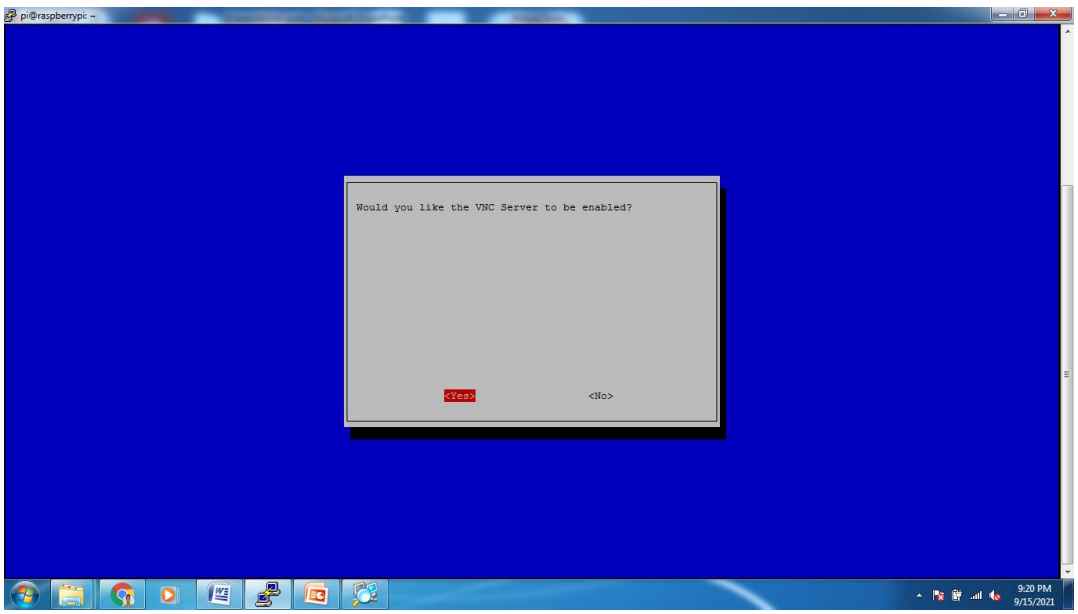

pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)
P1 Camera Enable/disable connection to the Raspberry Pi Camera
P2 SSH Enable/disable remote command line access using SSH
P3 VNC Enable/disable graphical remote access using RealVNC
P4 SPI Enable/disable automatic loading of SPI kernel module
P5 I2C Enable/disable automatic loading of I2C kernel module
P6 Serial Port Enable/disable shell messages on the serial connection
P7 1-Wire Enable/disable one-wire interface
P8 Remote GPIO Enable/disable remote access to GPIO pins
<Select>
<Back>
9:19 PM
9/15/2021

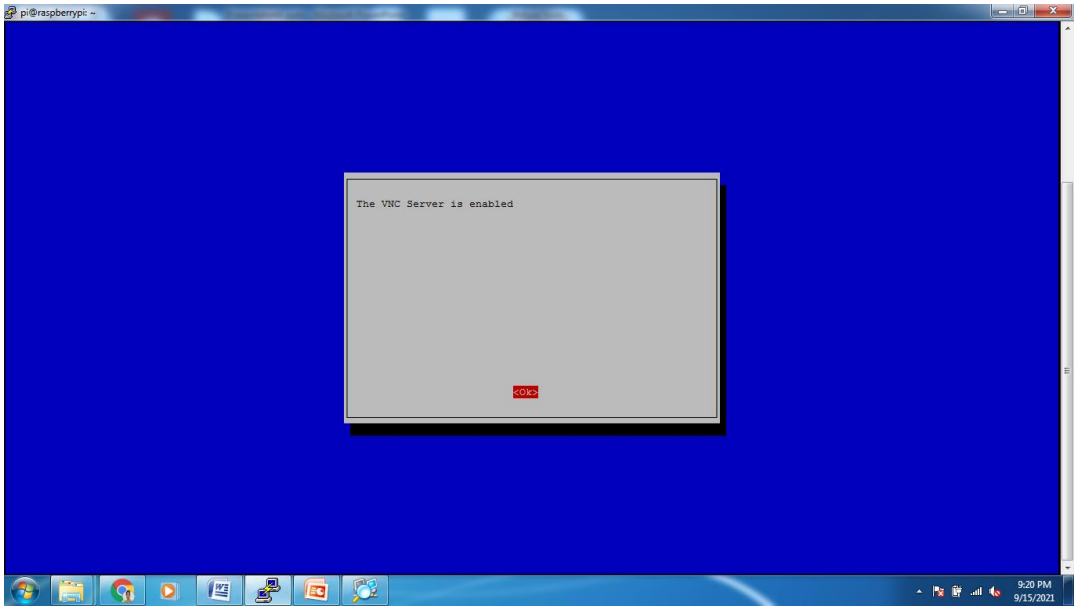

pi@raspberrypi: ~
Would you like the SSH server to be enabled?
Caution: Default and weak passwords are a security risk when SSH is enabled!
<Yes>
<No>
9:19 PM
9/15/2021

