Linux Basic Commands
By TESR

Linux Basic Commands

- **pwd** – command to terminal to display the **p**ath of the current **w**orking **d**irectory.

```
rengy@tesr-9939:~$ pwd
/home/rengy
```

- **ls** – command to display the **lis**t of content in current working directory.

```
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug   Documents   influxDB2                     Music      PyCharm     test1       Videos
Arduino                        cartographer_ws             Downloads   ironx_customer_data_backup    NodeRed    sketchbook  ui          ws_moveit
build-new-Desktop-Debug        catkin_ws                   foxy_ws     kobuki_ws                     Pictures   snap        untitled
build-TESR_Nav_gui-Desktop-Debug  Desktop                  grafana     model_editor_models           Public     Templates   untitled1
```
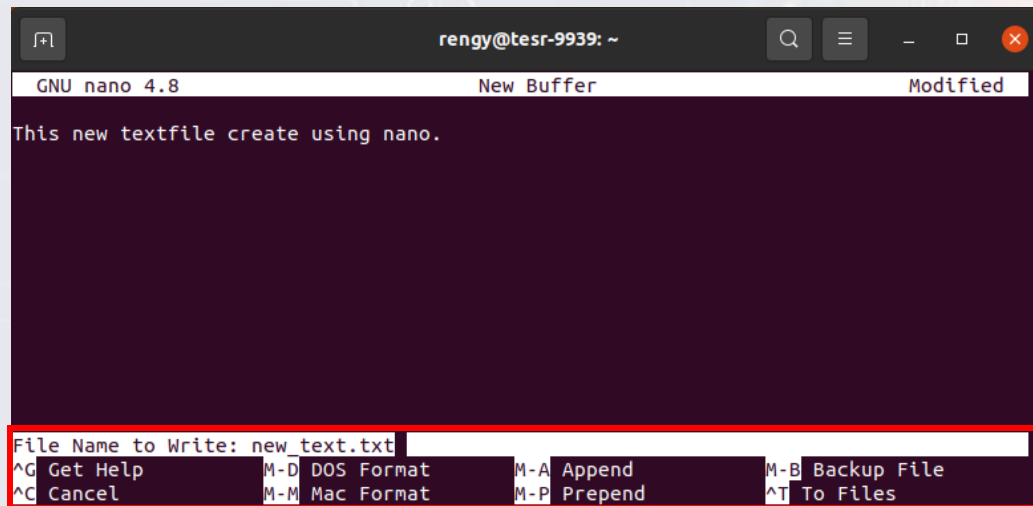
- **mkdir** – command to **m**a**k**e a new **dir**ectory folder.
  - **Argument require: "mkdir <folder_name>"** such as **"mkdir new_content"**

```
rengy@tesr-9939:~$ mkdir new_content
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug   Documents   influxDB2                     Music       Public      Templates   untitled1
Arduino                        cartographer_ws             Downloads   ironx_customer_data_backup    new_content PyCharm     test1       Videos
build-new-Desktop-Debug        catkin_ws                   foxy_ws     kobuki_ws                     NodeRed     sketchbook  ui          ws_moveit
build-TESR_Nav_gui-Desktop-Debug  Desktop                  grafana     model_editor_models           Pictures    snap        untitled
```

