

EASY

Raspberry basics: Project 23a Raspberry PI Zero W board - File Server with Samba

of [Lex C.](#) in **Raspberry Pi Zero W**

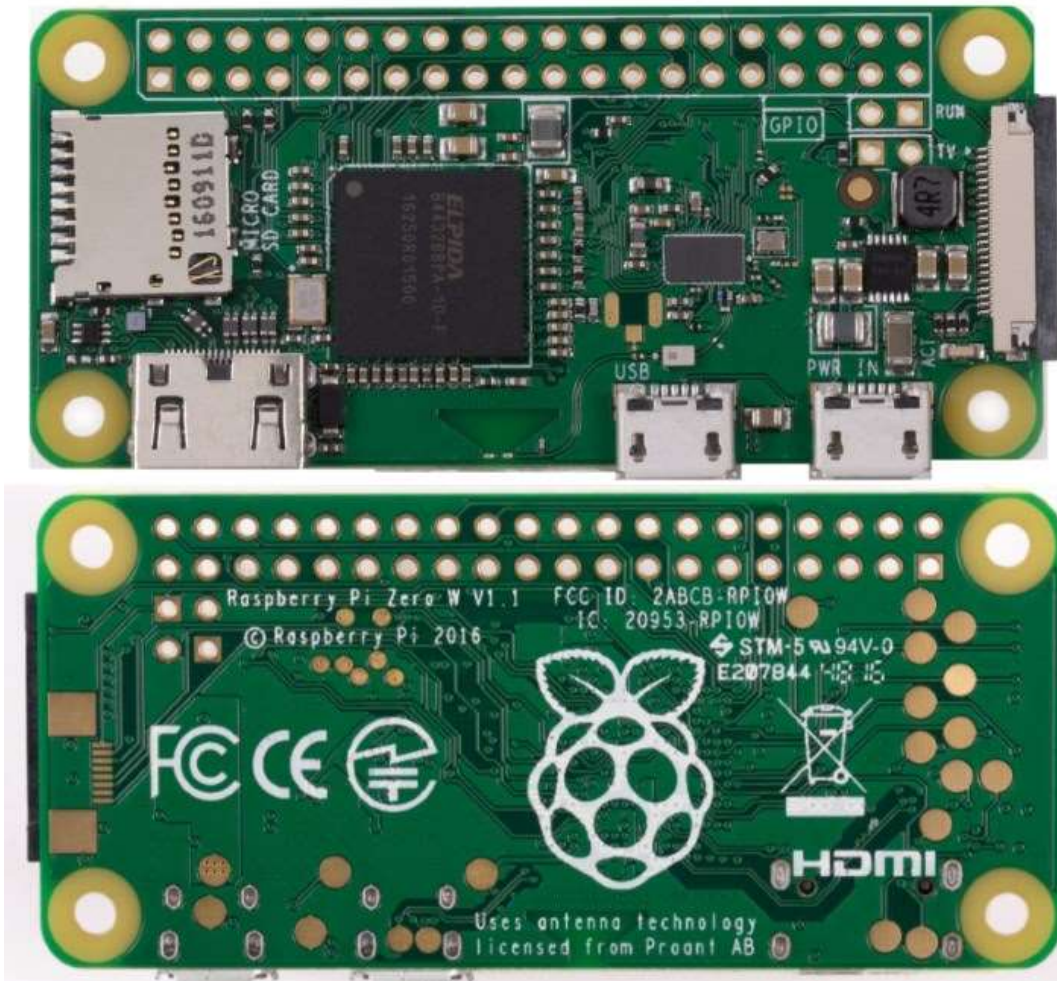
Raspberry basics: Project 23a

Project name: Raspberry PI Zero W board - File Server with Samba

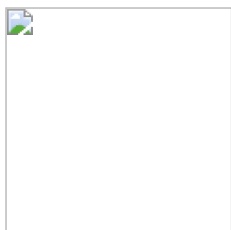
Tags: Raspberry, Raspberry PI Zero W board, vers 1.1, v 1.1, file server, Samba, Pi share, share, windows 10, back up on Raspberry Pi, share files

In this project, you needed these parts (Dear visitors. You can support our project buy clicking on the links of parts and buying them or donate us to keep this website alive. Thank you):

1. [Raspberry PI Zero W board](#) 1 pc



2. [Micro SD card with NOOBS and SD card adapter](#) 1 pc



3. [Micro USB power supply](#) (2 A 5V or 5V 3A) 1 pc



4. [USB keyboard](#) 1 pc



5. [USB mouse](#) 1 pc



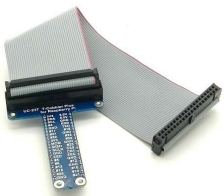
6. TV or PC monitor 1 pc



7. [HDMI cable](#) 1 pc



8. [T-Cobbler Breakout and GPIO Cable](#) 1 pc



9. [Micro USB 2.0 OTG Cable](#) 1 pc



10. [Mini HDMI to HDMI Adapter](#) (HDMI to Mini HDMI Adapter) 1 pc



11. [4-Port USB 2.0 Hub](#) 1 pc



General

We will learn how to create a file server using Raspberry PI Zero W board.

It's easy to use a Raspberry Pi as a Samba file server where you can store backups and share files from all the other computers on your network.

Samba is the Linux implementation of the SMB/CIFS file sharing standard used by Windows PCs and Apple computers, and widely supported by media streamers, games consoles and mobile apps. With Samba activated you can quickly copy files from a computer on your network to a Raspberry using wireless LAN (or a direct Ethernet connection).

We also assume you're using a 32GB (or smaller) micro SD card, which provides a reasonable amount of storage space without requiring any extra steps to make it accessible. However, if you need extra storage, it's easy to mount a large external USB drive and create a Samba entry for it.

Alternatively, if you want to keep things compact, you can install Raspbian on micro SD cards of up to 256GB, although we suggest checking online (non-working SD cards) before you buy to make sure you get one that's fully compatible with the Raspberry Pi.