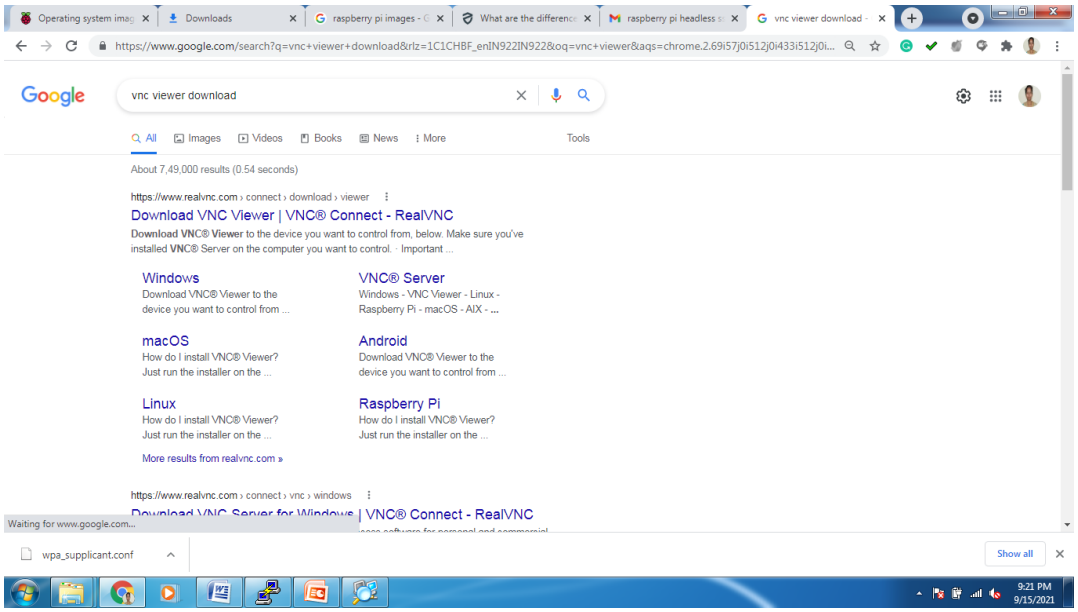

pi@raspberrypi: ~
The SSH server is enabled
<Ok>
9:20 PM
9/15/2021

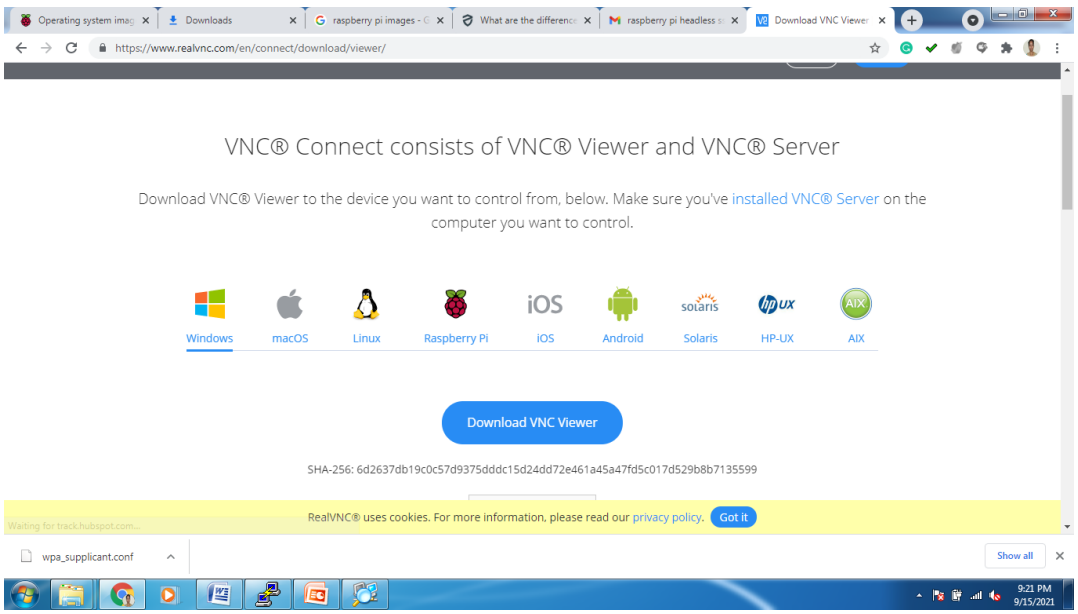

pi@raspberrypi: ~
Raspberry Pi 3 Model B Plus Rev 1.3
Raspberry Pi Software Configuration Tool (raspi-config)
1 System Options Configure system settings
2 Display Options Configure display settings
3 Interface Options Configure connections to peripherals
4 Performance Options Configure performance settings
5 Localisation Options Configure language and regional settings
6 Advanced Options Configure advanced settings
8 Update Update this tool to the latest version
9 About raspi-config Information about this configuration tool
<Select>
<Finish>
9:20 PM
9/15/2021