Linux Basic Commands

- **nano –** command use to create or open document file in current directory.
    - **Argument require: "nano <file_name.txt>"** for create new or open document file.
    - Can also create file by type "nano" but when Save or Write Out document file name **must** be set to complete creation.

```
rengy@tesr-9939:~$ nano
```
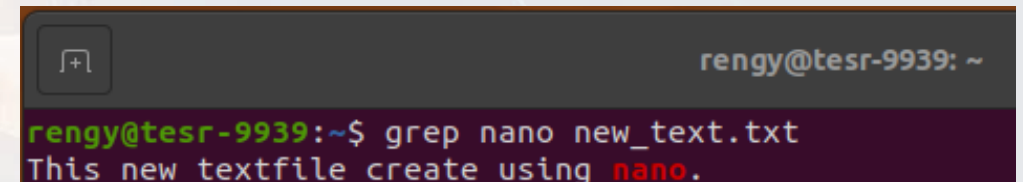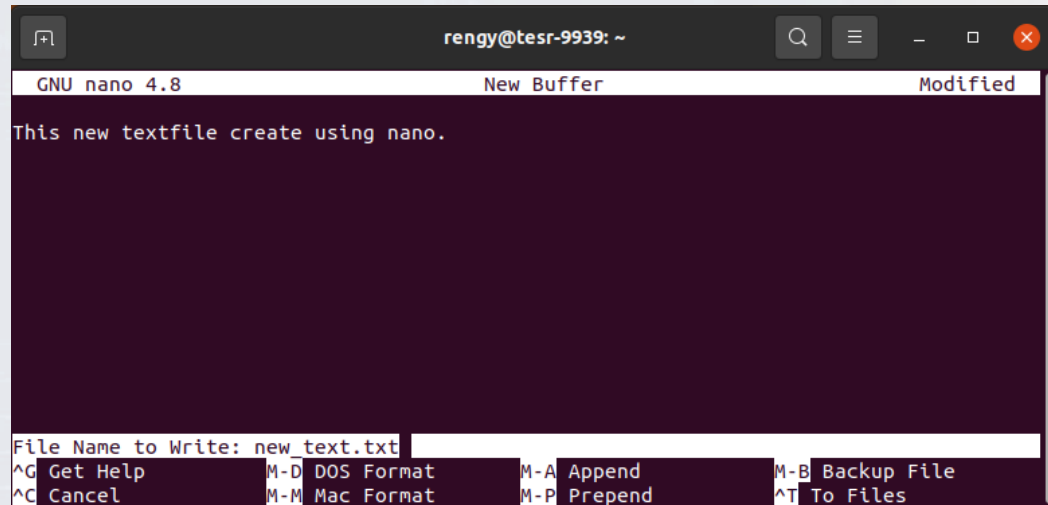

(type you fill after name to create file will define type of your document file. Such as text.py, file.bash or set.sh)

Linux Basic Commands

- **grep –** command use to find and display wording you given through a document.
  - **Argument require: "grep <word> <file_name.txt>"** to find and display word from document.

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- **echo –** command use to display the data in declared content or write content to file.
  - **Argument require: "echo <declared_variable>" or "echo <declared_variable> >> <file_name>"**

Linux Basic Commands

- **cd –** command to **c**hange current working **d**irectory.
    - **Argument require: "cd <directory_name>" such as "cd new_content"**

```
rengy@tesr-9939:~$ cd new_content
rengy@tesr-9939:~/new_content$
```

    - Can also type **"cd .."** to quit from current directory.

```
rengy@tesr-9939:~$ cd catkin_ws/src/r_test_navigation/
rengy@tesr-9939:~/catkin_ws/src/r_test_navigation$ cd ..
rengy@tesr-9939:~/catkin_ws/src$
```

    - Can also type **"cd"** to quit from current directory to user directory.
    (In this case, user directory is /home/rengy)

```
rengy@tesr-9939:~$ cd catkin_ws/src/r_test_navigation/
rengy@tesr-9939:~/catkin_ws/src/r_test_navigation$ cd
rengy@tesr-9939:~$ pwd
/home/rengy
```

Linux Basic Commands

- **cp –** command to **cop**y file to directory that you're prefer.
  - **Argument require: "cp <file_name> <directory_full_path>"**

```
rengy@tesr-9939:~$ cp new_text.txt new_content/
rengy@tesr-9939:~$ cd new_content/
rengy@tesr-9939:~/new_content$ ls
new_text.txt
```

Linux Basic Commands

- **mv –** command to **m**o**v**e file to directory that you're prefer.
  - **Argument require: "mv <file_name> <directory_name>"** for move a file.

```
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music        Public      Templates  untitled1
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  new_content  PyCharm     test1      Videos
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   NodeRed      sketchbook  ui         ws_moveit
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Pictures     snap        untitled
rengy@tesr-9939:~$ mv untitled new_content
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music        Public      Templates  Videos
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  new_content  PyCharm     test1      ws_moveit
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   NodeRed      sketchbook  ui
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Pictures     snap        untitled1
rengy@tesr-9939:~$ cd new_content
rengy@tesr-9939:~/new_content$ ls
untitled
```