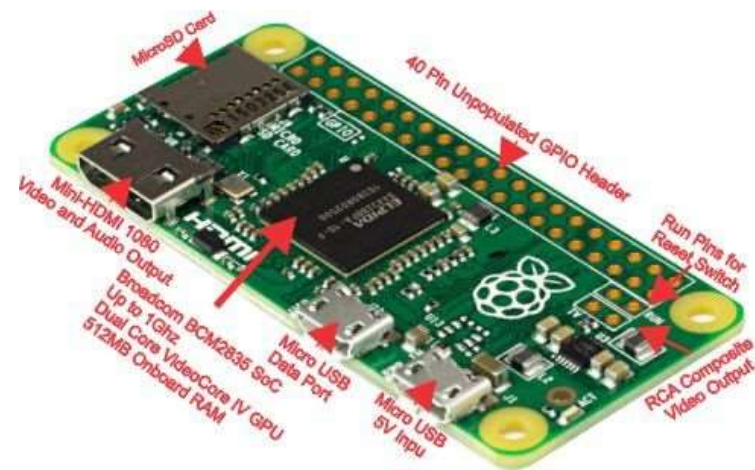
Once set up, you can mount your home file server on all the other computers on your network, and use it as a convenient place to store everything from music files you want to share with your housemates, to backups of important documents and save-game files you'd like to share between computers.

We recommend using a wired Ethernet connection for stability and fast transfer speeds. The project will still work if you connect your Pi via WiFi, although performance will be affected, particularly when it comes to copying over large files.

Understanding the Raspberry PI Zero W board

You can read more about it [here](#).

Signals and connections of the Raspberry PI Zero W board



Raspberry Pi Zero v1.3

CSI camera connector

Wiring BCM Serial PWM Misc

Different places use different pin numbers
GPIO, Wiring, and BCM have been included.

SDA	8	2	3	4	5V
SCL	9	3	5	6	5V
GPCLK0	4	7	4	7	GND
spi1 CS1	17	0	17	11	10
	27	2	27	13	15
	22	3	22	15	18
					16
MOSI	12	10	19	20	GND
MISO	13	9	21	22	25
SCLK	14	11	23	24	8
					10
ID_SD	30	0	DNC	27	DNC
GPCLK1	5	21	5	29	GND
GPCLK2	6	22	6	31	12
PWM1	13	23	13	33	GND
	19	24	19	35	16
	26	25	26	37	20
					28
					21
					29
					31
					33
					35
					37
					39

GPIO 0 and 1 are reserved - Do Not Connect
PAL or NTSC via composite video on TV pads
Run - temporarily connect pins to reset chip (or start chip after a shutdown)
Camera Connector (not on Zero 1.1 or 1.2) - 22pin, 0.5mm
Board Dimensions - 65mm x 30mm x 0.2mm
Mounting holes M2.5

Raspberry Pi Zero W v1.1

CSI camera connector

CSI camera connector

Power	3V3	1	2	5V	Power
SDA I2C	GPIO2	3	4	5V	Power
SCL I2C	GPIO3	5	6	Ground	
	GPIO4	7	8	GPIO14	UART0_TXD
	Ground	9	10	GPIO15	UART0_RXD
	GPIO17	11	12	GPIO18	PCM_CLK
	GPIO27	13	14	Ground	
	GPIO22	15	16	GPIO23	
Power	3V3	17	18	GPIO24	
MOSI	GPIO10	19	20	Ground	
MISO	GPIO9	21	22	GPIO25	
SCLK	GPIO11	23	24	GPIO8	CE0_N
	Ground	25	26	GPIO7	CE1_N
I2C ID EEPROM	ID_SD	27	28	ID_SC	I2C ID EEPROM
	GPIO5	29	30	Ground	
	GPIO6	31	32	GPIO12	
	GPIO13	33	34	Ground	
	GPIO19	35	36	GPIO16	
	GPIO26	37	38	GPIO20	
	Ground	39	40	GPIO21	

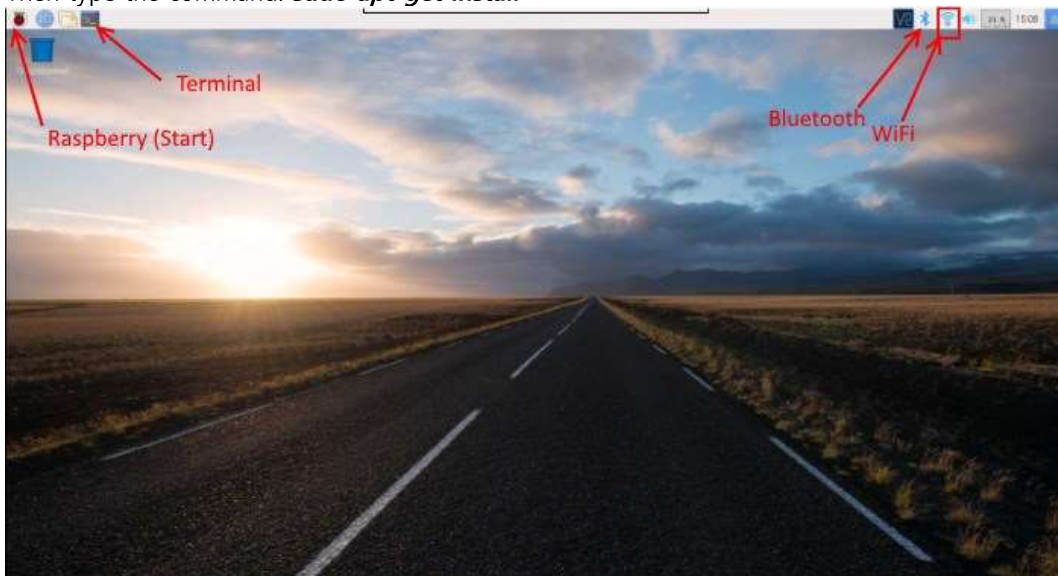
Step by Step instruction

We recommend using a high-performance SD card for increased stability as well as plugging your device into an external display to see the default application booting up.