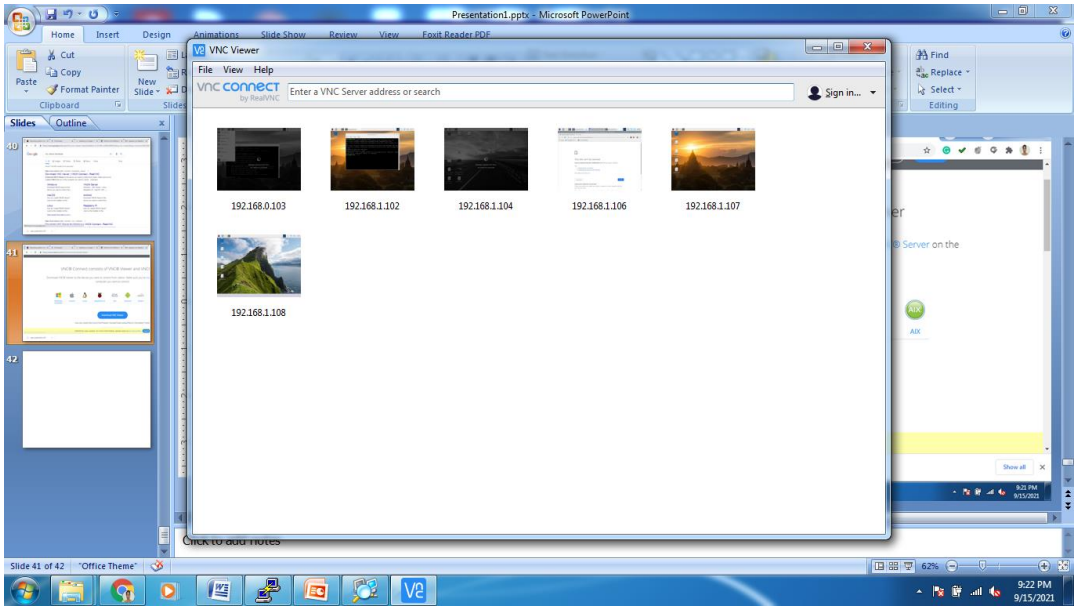

pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)
P1 Camera Enable/disable connection to the Raspberry Pi Camera
P2 SSH Enable/disable remote command line access using SSH
P3 VNC Enable/disable graphical remote access using RealVNC
P4 SPI Enable/disable automatic loading of SPI kernel module
P5 I2C Enable/disable automatic loading of I2C kernel module
P6 Serial Port Enable/disable shell messages on the serial connection
P7 1-Wire Enable/disable one-wire interface
P8 Remote GPIO Enable/disable remote access to GPIO pins
<Select>
<Back>
9:20 PM
9/15/2021

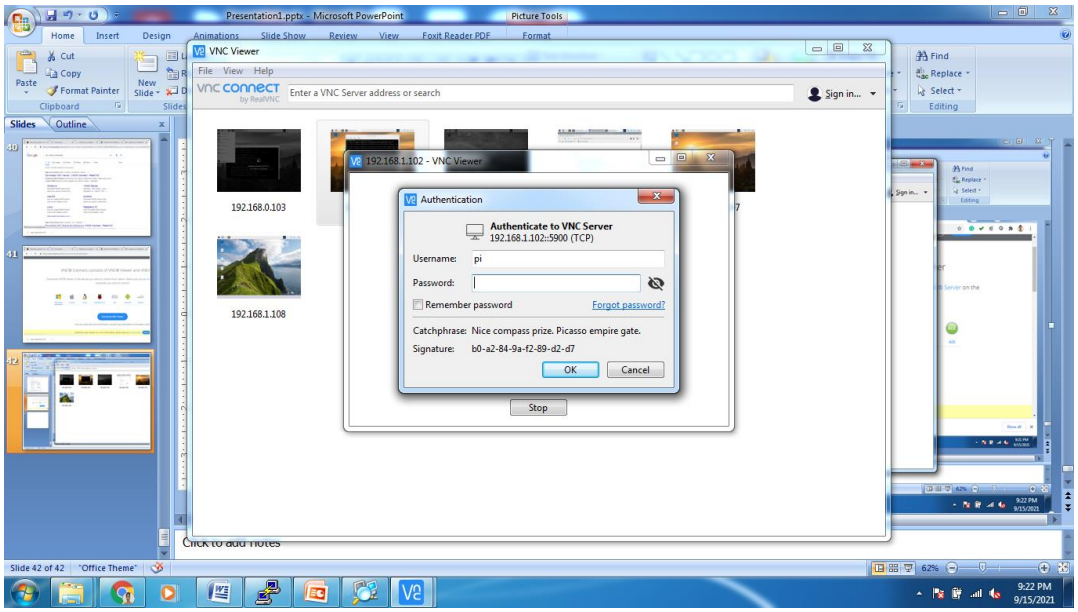

pi@raspberrypi: ~
Would you like the VNC Server to be enabled?
<Yes>
<No>
9:20 PM
9/15/2021


pi@raspberrypi: ~
The VNC Server is enabled
<OK>
9:20 PM
9/15/2021


Operating system imag
Downloads
raspberry pi images -
What are the difference
raspberry pi headless s
vnc viewer download -
https://www.google.com/search?q=vnc+viewer+download&rlz=1C1CHBF_enIN922IN922&oq=vnc+viewer&aqs=chrome.2.69i57j0i512j0i433i512j0i...
Google
vnc viewer download
All
Images
Videos
Books
News
More
Tools
About 7,49,000 results (0.54 seconds)
https://www.realvnc.com › connect › download › viewer
Download VNC Viewer | VNC® Connect - RealVNC
Download VNC® Viewer to the device you want to control from, below. Make sure you've installed VNC® Server on the computer you want to control. · Important ...
Windows
Download VNC® Viewer to the device you want to control from ...
VNC® Server
Windows - VNC Viewer - Linux - Raspberry Pi - macOS - AIX - ...
macOS
How do I install VNC® Viewer? Just run the installer on the ...
Android
Download VNC® Viewer to the device you want to control from ...
Linux
How do I install VNC® Viewer? Just run the installer on the ...
Raspberry Pi
How do I install VNC® Viewer? Just run the installer on the ...
More results from realvnc.com »
https://www.realvnc.com › connect › vnc › windows
Download VNC Server for Windows | VNC® Connect - RealVNC
Waiting for www.google.com...
wpa_supplicant.conf
Show all
9:21 PM
9/15/2021


Operating system imag
Downloads
raspberry pi images -
What are the difference
raspberry pi headless s
Download VNC Viewer
https://www.realvnc.com/en/connect/download/viewer/
VNC® Connect consists of VNC® Viewer and VNC® Server
Download VNC® Viewer to the device you want to control from, below. Make sure you've installed VNC® Server on the computer you want to control.
Windows
macOS
Linux
Raspberry Pi
iOS
Android
Solaris
HP-UX
AIX
Download VNC Viewer
SHA-256: 6d2637db19c0c57d9375dddc15d24dd72e461a45a47fd5c017d529b8b7135599
RealVNC® uses cookies. For more information, please read our privacy policy.
Got it
Waiting for track.hubspot.com...
wpa_supplicant.conf
Show all
9:21 PM
9/15/2021





WEEK-8

Interface RGB LED with Raspberry Pi to obtain different colours and brightness using PWM.