- Can also use to rename by type **"mv <current_name> <new_name>"**

```
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music        Public      Templates  Videos
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  new_content  PyCharm     test1      ws_moveit
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   NodeRed      sketchbook  ui
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Pictures     snap        untitled1
rengy@tesr-9939:~$ mv new_content change_name
rengy@tesr-9939:~$ ls
arduino                        cartographer_ws  Downloads                   kobuki_ws            Public      test1
Arduino                        foxy_ws          model_editor_models         PyCharm             ui
build-new-Desktop-Debug        change_name      grafana                     Music                sketchbook  untitled1
build-TESR_Nav_gui-Desktop-Debug  Desktop       influxDB2                   NodeRed             snap        Videos
build-test1-Desktop-Debug      Documents        ironx_customer_data_backup  Pictures            Templates   ws_moveit
```

Linux Basic Commands

- **rmdir –** command to **rem**ove the **dir**ectory including content inside it.
  - **Argument require: "rm <directory_name>"** to remove the directory.

```
rengy@tesr-9939:~$ ls
arduino                        cartographer_ws  Downloads                   kobuki_ws             Public      test1
Arduino                        catkin_ws        foxy_ws                     model_editor_models  PyCharm     ui
build-new-Desktop-Debug        change_name      grafana                     Music                sketchbook  untitled1
build-TESR_Nav_gui-Desktop-Debug  Desktop       influxDB2                   NodeRed              snap        Videos
build-test1-Desktop-Debug      Documents        ironx_customer_data_backup  Pictures             Templates   ws_moveit
rengy@tesr-9939:~$ rmdir change_name
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music     PyCharm     test1      ws_moveit
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  NodeRed   sketchbook  ui
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   Pictures  snap        untitled1
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Public    Templates   Videos
```

- **rm –** command to **rem**ove a file from your working directory.
  - **Argument require: "rm <file_name>"** to remove a file.

```
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music     PyCharm     test1        Videos
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  NodeRed   sketchbook  textfile.txt  ws_moveit
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   Pictures  snap        ui
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Public    Templates   untitled1
rengy@tesr-9939:~$ rm textfile.txt
rengy@tesr-9939:~$ ls
arduino                        build-test1-Desktop-Debug  Documents  influxDB2                   Music     PyCharm     test1      ws_moveit
Arduino                        cartographer_ws            Downloads  ironx_customer_data_backup  NodeRed   sketchbook  ui
build-new-Desktop-Debug        catkin_ws                  foxy_ws    kobuki_ws                   Pictures  snap        untitled1
build-TESR_Nav_gui-Desktop-Debug  Desktop                 grafana    model_editor_models         Public    Templates   Videos
```

  - Can also remove directory as same as rmdir by type **"rm –r <directory_name>"**

Linux Basic Commands

- **df –** command to show the report of system's disk space usage.

```
rengy@tesr-9939:~$ df
Filesystem       1K-blocks       Used Available Use% Mounted on
udev               7847380          0   7847380   0% /dev
tmpfs              1577004       2180   1574824   1% /run
/dev/nvme0n1p7   103417728   74808008  23310164  77% /
tmpfs              7885000     270396   7614604   4% /dev/shm
tmpfs                 5120          4      5116   1% /run/lock
tmpfs              7885000          0   7885000   0% /sys/fs/cgroup
/dev/loop0             128        128         0 100% /snap/bare/5
/dev/loop2          136576     136576         0 100% /snap/chromium/2036
/dev/loop1          233600     233600         0 100% /snap/blender/2578
/dev/loop3           56960      56960         0 100% /snap/core18/2538
/dev/loop8           55552      55552         0 100% /snap/snap-store/558
/dev/loop7          370944     370944         0 100% /snap/obs-studio/1276
/dev/loop4          116736     116736         0 100% /snap/core/13308
/dev/loop5           56960      56960         0 100% /snap/core18/2409
/dev/loop9          409088     409088         0 100% /snap/obs-studio/1284
/dev/loop10          52224      52224         0 100% /snap/snap-store/547
/dev/loop12          48128      48128         0 100% /snap/snapd/16292
```

Linux Basic Commands

- **sudo –** stand for **"SuperUser DO"** command line enables you to perform tasks that require administrative or root permission. Such as create, edit and remove file that protected by linux system.