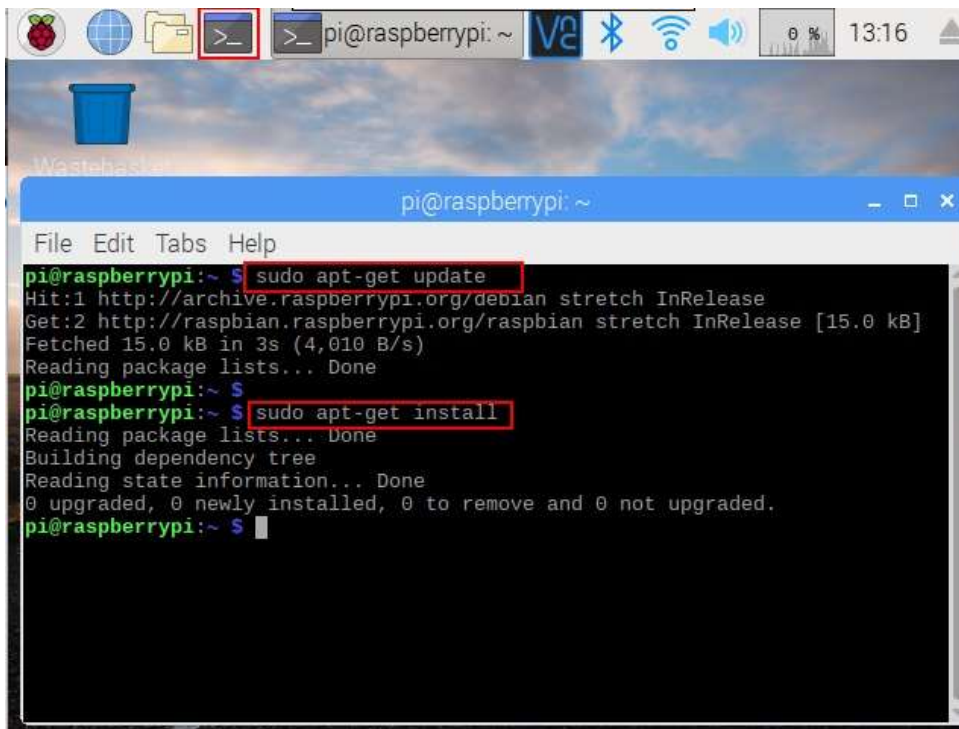
1. Setup and preparation

We assume that you have **Windows 10** installed on your PC and **Raspbian OS** installed on your Raspberry Pi Zero W board.

1. Do wiring.
2. Insert your micro SD card with **Raspbian OS** into the TF card slot on the Raspberry Pi Zero W board. It will only fit one way.
3. Connect Raspberry Pi Zero W board mini HDMI port to your TV or Monitor HDMI (DVI) port (use HDMI cable and mini HDMI to HDMI adapter and/or HDMI to DVI adapter).
4. Make sure that your monitor or TV is turned on, and that you have selected the right input (e.g. HDMI/DVI, etc).
5. Plug in micro USB 2.0 OTG Cable to USB data port of Pi Zero and 4-Port USB 2.0 Hub to micro USB 2.0 OTG Cable.
6. Plug in your USB mouse and USB keyboard to 4-Port USB 2.0 Hub.
7. If you intend to connect your Raspberry Pi Zero vers 1.2 or vers 1.3 to the internet, connect a WiFi dongle to one of the 4-Port USB 2.0 Hub ports.
8. Connect Micro USB power supply to Raspberry PI Zero board micro USB input.
9. The Raspberry PI desktop will start up.
10. Open **Terminal** window and type the command: ***sudo apt-get update***
11. Then type the command: ***sudo apt-get install***

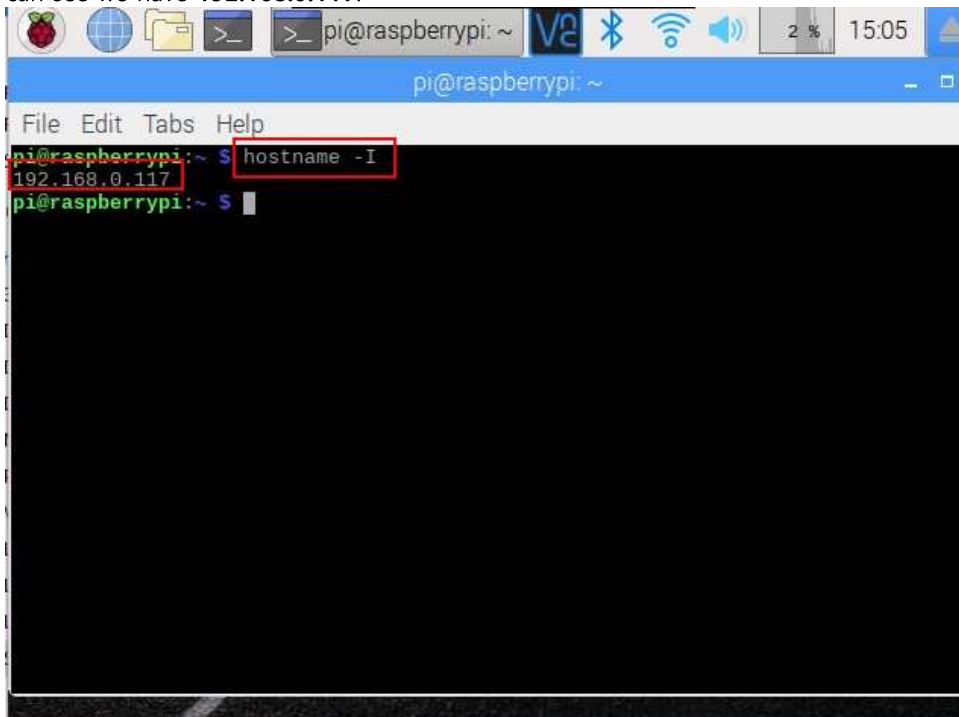


12.