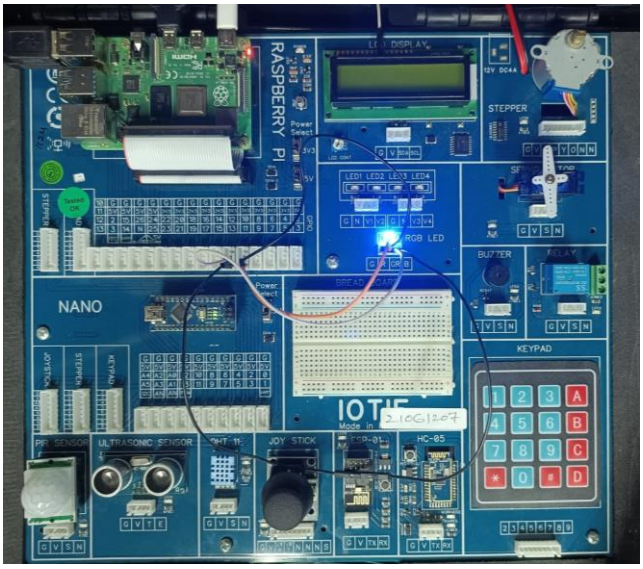
1.

AIM: To interface RGB LED brightness using PWM pins with Raspberry Pi.
PROGRAM:

```
import RPi.GPIO as g

import time


g.setmode(g.BCM)
```

```
g.setwarnings(False)
ground = 10
red = 11
green = 12
blue = 13
g.setup(red, g.OUT)
g.setup(green, g.OUT)
g.setup(blue, g.OUT)
g.setup(ground, g.OUT)
g.OUTPUT(ground, g.LOW)
p = g.PWM(11,100)
q = g.PWM(12,100)
r = g.PWM(13,100)
p.start(0)
q.start(10)
r.start(50)
while True:
   for i in range(50):
      p.ChangeDutyCycle(i)
      q.ChangeDutyCycle(i)
      r.ChangeDutyCycle(i)
      time.sleep(0.5)
   for i in range(50):
      p.ChangeDutyCycle(100-i)
      q.ChangeDutyCycle(100-i)
      r.ChangeDutyCycle(100-i)
      time.sleep(0.5)
```

CIRCUIT:



2.

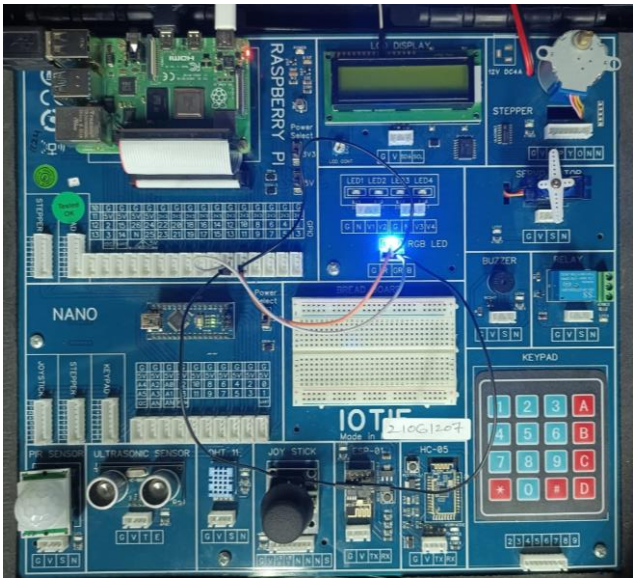
AIM: To interface RGB LED with Raspberry Pi to obtain different colors through user input.

PROGRAM:

```
import RPi.GPIO as g

import time


g.setmode(g.BCM)

g.setwarnings(False)

ledpinone = 11

ledpintwo = 12

ledpinthree = 13


g.setup(10, g.LOW)

g.setup(ledpinone, g.OUT)

g.setup(ledpintwo, g.OUT)

g.setup(ledpinthree, g.OUT)

while True:

   color = input()

   if color == 'red':
```

```
    g.OUTPUT(ledpinone, g.HIGH)
    g.OUTPUT(ledpintwo, g.LOW)
    g.OUTPUT(ledpinthree, g.LOW)
  elif color == 'green':
    g.OUTPUT(ledpinone, g.LOW)
    g.OUTPUT(ledpintwo, g.HIGH)
    g.OUTPUT(ledpinthree, g.LOW)
  elif color == 'blue':
    g.OUTPUT(ledpinone, g.LOW)
    g.OUTPUT(ledpintwo, g.LOW)
    g.OUTPUT(ledpinthree, g.HIGH)
```

CIRCUIT:



3.

AIM: To interface RGB led individual brightness using PWM pins with user input.