  - Create file with sudo command will **protect** your file from edit or remove without permission.

```
rengy@tesr-9939:~$ sudo nano textfile.txt
[sudo] password for rengy:
rengy@tesr-9939:~$ ls
arduino                      build-test1-Desktop-Debug   Documents   influxDB2                    Music     PyCharm      test1
Arduino                      cartographer_ws             Downloads   ironx_customer_data_backup   NodeRed   sketchbook   textfile.txt
build-new-Desktop-Debug      catkin_ws                   foxy_ws     kobuki_ws                    Pictures  snap         ut
```

  - Without sudo command you cannot edit or remove file that create by sudo command.

Try to edit:
```
rengy@tesr-9939:~$ nano textfile.txt
```
➡️
```
[ Error writing textfile.txt: Permission denied ]
ere Is      ^K Cut Text    ^J Justify    ^C Cur Pos
place       ^U Paste Text  ^T To Spell   ^  Go To Line
```

Try remove:
```
rengy@tesr-9939:~$ rm textfile.txt
rm: remove write-protected regular empty file 'textfile.txt'?
```

Linux Basic Commands

- **chmod** – command use to give permission to manage the content in working directory.
    - **Argument require: "chmod +x <file_name>"**

      * +x = execute, +r = read, +w = write can also add as +rwx to allow all the same command.

- For the file create by sudo you must add sudo in front of command to allow to manage that file.

Linux Basic Commands

- **tar –** command to unzip .tar file. For example, we will download and install Arduino using tar unzip.

  - Download Link: https://www.arduino.cc/en/software

  - Select Linux 64 bit

Linux Basic Commands

- After download, type "cd <download_folder" (In this case, cd Downloads)