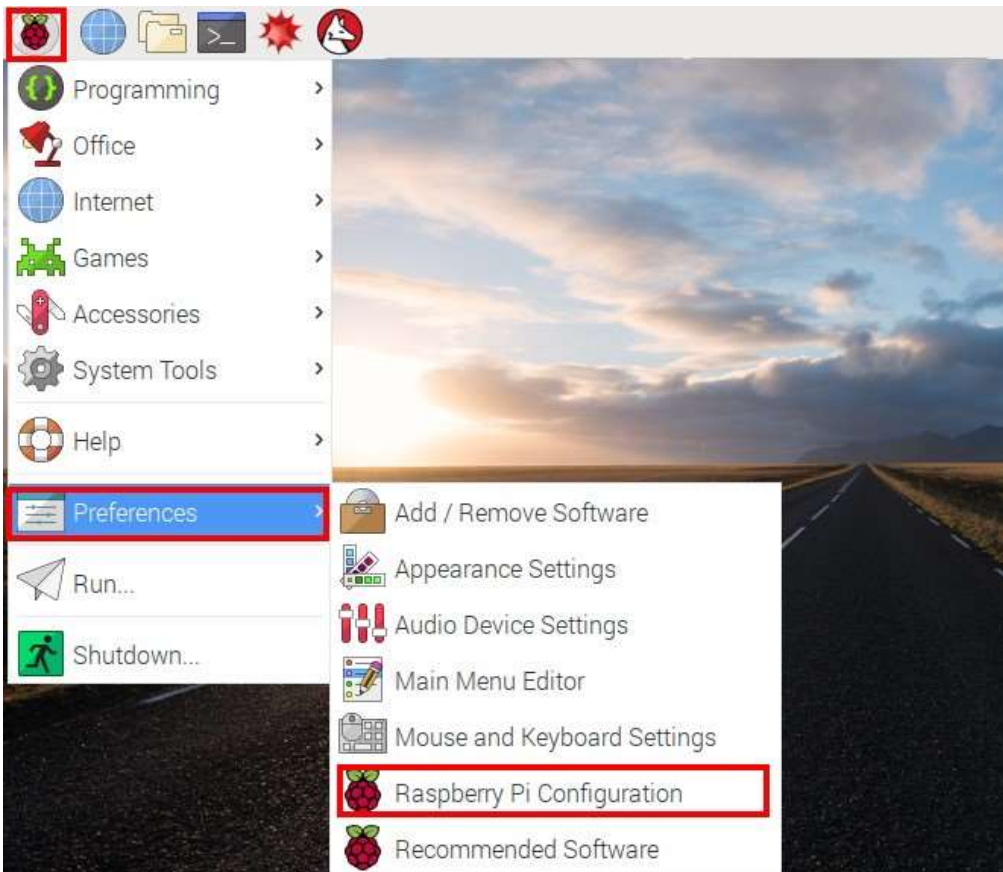
```
pi@raspberrypi:~$ sudo apt-get update
Hit:1 http://archive.raspberrypi.org/debian stretch InRelease
Get:2 http://raspbian.raspberrypi.org/raspbian stretch InRelease [15.0 kB]
Fetched 15.0 kB in 3s (4,010 B/s)
Reading package lists... Done
pi@raspberrypi:~$ sudo apt-get install
Reading package lists... Done
Building dependency tree
Reading state information... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
pi@raspberrypi:~$
```

- 13.
14. We will need to know our Raspberry Pi Zero W board IP address to access it. Type this command: **hostname -I** As you can see we have **192.168.0.117**.

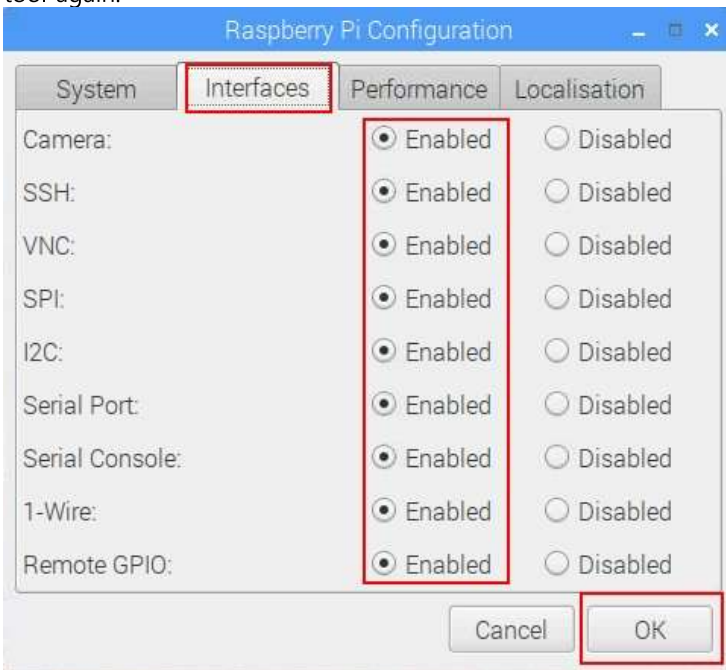


```
pi@raspberrypi:~$ hostname -I
192.168.0.117
pi@raspberrypi:~$
```

- 15.
16. Using obtained IP address you can remote login to Raspberry Pi Zero W board with SSH.
17. Open the Raspberry Pi Configuration tool from the main menu. Go to **Raspberry icon-> Preferences -> Raspberry PI configuration**



- 18.
19. Select **Interfaces** and make sure that all settings are enabled so you will not need to come back to these configuration tool again.



- 20.
21. Click on **OK** button.
22. We need to reboot our Raspberry Pi. If it will not reboot automatically go to **Terminal**. Type this command in the Terminal: **sudo reboot**

2. Installing Samba

1. After restart of Raspberry Pi set up the remote access to your Raspberry Pi Zero W board . You can read how to do it [here](#).
2. Once you remote login to your Raspberry Pi Zero W board create a folder named **Share** that contains folder named **Server** in the home directory. We will use **Server** folder for file server demo. Go to **Terminal**. Type these commands in the Terminal: **sudo mkdir Share**
3. **cd Share/**
4. **sudo mkdir Server**
5. **cd Server/**

```

pi@raspberrypi: ~/Share/Server
File Edit Tabs Help
pi@raspberrypi:~$ sudo mkdir Share
pi@raspberrypi:~$ cd Share/
pi@raspberrypi:~/Share$ sudo mkdir Server
pi@raspberrypi:~/Share$ cd Server/
pi@raspberrypi:~/Share/Server$