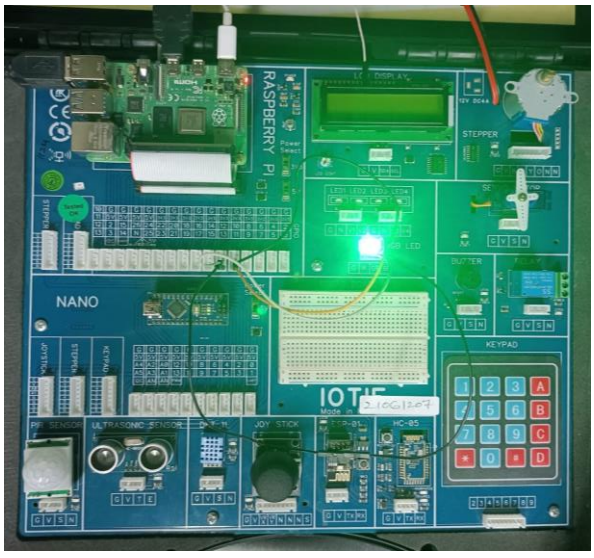
PROGRAM:

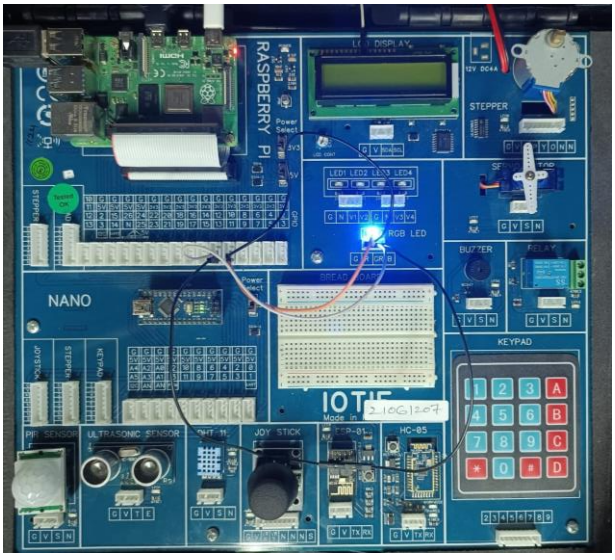
```
import RPi.GPIO as g
import time


g.setmode(g.BCM)
```

```
g.setwarnings(False)
ground = 10
red = 11
green = 12
blue = 13

g.setup(red, g.OUT)
g.setup(green, g.OUT)
g.setup(blue, g.OUT)
g.setup(ground, g.OUT)
g.OUTPUT(ground, g.LOW)

p = g.PWM(11,100)
q = g.PWM(12,100)
r = g.PWM(13,100)

p.start(0)
q.start(0)
r.start(0)

while True:
   color = input()
   if color == 'red':
      for x in range(100):
         p.ChangeDutyCycle(x)
         time.sleep(0.05)
      for x in range(100):
         p.ChangeDutyCycle(100-x)
         time.sleep(0.05)
   elif color =='green':
      for x in range(100):
```

```
        q.ChangeDutyCycle(x)
        time.sleep(0.05)
    for x in range(100):
        q.ChangeDutyCycle(100-x)
        time.sleep(0.05)
elif color == 'blue':
    for x in range(100):
        r.ChangeDutyCycle(x)
        time.sleep(0.05)
    for x in range(100):
        r.ChangeDutyCycle(100-x)
        time.sleep(0.05)
```

CIRCUIT:





WEEK-9

a) Interface an ultrasonic sensor with Raspberry pi to print distance readings on the monitor when the sensor changes its position.
b) Reading the data from an analog sensor with Raspberry using Arduino serial port or ADC MCP3208 using SPI.

1.

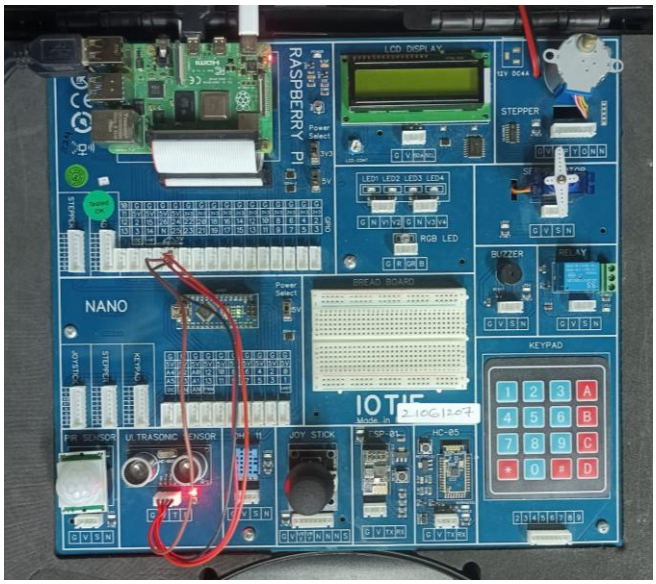
AIM: To interface an ultrasonic sensor with Raspberry pi to print distance readings on the monitor when the sensor changes its position.

PROGRAM:

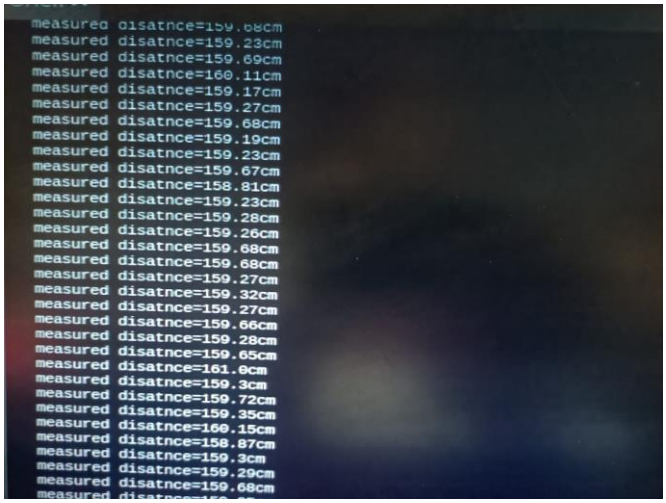
```
import RPi.GPIO as g
import time


def distance(trigpin, echopin):
    g.output(trigpin, True)
    time.sleep(0.0001)
    g.output(trigpin, False)
    while g.input(echopin) == 0:
      pulse_start = time.time()
    while g.input(echopin) == 1:
      pulse_end = time.time()
    try:
      pulse_duration = pulse_end - pulse_start
    except:
      print('Calibrating')
      return -1
    distance = pulse_duration * 17150
    distance = round(distance + 1.15, 2)
    return distance


g.setmode(g.BCM)
trigpin = 24
```

```
echopin = 25
g.setup(trigpin, g.OUT)
g.setup(echopin, g.IN)

while True:
    dist = distance(trigpin, echopin)
    print('Measured distance = {}cm'.format(dist))
    time.sleep(0.01)
```

