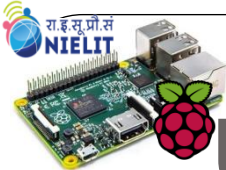


Preparing SD card for Pi

Dr. Sarwan Singh
Deputy Director(S)
NIELIT Chandigarh

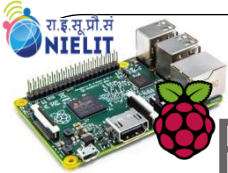
Education is the kindling of a flame,
not the filling of a vessel.
- *Socrates*





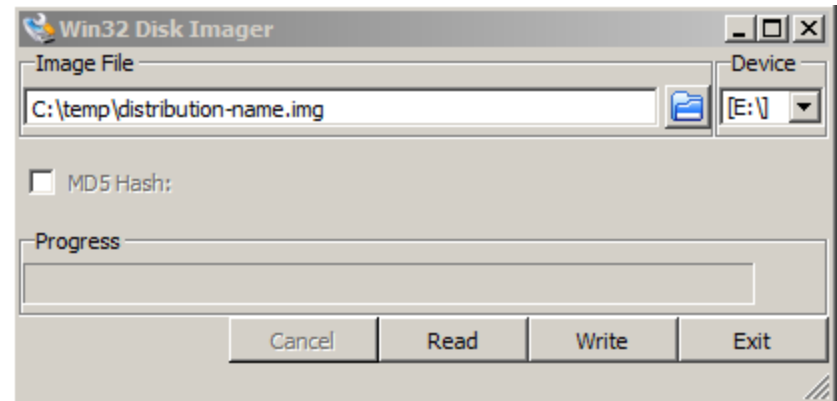
Using NOOBS- New Out Of Box Software

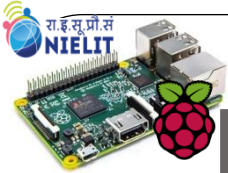
- Download NOOBS from the raspberrypi.org downloads page
- Insert a (4 GB+) SD Card into your computer
 - If you want to save space on the SD Card, you can delete some of the images inside the OS folder in the NOOBS zip file that you don't want to use.
- Format the disk (**Windows**)
 - Download and install the SD Association's Formatting tool from https://www.sdcard.org/downloads/formatter_4/eula_windows/
 - Open the Application you have just installed
 - Set "FORMAT SIZE ADJUSTMENT" to ON in the Options menu.
 - Make sure you have selected the Drive your SD Card is inserted in
 - Click "Format"
- Extract the file you downloaded in Step 1
- Copy the files you just extracted to your SD Card



Flashing the SD Card using Windows

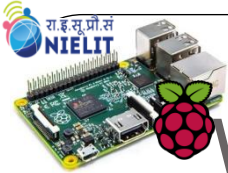
- Download the distribution from the raspberrypi.org downloads page
- Extract the image file from the downloaded .zip file, so you now have "distribution-name.img".
- Insert the SD card into your SD card reader
- Download the Win32DiskImager utility (it is also a zip file).
- run the Win32DiskImager utility –‘Run as Administrator’
- Select the image file you extracted above and click write





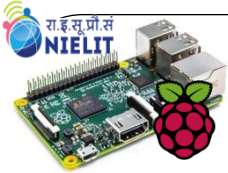
Basic Raspbian Setup

- When you first turn on your Raspberry Pi with it's fresh Raspbian image on the SD card, you will likely want to tweak the system settings. There's a tool called **raspi-config** which makes everything super-easy to set up. This automatically launches when you first boot Raspbian up .
- If you want to access the setup screen again, just type:
sudo raspi-config
in the terminal .

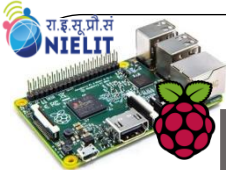


Word Processing/Internet Browsing...

- **Raspbian** currently comes with Midori installed for web browsing and LibreOffice for word processing and spreadsheet (office); other programs be installed rather easily.
- Entering "sudo apt-get install chromium-browser" into a terminal will install Chromium which is generally a faster and more featured browser than Midori
- Entering "sudo apt-get install abiword-common" into a terminal will install AbiWord, a lighter weight but still fully functional word processor
- Entering "sudo apt-get install gnumeric" into a terminal will install Gnumeric, a lighter weight but still fully functional spreadsheet

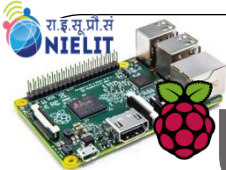


- Username : pi
- Password : raspberry
- Go to GUI mode, command : **startx**



Methods of Working with the Pi

- Once the Pi is configured, there are a few methods of using it depending on if you want to use it like a desktop or manage it remotely.
 - Using HDMI-out – Operate your Pi like a desktop computer.
 - Using the serial terminal – some functionality but buggy in the latest Raspbian release.
 - Using SSH – Operate through a network linked to another computer.

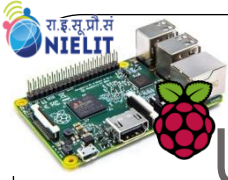


Using HDMI-out

- If configured to boot to shell, log in with **pi** as the user name and **raspberrypi** as the password. Then, enter **startx** to enter a graphical environment where you are presented with a desktop-type menu-driven operating system.