```

- 6.
7. **Samba** lets you easily share files over network. We can install samba by typing this command in the **Terminal**: **`sudo apt-get install samba samba-common-bin`**

```

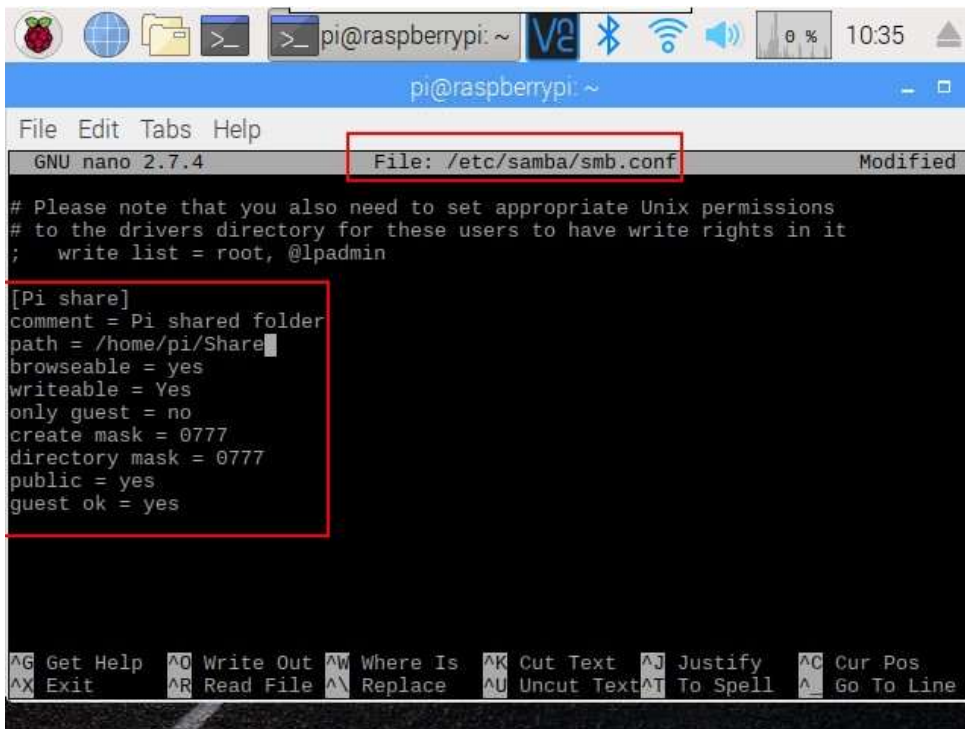
pi@raspberrypi: ~/Share/Server
File Edit Tabs Help
pi@raspberrypi:~$ sudo mkdir Share
pi@raspberrypi:~$ cd Share/
pi@raspberrypi:~/Share$ sudo mkdir Server
pi@raspberrypi:~/Share$ cd Server/
pi@raspberrypi:~/Share/Server$ sudo apt-get install samba samba-common-bin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  attr libaio1 libfile-copy-recursive-perl python-dnspython python-ldb
  python-samba python-tdb samba-dsdb-modules samba-vfs-modules tdb-tools
  update-inetd
Suggested packages:
  python-gpgme bind9 bind9utils ctdb ldb-tools ntp | chrony smbldap-tools
  winbind ufw heimdal-clients
The following NEW packages will be installed:
  attr libaio1 libfile-copy-recursive-perl python-dnspython python-ldb
  python-samba python-tdb samba samba-common-bin samba-dsdb-modules
  samba-vfs-modules tdb-tools update-inetd
0 upgraded, 13 newly installed, 0 to remove and 0 not upgraded.
Need to get 3,472 kB of archives.
After this operation, 23.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirror.litnet.lt/raspbian/raspbian stretch/main armhf python-dnspy

```

8.

3. Configuring Samba

- Once SAMBA installed we need to edit configuration file so it knows where to look for our Server. Open configuration file by typing this command in the Terminal: **`sudo nano /etc/samba/smb.conf`**
- Add the following settings to the bottom of this file: **`[Pi share] comment = Pi shared folder path = /home/pi/Share browseable = yes writeable = Yes only guest = no create mask = 0777 directory mask = 0777 public = yes guest ok = yes`**
- This means that anyone will be able to read, write, and execute files in the share, either by logging in as a Samba user (which we'll set up below) or as a guest. If you don't want to allow guest users, omit the `guest ok = yes` line. You could also use Samba to share a user's home directory so they can access it from elsewhere on the network, or to share a larger external hard disk that lives at a fixed mount point. Just create a `smb.conf` entry for any path you want to share, and it'll be made available across your network when you restart Samba.



```

pi@raspberrypi: ~
File Edit Tabs Help
GNU nano 2.7.4 File: /etc/samba/smb.conf Modified

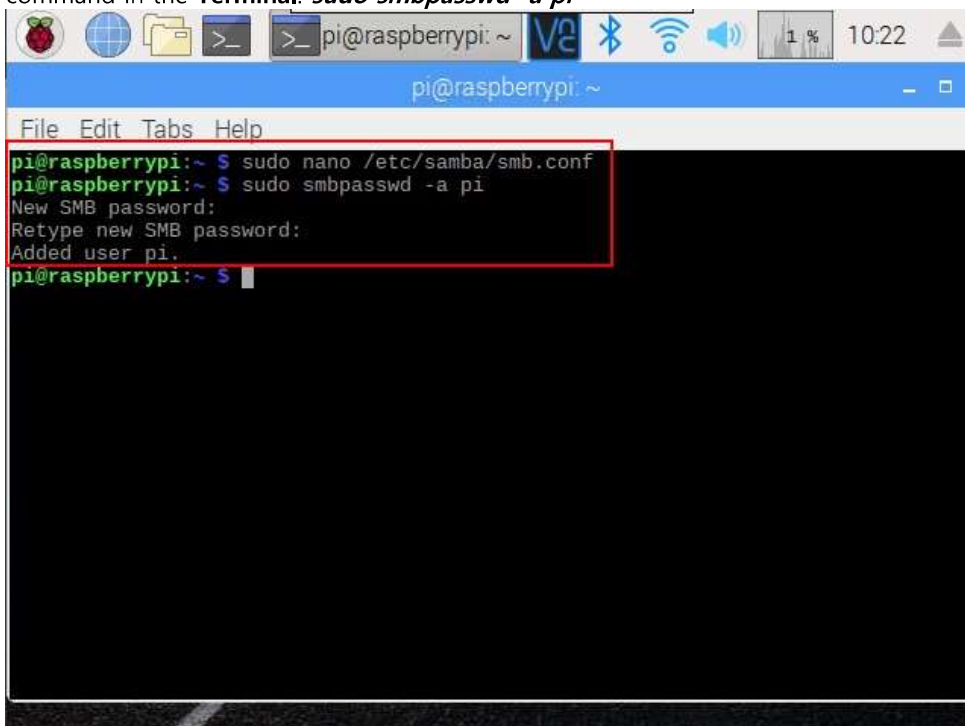
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
; write list = root, @lpadmin

[Pi share]
comment = Pi shared folder
path = /home/pi/Share
browseable = yes
writeable = Yes
only guest = no
create mask = 0777
directory mask = 0777
public = yes
guest ok = yes

AG Get Help  AQ Write Out  AW Where Is  AK Cut Text  AJ Justify  AC Cur Pos
AX Exit      AR Read File  AL Replace AU Uncut Text AT To Spell  AL Go To Line