CIRCUIT:



OUTPUT:



2.

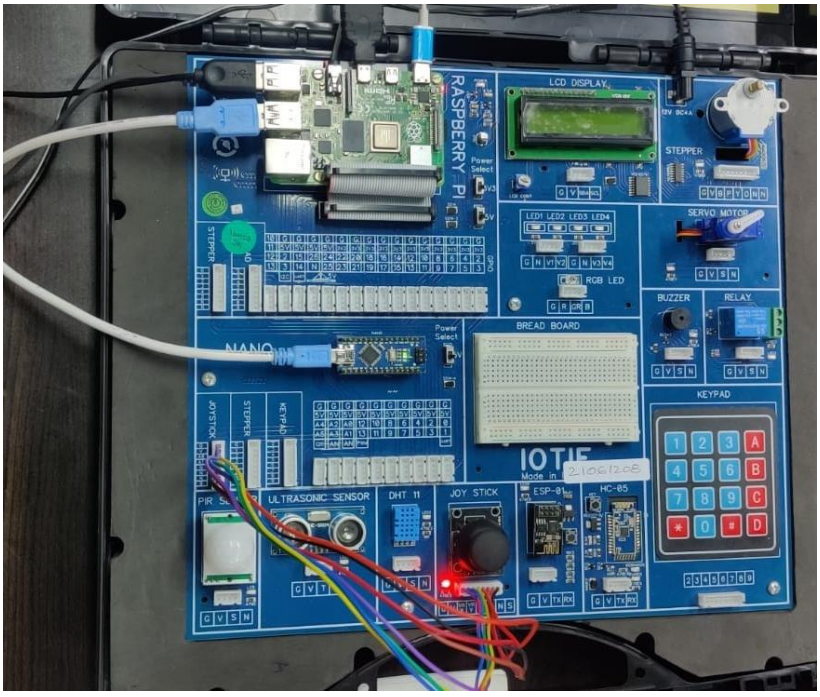
AIM: To read the data from an analog sensor (joystick) with Raspberry using Arduino serial port.

PROGRAM:

```
# ## On Arduino
int VRx = A0;
int VRy = A1;
int xposition = 0;
int yposition = 0;
int mapx = 0
int mapy = 0;
void setup() {
  Serial.begin(9600);
  pinMode(VRx, INPUT);
  pinMode(VRy, INPUT);
}

void loop()
{
  xposition = analogRead(VRx);
  yposition = analogRead(VRy);
  mapx = map(xposition, 0, 1023, -512, 512);
  mapy = map(yposition, 0, 1023, -512, 512);
  Serial.print("X:");
  Serial.print(mapx);
  Serial.print("Y:");
  Serial.print(mapy);
  delay(100);
}

# ON Raspberry pi
import serial
```

```
import time
if _name_ == "_main_":
   ser = serial.Serial('/dev/ttyUSB0', 9600, timeout=1)
   ser.reset_input_buffer()

while True:
   if ser.in_waiting>0:
      line = ser.readline().decode('utf-8').rstrip()
      print(line)
```

CIRCUIT:



OUTPUT: (will look similar to this)

WEEK-10

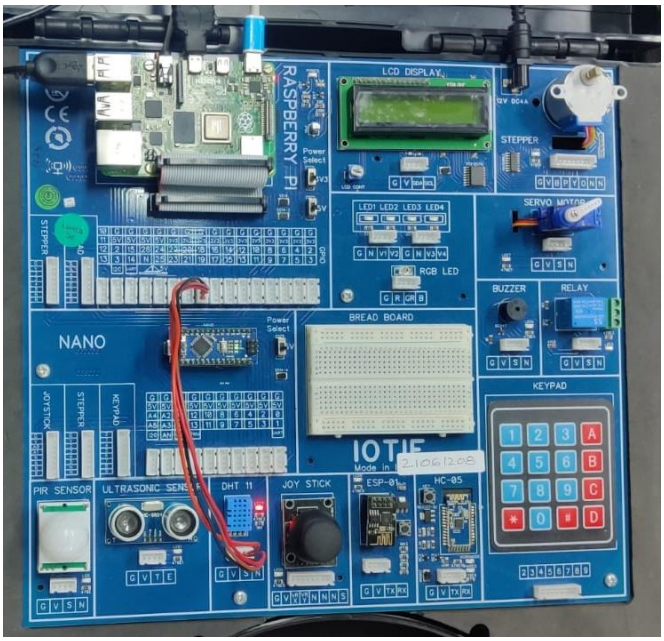
Post/read the data to/from the cloud via MQTT broker with a Raspberry Pi.

AIM: To post the data to the cloud via MQTT broker with a Raspberry Pi.