- Type **"sudo tar -xvf arduino-1.8.19-linux64.tar.xz"**

- Type **"cd arduino-1.8.19"**

- Type **". install.sh"**
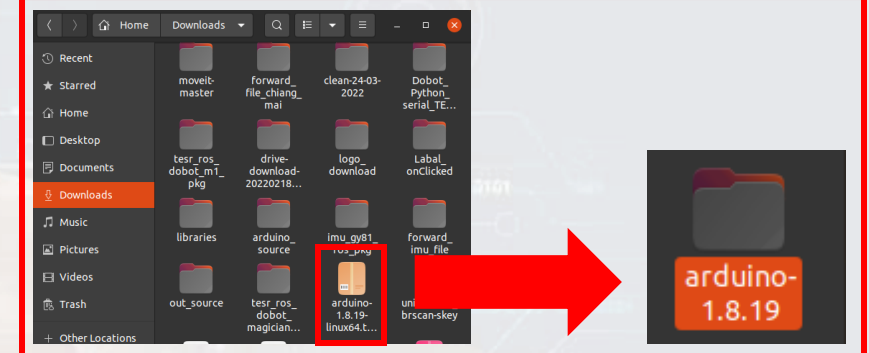
Linux Basic Commands
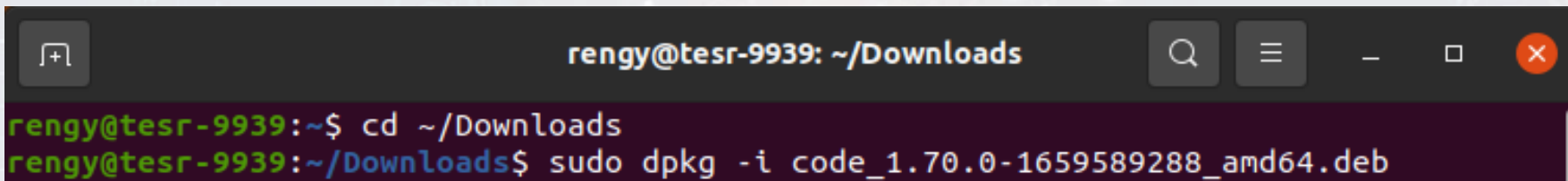
- **dpkg –** is a tools for install, build, remove and manage deb file. For example, we will download and install **Visual Studio Code** using dpkg.
  - Download Link: https://code.visualstudio.com/download
  - Select .deb for Debian, Ubuntu
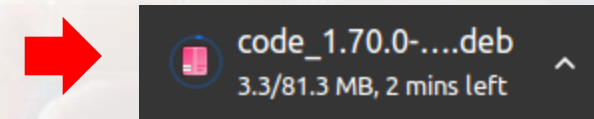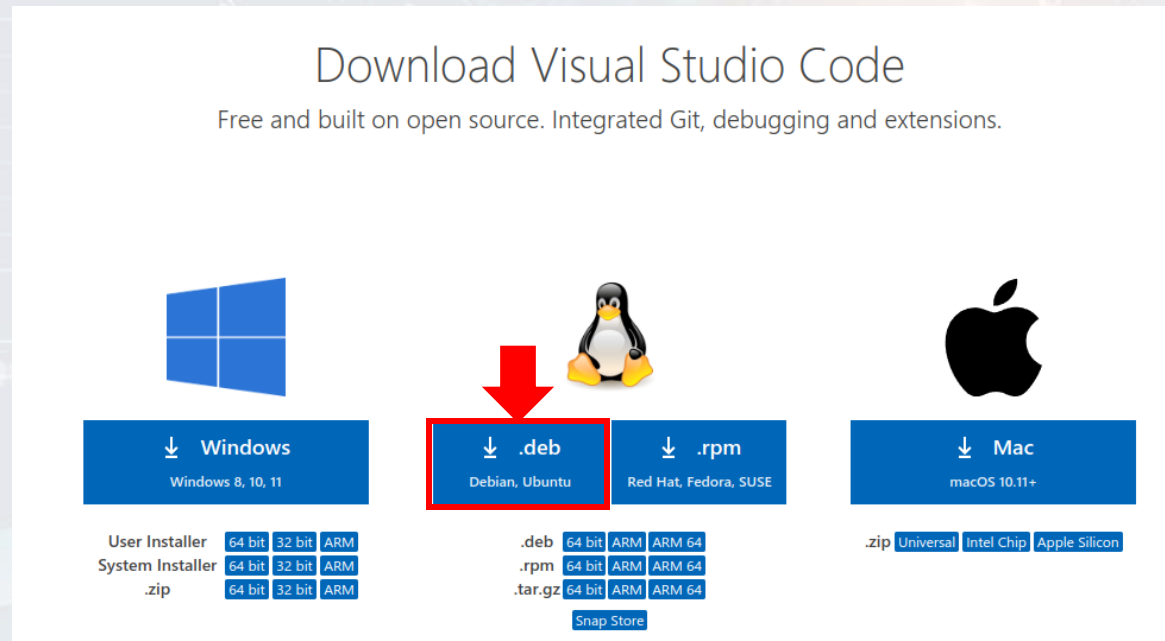
Linux Basic Commands
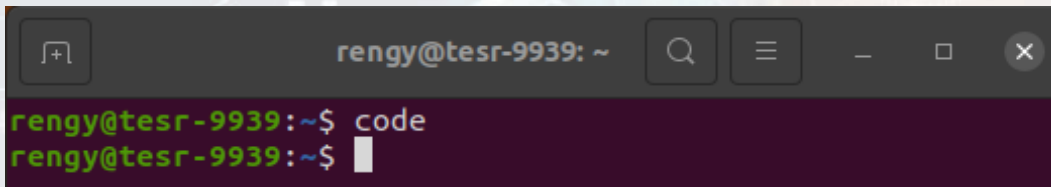
- **dpkg –** Install Visual Studio Code
  - Type **"cd ~/Downloads"**
  - Type **"sudo dpkg -i code_1.70.0-1659589288_amd64.deb"**

*dpkg -i = install
   dpkg --help = see all function of dpkg

  - Type **"code"** to open **Visual Studio Code**
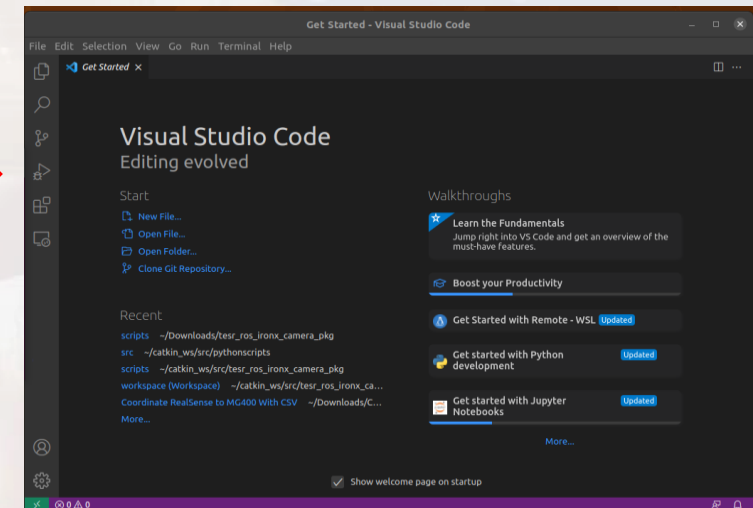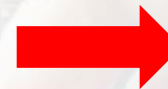
Linux Basic Commands