```

- 4.
5. Press Ctrl+X, Y, Enter buttons to save the file.
6. Before we start the server, we'll want to set a Samba password – this is not the same as your standard default password (raspberry), but there's no harm in reusing this if you want to, as this is a low-security, local network project. Type this command in the **Terminal**: *sudo smbpasswd -a pi*



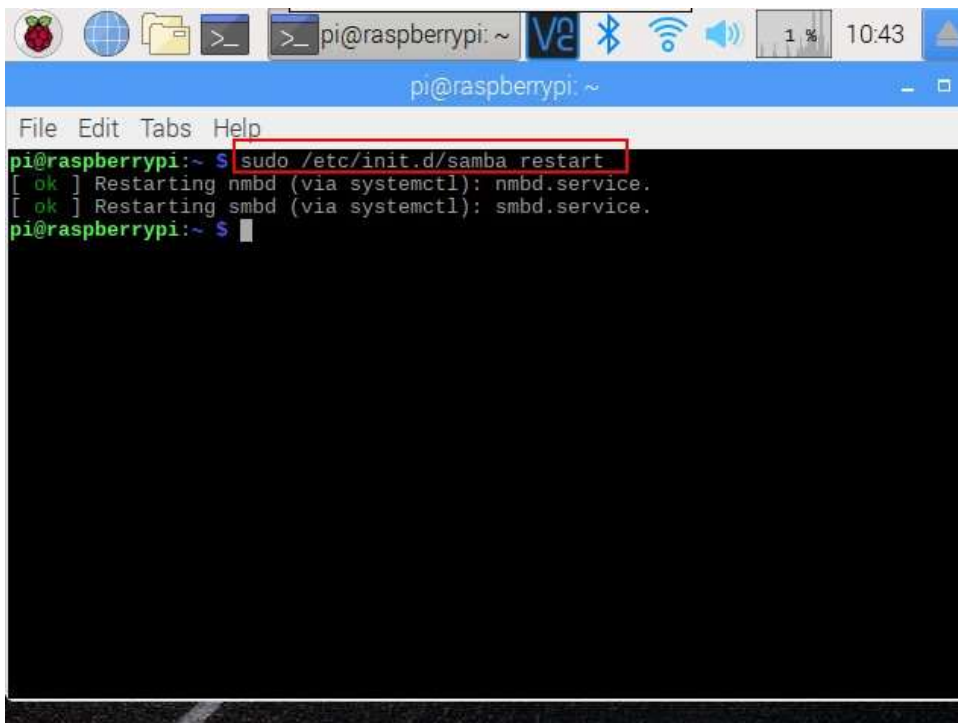
```

pi@raspberrypi: ~
File Edit Tabs Help

pi@raspberrypi:~ $ sudo nano /etc/samba/smb.conf
pi@raspberrypi:~ $ sudo smbpasswd -a pi
New SMB password:
Retype new SMB password:
Added user pi.
pi@raspberrypi:~ $

```

- 7.
8. You will need to type your password and press **Enter** button, then type again the same password and press **Enter** button. Your password will be saved for user **pi**.
9. Restart Samba by typing this command in the **Terminal**: *sudo /etc/init.d/samba restart*

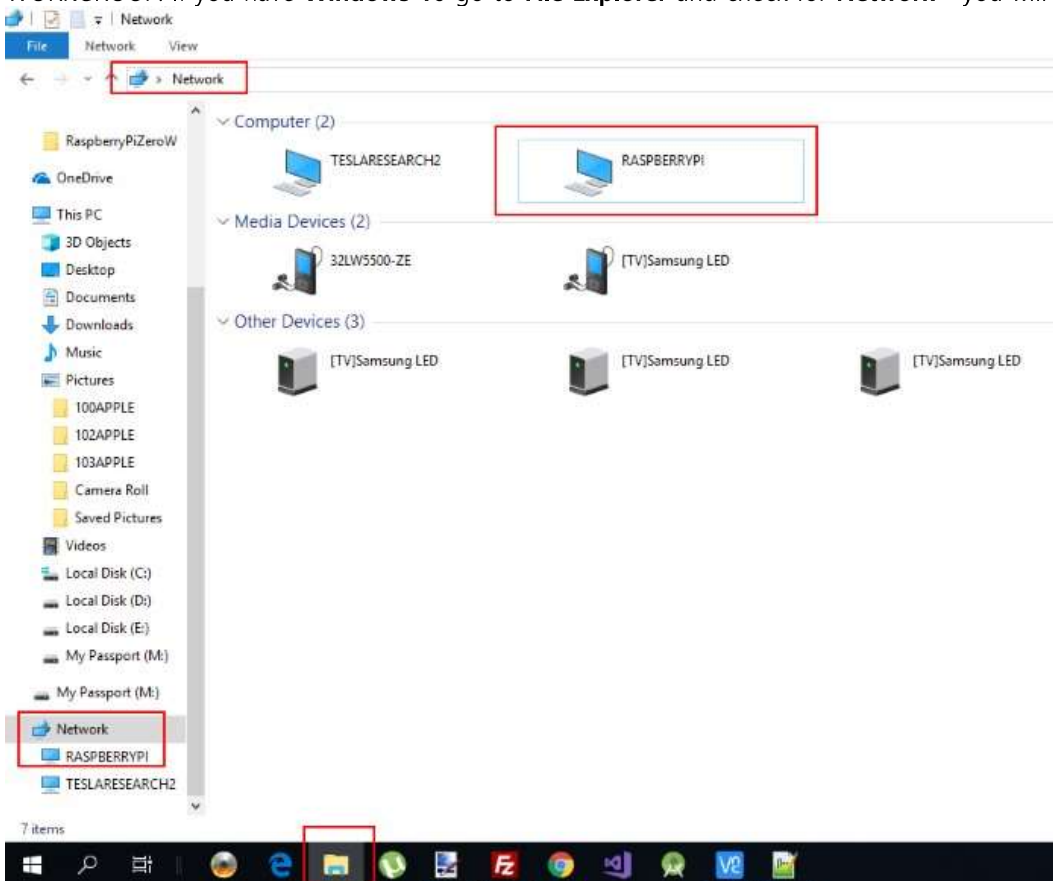


```

pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ sudo /etc/init.d/samba restart
[ ok ] Restarting nmbd (via systemctl): nmbd.service.
[ ok ] Restarting smbd (via systemctl): smbd.service.
pi@raspberrypi:~ $

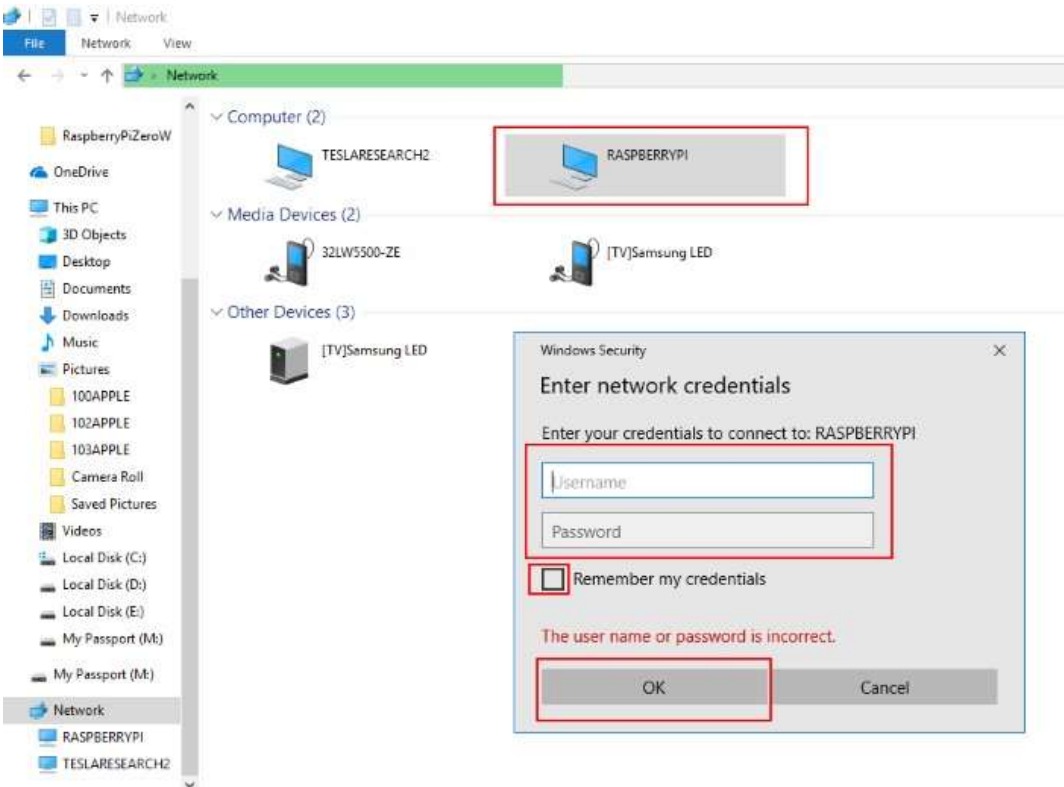
```