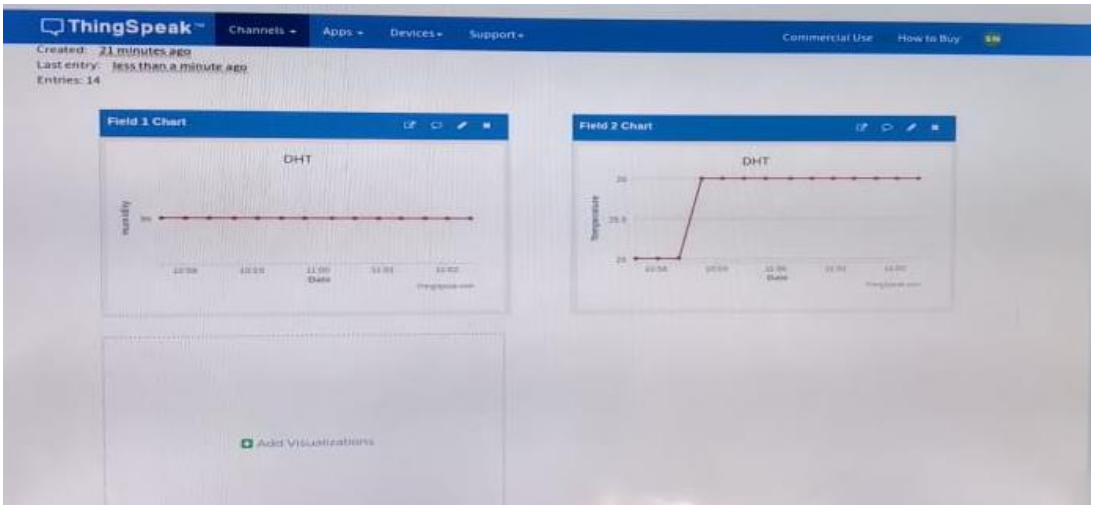
PROGRAM:

```
import urllib.request
import time
import RPi.GPIO as GPIO
import Adafruit_DHT

writeAPIKey = 'FNAIGOOVH990KRLW'
baseURL = "https://api.thingspeak.com/update?api_key={}".format(writeAPIKey)
sensor = Adafruit_DHT.DHT11
sensorPin = 18
GPIO.setmode(GPIO.BCM)
try:
   while True:
      humidity,temperature = Adafruit_DHT.read_retry(sensor,sensorPin)
      if humidity is not None and temperature is not None:
         humidity = '%.2f' % humidity
         temperature = '%.2f' % temperature
         conn = urllib.request.urlopen(baseURL +
         '&field1={}&field2={}'.format(humidity,temperature))
         print(conn.read())
         conn.close()
      time.sleep(20)
except KeyboardInterrupt:
   GPIO.cleanup()
   exit()
```

CIRCUIT:



OUTPUT:



WEEK-11

Send real-time sensor data to a smartphone using Raspberry Pi onboard Bluetooth.

Here's what you'll need to do to install it:

- Open Terminal and type **sudo apt-get install bluetooth bluez blueman**. Press enter.
- Once the packages have downloaded and installed, type **sudo reboot**.
- To access this menu, on the Raspberry Pi desktop click Menu, located in the upper left corner of the screen, scroll down to **Preferences** with your cursor and click **Bluetooth Manager**. From there, you can pair to any nearby devices, or you can make your Raspberry Pi discoverable so you can pair your phone to it from your phone's Bluetooth settings.

How to setup Bluetooth on Raspberry Pi:

- From the Raspberry Pi desktop, open a new Terminal window.
- Type **sudo bluetoothctl** then press enter and input the administrator password (the default password is **raspberry**).
- Next, enter **agent on** and press enter. Then type **default-agent** and press enter.
- Type **scan on** and press enter one more time. The unique addresses of all the Bluetooth devices around the Raspberry Pi will appear and look something like an alphanumeric **XX:XX:XX:XX:XX:XX**. If you make the device you want to pair discoverable (or put it into pairing mode), the device nickname may appear to the right of the address. If not, you will have to do a little trial and error or waiting to find the correct device.
- To pair the device, type **pair [device Bluetooth address]**. The command will look something like pair **XX:XX:XX:XX:XX:XX**.
- If you're pairing a keyboard, you will need to enter a six-digit string of numbers. You will see that the device has been paired, but it may not have connected. To connect the device, type **connect XX:XX:XX:XX:XX:XX**.

1.

AIM: To implement a program to control sensor through smart phone using Raspberry Pi onboard Bluetooth.

PROGRAM:

```
import bluetooth

import RPi.GPIO as GPIO

ledpin = 18
```

```
buzzerpin = 10
GPIO.setmode(GPIO.BCM)
GPIO.setup(ledpin, GPIO.OUT)
host = " "
port = 1
server = bluetooth.BluetoothSocket(bluetooth.RFCOMM)
try:
   server.bind((host, port))
   print("Bluetooth binding succesful")
except:
   print('Bluetooth binding failed')
server.listen(1)
client, address = sensor.accept()
print('connection received from', address)
print('client: ', client)

try:
   while True:
      data = client.recv(1024)
      data = data.decode('utf-8').strip().upper()
      print('client sent:', data)

      if data =='L1':
         GPIO.output(ledpin, True)
         send_data = 'lights on'
      elif data =='L0':
         GPIO.output(ledpin, False)
         send_data = 'lights off'
      elif data =='B1':
         GPIO.output(buzzerpin, True)
         send_data = 'Buzzer on'
```

```
        elif data =='B0':
            GPIO.output(buzzerpin, Flase)
            send_data = 'Buzzer off'
        else:
            send_data = 'supported elements are: L0 L1 B0 B1'
except:
    client.send('\n Exiting the Program')
    GPIO.cleanup()
    client.close()
    server.close()
    exit()
```

2.