To get back to text land, you can either

- log off through the Task Bar Menu – drops back to the shell, closing down the X window system
- open xterm from the Task Bar – opens a shell in a graphical window
- Use CTRL-ALT-1 through CTRL-ALT-8 – gives you a number of shells, with 7 being the graphic environment (if loaded).



Using the Serial Terminal without a Monitor

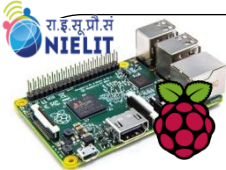
- Connect the FTDI to the mini-usb cable and plug into a usb port on your computer.
- Set the serial settings to **72000** baud, 8 bit, no parity, 1 stop and no flow control.



Enable SSH (SECURE SHELL)

- You can **enable** or disable the **SSH** server on your **Raspberry Pi** (it is **enabled** by default).
- This is done using raspi-config: Enter command **\$ sudo raspi-config** in the terminal, then navigate to **ssh** , hit Enter and select **Enable** or disable **ssh** server .
download PuTTY or a similar SSH terminal.

Find IP address of Pi **\$ ifconfig**



PuTTY Configuration

Category:

- Session
 - Logging
- Terminal
 - Keyboard
 - Bell
 - Features
- Window
 - Appearance
 - Behaviour
 - Translation
 - Selection
 - Colours
- Connection
 - Data
 - Proxy
 - Telnet
 - Rlogin
 - SSH**
 - Serial

Basic options for your PuTTY session

Specify the destination you want to connect to

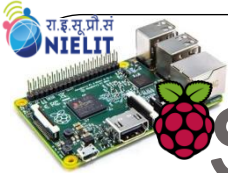
Host Name (or IP address) Port

Connection type:
☐ Raw ☐ Telnet ☐ Rlogin ☒ SSH ☐ Serial

Load, save or delete a stored session

Saved Sessions

Close window on exit:
☐ Always ☐ Never ☒ Only on clean exit



Setting up a VNC Server

- VNC is a graphical desktop sharing system that allows you to remotely control the desktop interface of one computer from another. It transmits the keyboard and mouse events from the controller, and receives updates to the screen over the network from the remote host.

- On Pi install the TightVNC package:

\$ sudo apt-get install tightvncserver

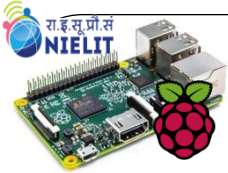
- Next, run TightVNC Server which will prompt you to enter a password :

tightvncserver



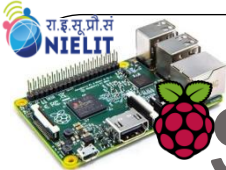
Install a VNC server:

1. Open LX terminal
2. In LX terminal type in "**sudo apt-get update**" to update the operating system to the latest version
3. When prompted to update type in "y" and press enter
4. After updating is complete type in "**sudo install tightvncserver**".
Press "y" and hit enter when prompted
5. Once tight VNC server has completed installation you can start it by typing in "**vncserver:1**"
6. It will prompt you to create a password. Keep in mind passwords can be at MOST 8 characters long.
7. Once you have entered a password you are done! The VNC server is now running in the background of your Raspberry Pi's operating system. Now you can use any computer on your network with a VNC client to remotely access the Raspberry Pi



- How to install a client on a Windows PC. There are several free clients available. In this one we will use Ultra VNC, but here's a list of VNC clients that offer free versions:

- Tight VNC
- Real VNC
- Ultra VNC



Setting up a VNC Client

- Now, on your computer, install and run the VNC client:
- On a Linux machine install the package `xtightvncviewer`:

`sudo apt-get install xtightvncviewer`

Otherwise, TightVNC is downloadable from tightvnc.com



Setting up the Pi to Automatically Start a VNC Server Upon Bootup

1. In LX Terminal go into the hidden config directory by typing "cd .config"
2. create a new folder named "autostart" within the ".config" folder by typing "sudo mkdir autostart"
3. enter into the folder you just created by typing "cd autostart"
4. create a new configuration file that will tell the OS to start VNC upon bootup by typing "sudo nano tightvnc.desktop"
5. This will open the text editor within LX Terminal. Enter in the following into the text file:

```
[Desktop Entry]
Type=Application
Name=TightVNC
Exec=vncserver:1
StartupNotify=false
```

```
pi@raspberrypi: ~/.config/autostart
File Edit Tabs Help
GNU nano 2.2.6 File: tightvnc.desktop
[Desktop Entry]
Type=Application
Name=TightVNC
Exec=vncserver :1 -geometry 1024x768 -depth 24 -dpi 96
StartupNotify=false
```

6. Press Ctrl+O to write the changes and Ctrl+X to exit the text editor. your Pi will automatically start the VNC server every time it boots up



Using apt-get command – proxy server

```
sudo bash -c
```

```
‘http_proxy=“http://192.168.4.38:3128  
/” apt-get update’
```