- 10.
11. From now on, Samba will start automatically whenever you power on your Pi. Once you've made sure that you can locate your shared folder on the network, you can safely disconnect the mouse, monitor, and keyboard from your Pi and just leave it running as a headless file server.
12. YWe'll now be able to find your Raspberry Pi file server (named RASPBERRYPI by default) from any device on your local network. If you've left **smb.conf**'s default settings as they are, it will appear in a Windows network workgroup called WORKGROUP. If you have **Windows 10** go to **File Explorer** and check for **Network** - you will see the **RASPBERRYPI**.

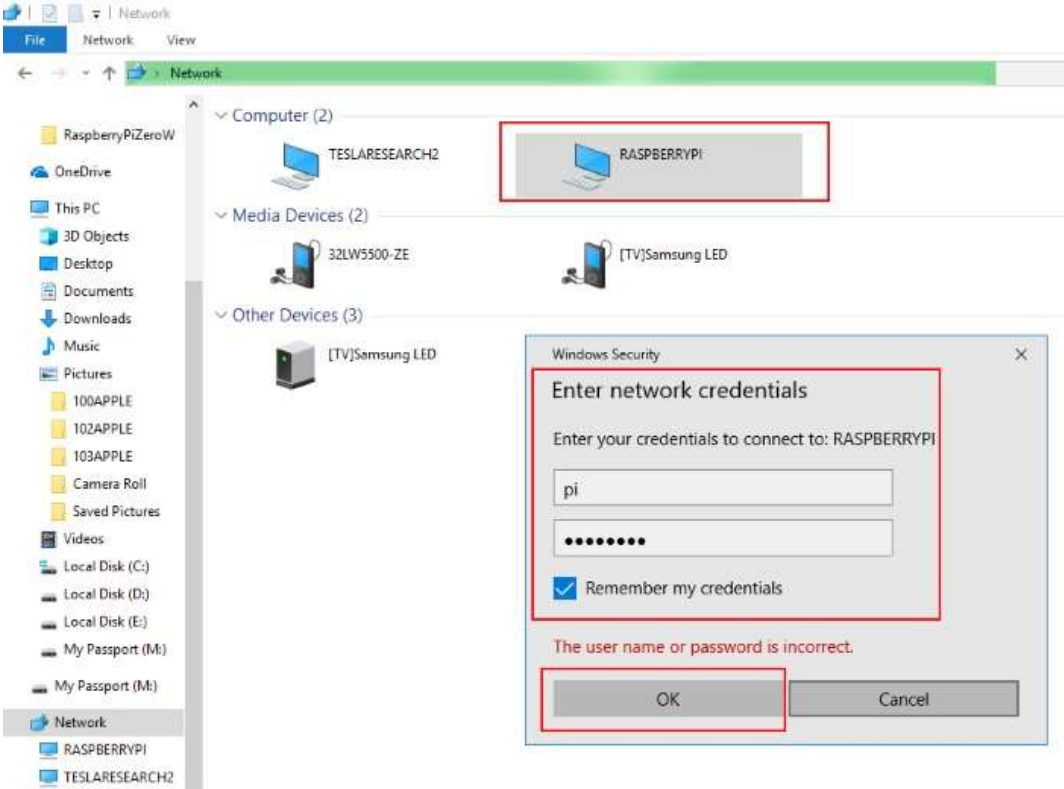


- 13.
14. Double-click on **RASPBERRYPI**. You will need to enter your network credentials (**username** (we have **pi**) and **password**) and tick on box **Remember my credentials** and press **OK** button. Your network credentials will be saved and used every time for automatic log on.

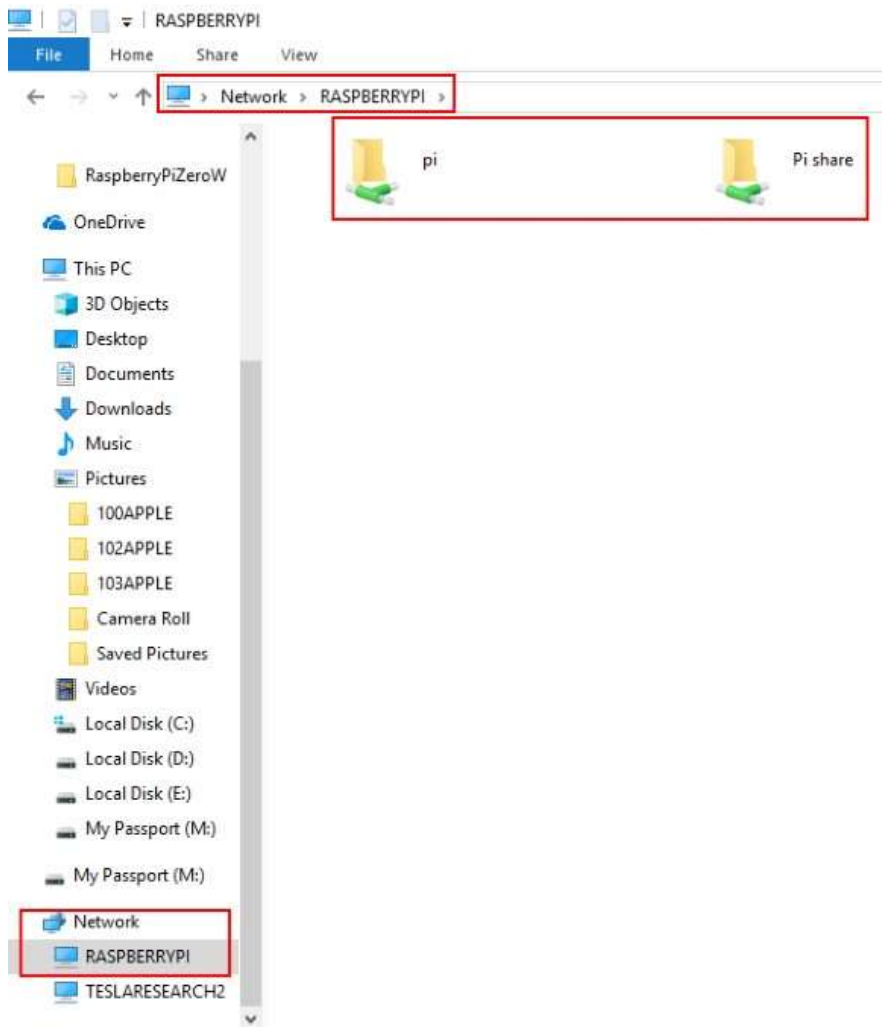
15.



16.

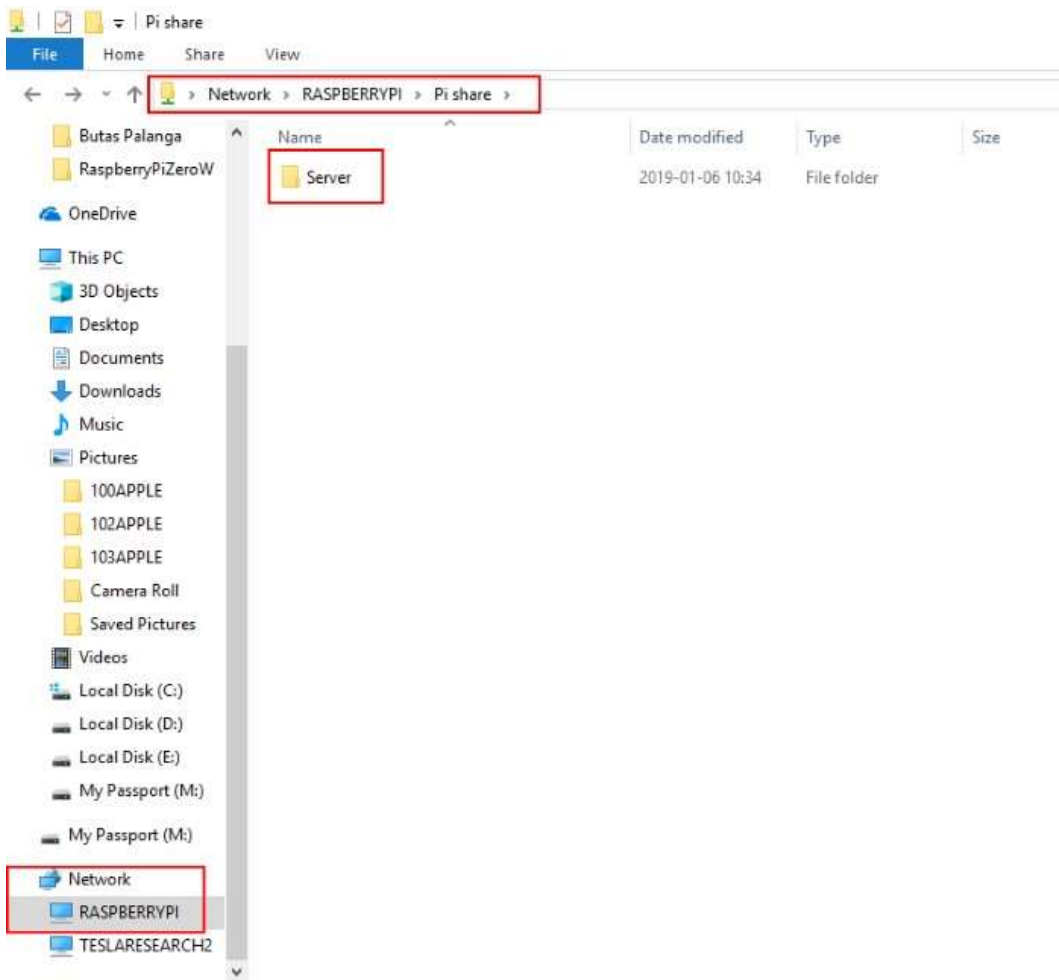


17. You will see two network folders **Pi** and **Pi share**.



18. 2 items

19. Double-click on **Pi Share**.



20. 1 item

21. You should see **Server** folder appearing.

Summary

We have learnt how to create a file server using Raspberry PI Zero W board.

Libraries in use

- no libraries used

Script

- none