- **git clone –** command that help you to download folder from github HTTPS link address.
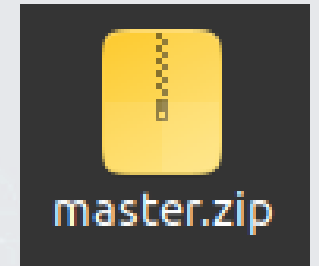 - **Argument require: "git clone <HTTPs_link_address>"**


```
rengy@tesr-9939:~$ git clone https://github.com/ROBOTIS-GIT/turtlebot3.git
Cloning into 'turtlebot3'...
remote: Enumerating objects: 6344, done.
remote: Counting objects: 100% (184/184), done.
remote: Compressing objects: 100% (72/72), done.
remote: Total 6344 (delta 94), reused 177 (delta 93), pack-reused 6160
Receiving objects: 100% (6344/6344), 119.92 MiB | 1.35 MiB/s, done.
Resolving deltas: 100% (3936/3936), done.
```
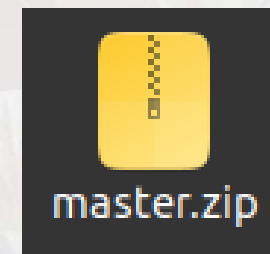
turtlebot3

Linux Basic Commands

- **wget –** command tools help you to download file.
  - **Argument require: "wget <download_link>"**

- **zip –** command to unzip .zip file.
  - **Argument require: "unzip <file_name.zip>"**
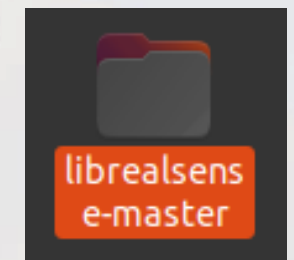
Linux Basic Commands

- **ifconfig –** command use to check own Laptop/PC ip address and MAC address too.

- **hostname -i –** another command use to show ip address

Linux Basic Commands

- **ping –** command use to check the connection within network.
  - **Argument require: "ping <ip_address>"** such as **"ping 192.168.1.103"**

```
rengy@tesr-9939:~$ ping 192.168.1.103
PING 192.168.1.103 (192.168.1.103) 56(84) bytes of data.
64 bytes from 192.168.1.103: icmp_seq=1 ttl=64 time=0.046 ms
64 bytes from 192.168.1.103: icmp_seq=2 ttl=64 time=0.064 ms
64 bytes from 192.168.1.103: icmp_seq=3 ttl=64 time=0.088 ms
64 bytes from 192.168.1.103: icmp_seq=4 ttl=64 time=0.124 ms
^C
--- 192.168.1.103 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3066ms
rtt min/avg/max/mdev = 0.046/0.080/0.124/0.029 ms
```

Connection found.

```
rengy@tesr-9939:~$ ping 192.168.1.100
PING 192.168.1.100 (192.168.1.100) 56(84) bytes of data.
From 192.168.1.103 icmp_seq=1 Destination Host Unreachable
From 192.168.1.103 icmp_seq=2 Destination Host Unreachable
From 192.168.1.103 icmp_seq=3 Destination Host Unreachable
^C
--- 192.168.1.100 ping statistics ---
5 packets transmitted, 0 received, +3 errors, 100% packet loss, time 4088ms
pipe 3
```

Connection not found.

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Line official Account: @ion1900z
Facebook fanpage: TESR
Tel. 082-983-7768

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TESR Co., LTD

112/296 หมู่บ้าน เพอร์เฟค มาสเตอร์พีซ
หมู่ที่ 2 ตำบลไทรม้า อำเภอเมืองนนทบุรี
จังหวัดนนทบุรี 11000