AIM: To implement a program to send real-time sensor data to smart phone using Raspberry Pi onboard Bluetooth.

PROGRAM:

```
import bluetooth
import time
import RPi.GPIO as g


g.setmode(g.BCM)
trigpin = 24
echopin = 25
g.setup(trigpin, g.OUT)
g.setup(echopin, g.IN)
host = " "
port = 1
server = bluetooth.BluetoothSocket(bluetooth.RFCOMM)
try:
    server.bind((host, port))
    print("bluetooth binding succesful")
```

```
except:
    print('Bluetooth binding unsuccesful')
    server.listen(1)
    client, address = server.accept()
    print('connection received from', address)
    print('client', client)

    def distance(trigpin, echopin):
        g.output(trigpin, True)
        time.sleep(0.0001)
        g.output(trigpin, False)
        while g.input(echopin) == 0:
            pulse_start = time.time()
        while g.input(echopin) == 1:
            pulse_end = time.time()
        try:
            pulse_duration = pulse_end - pulse_start
        except:
            print('Calibrating')
            return -1
        distance = pulse_duration * 17150
        distance = round(distance + 1.15, 2)
        return distance

    while True:
        dist = distance(trigpin, echopin)
        print('measured distance = {} cm'.format(dist))
        client.send('\n measured distance')
        client.speed(str(dist))
        time.sleep(2)
```

WEEK-12

Implement an intruder alert system that alerts through email

1.

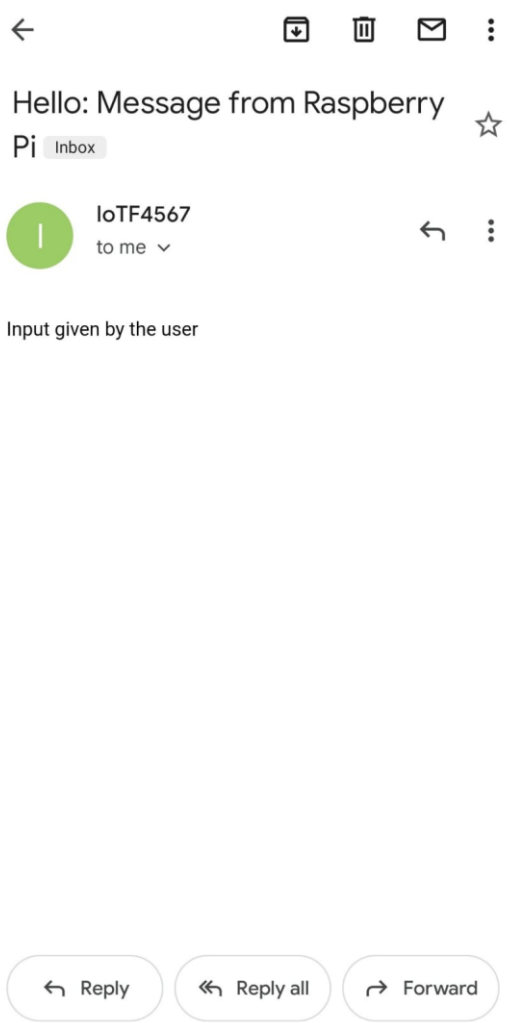
AIM: To implement a program to send an email with Raspberry Pi.

PROGRAM:

```
import smtplib
from time import sleep
import RPi.GPIO as GPIO
from sys import exit

from_email = '<my-email>'
receipients_list = ['<receipient-email>']
cc_list = []
subject = 'Hello: Message from Raspberry Pi'
message = 'Input given by the user'
username = '<Gmail-username>'
password = '<password>'
server = 'smtp.gmail.com:587'

inp=int(input())
def sendmail(from_addr, to_addr_list, cc_addr_list, subject, message, login, password,
smtpserver):
        header = 'From: %s \n' % from_ addr
        header += 'To: %s \n' % ','.join(to_addr_list)
        header += 'Cc: %s \n' % ','.join(cc_addr_list)
        header += 'Subject: %s \n \n' % subject
        message = header + message

        server = smtplib.SMTP(smtpserver)
        server.starttls()
```

```
        server.login(login, password)
        problems = server.sendmail(from_addr, to_addr_list, message)
        server.quit()


while True:
    try:
        if (inp == 1):
            sendmail(from_email, receipients_list, cc_list, subject, message, username, password,
server)
        sleep(.01)
    except KeyboardInterrupt:
        exit()
```

OUTPUT:



2.

AIM: To implement an intruder alert system that alerts through email.

PROGRAM:

```
import smtplib
import time
from time import sleep
import RPi.GPIO as GPIO
from sys import exit

from_email = '<my-email>'
receipients_list = ['<receipient-email>']
cc_list = []
subject = 'Hello'
message = 'PIR with Raspberry Pi'
username = '<Gmail-username>'
password = '<password>'
server = 'smtp.gmail.com:587'

GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

GPIO.setup(11, GPIO.IN)


def sendmail(from_addr, to_addr_list, cc_addr_list, subject, message, login, password,
smtpserver):
   header = 'From: %s \n' % from_addr
   header += 'To: %s \n' % ','.join(to_addr_list)
   header += 'Cc: %s \n' % ','.join(cc_addr_list)
   header += 'Subject: %s \n \n' % subject
   message = header + message

   server = smtplib.SMTP(smtpserver)
   server.starttls()
   server.login(login, password)
   problems = server.sendmail(from_addr, to_addr_list, message)
   server.quit()

while True:
    try:
       if (GPIO.input(11) == 1):
          sendmail(from_email, receipients_list, cc_list, subject, message, username, password,
server)
       sleep(.01)
```

```
except KeyboardInterrupt:
    exit()
```

OUTPUT: