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## 1-What Is Linux, And How Does It Differ From Other Operating Systems Like Windows And MacOS??

Linux Is An Open Source Operating System , It Has Grown To Become A Popular Choice For Servers , Desktops , And Embedded Systems

### Linux Is Different Because:

1-Linux Is An Open Source Meaning That Its source Code Available For Every One But, Windows && Mac Are Not.

2-We Have Many Free Distributions In Linux , But Windows And Macs Require License.

3-In Linux Command Line Is A Powerful Tool In Linux Often Use For System Administration And Automation Many Task Can Done From The Terminal , But In Windows

We Have PowerShell And Prompt Provide Command Line but Graphical Interface Are Commonly Used.

4-Linux Is More Secure Thin Windows && Macs That's Mean Windows && Macs Are More Threaded By Malware

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2-Name Three Popular Linux Distribution And Briefly Describe One Of Them??

A-Ubuntu

B-Fedora

C-Debian

**Debian** ==> A Stable And Versatile Distribution Known For Its Robustness ,Its Often Used As The Base For Other Distributions , Including Ubuntu.

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3- What Is The Root Directory In Linux, And what Is Its Significance

In Linux, the root directory is the top-level directory in the filesystem hierarchy, represented by a single forward slash (`/`), It serves as the starting point from which all other directories and files branch out.

**Significance of the Root Directory:**

1-Filesystem Structure: The root directory is the foundation of the Linux filesystem hierarchy. All files and directories are organized within it.

2-Mount Points: The root directory can serve as a mount point for additional filesystems. For instance

3-System Accessibility: The root directory provides a central location where system files, user files, application files, and library files are stored.

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4-Explain The Difference Between An Absolute Path And a Relative Path In Linux??

**Absolute Path**: An absolute path is a complete path that specifies the location of a file or directory from the root directory . It begins with a forward slash and provides the exact location in the filesystem hierarchy.

**relative path**: A relative path specifies the location of a file or directory in relation to the current working directory. It does not begin with a forward slash and instead uses the current directory as the starting point.

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5-What Command Would You Use To Update The Package List On A Debian Based System??



**sudo apt update**

```
(kali@kali)-[~/Desktop]
$ sudo apt update
Ign:1 http://http.kali.org/kali kali-rolling InRelease
Ign:1 http://http.kali.org/kali kali-rolling InRelease
0% [Connecting to http.kali.org]
```

## 6-Write The Command To Display The Current Working Directory?

```
(kali㉿kali)-[~]
$ cd Desktop

(kali㉿kali)-[~/Desktop]
$ pwd
/home/kali/Desktop

(kali㉿kali)-[~/Desktop]
$
```

**pwd**

## 7-How Do You Change To The ' /etc ' Directory From Your Current Location??

```
(kali㉿kali)-[~]
$ cd Desktop

(kali㉿kali)-[~/Desktop]
$ cd /etc

(kali㉿kali)-[/etc]
$ pwd
/etc

(kali㉿kali)-[/etc]
$
```

**cd /etc**

## 8- List The Contents Of The '/home ' Directory ,including Hidden Files , In A Detailed List Format??

```
(kali㉿kali)-[~]
$ cd /home

(kali㉿kali)-[/home]
$ ls -alh
total 12K
drwxr-xr-x  3 root root 4.0K Jul 27 14:40 .
drwxr-xr-x 18 root root 4.0K Nov 30  2023 ..
drwx----- 17 kali kali 4.0K Aug  2 08:55 kali

(kali㉿kali)-[/home]
$ ls -a
.  ..  kali

(kali㉿kali)-[/home]
$ ls -al
total 12
drwxr-xr-x  3 root root 4096 Jul 27 14:40 .
drwxr-xr-x 18 root root 4096 Nov 30  2023 ..
```

**ls -alh**

9- What Is The Purpose Of The 'ls -l' Command And What Information It Provide??

We Use 'ls-l' To Get Information About Files Like: Time , Date,Size...

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10-What Command Can Be Used To Return To Your Home Directory From Any Location In The File System??

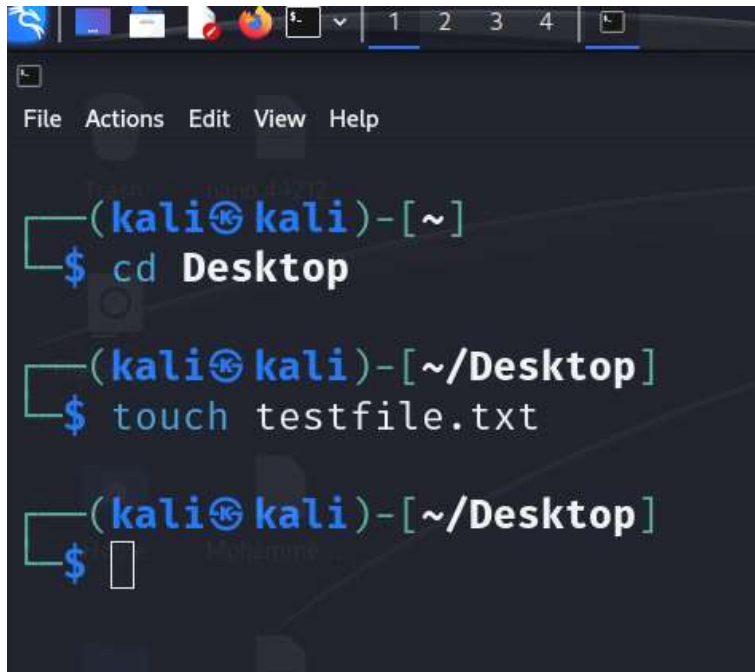
A terminal window titled 'kali@kali: /home' showing a sequence of directory navigation commands. The prompt is '(kali@kali)-[~]' and the user enters '\$ cd Desktop'. The prompt changes to '(kali@kali)-[~/Desktop]' and the user enters '\$ cd Mohammed'. The prompt changes to '(kali@kali)-[~/Desktop/Mohammed]' and the user enters '\$ cd /home'. The prompt changes to '(kali@kali)-[/home]' and the user enters '\$' followed by a cursor.

```
(kali@kali)-[~]  
$ cd Desktop  
  
(kali@kali)-[~/Desktop]  
$ cd Mohammed  
  
(kali@kali)-[~/Desktop/Mohammed]  
$ cd /home  
  
(kali@kali)-[/home]  
$
```

A pink speech bubble with a black outline, containing the text 'cd /home' in a bold, italicized font.

cd /home

11-Write The Command To Create An Empty File Fail Named Testfile.txt??




```
(kali㉿kali)-[~]  
$ cd Desktop  
  
(kali㉿kali)-[~/Desktop]  
$ touch testfile.txt  
  
(kali㉿kali)-[~/Desktop]  
$
```

touch testfile.txt

---

12-How Do You Create A Directory Named 'testdir'??



```
(kali㉿kali)-[~]  
$ cd Desktop  
  
(kali㉿kali)-[~/Desktop]  
$ mkdir testdir  
  
(kali㉿kali)-[~/Desktop]  
$
```

**mkdir testdir**

13-Write The Command To Copy 'testfile.txt' To 'backup\_testfile.txt'??

```
kali@kali: ~/Desktop
File Actions Edit View Help

(kali@kali)-[~/Desktop]
$ touch testfile.txt

(kali@kali)-[~/Desktop]
$ sudo cp testfile.txt /home/kali/Desktop/testdir

(kali@kali)-[~/Desktop]
$
```

***sudo cp testfile.txt  
/home/kali/Desktop/  
p/testdir***

14- What Is The Command Would You Use To Move(rename) 'testfile.txt' To 'newfile.txt'?

```
kali@kali: ~/Desktop
File Actions Edit View Help

(kali@kali)-[~/Desktop]
$ sudo mv testfile.txt /
home/kali/Desktop/newfile.
txt

(kali@kali)-[~/Desktop]
$
```

**sudo mv testfile.txt  
/home/kali/Desktop/newfile.tx  
t**



15-Write The Command To Remove The Directory 'testdir.txt' and its contents??

```
File Actions Edit View Help
(kali@kali)-[~]
$ cd Desktop
(kali@kali)-[~/Desktop]
$ sudo rm -r testdir
(kali@kali)-[~/Desktop]
$
```

**sudo rm -r testdir**

16-How

Can You list All Existing Users On The System??

```
File Actions Edit View Help
(kali@kali)-[~]
$ W
15:39:01 up 3 min, 1 user, load average: 0.44, 0.51, 0.25
USER  TTY  FROM          LOGIN@  IDLE   JCPU   PCPU WHAT
kali  -    -             15:35   3:02   0.00s  0.24s lightdm --session-child 13 24
(kali@kali)-[~]
$
```

**W**

17-Write The Command To Create A New User With The Username 'newuser'??

```
File Actions Edit View Help
(kali@kali)-[~/Desktop]
$ sudo useradd newuser
[sudo] password for kali:
(kali@kali)-[~/Desktop]
$
```

**sudo useradd**  
**newuser**

## 18- How Do You Create A New Group Named 'newgroup'??

```
File Actions Edit View Help
kali@kali:~$ sudo groupadd newgroup
[sudo] password for kali:
kali@kali:~$
```

`sudo groupadd newgroup`

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## 19-Write The Command To Add The User 'newuser' To The Group 'newgroup'??

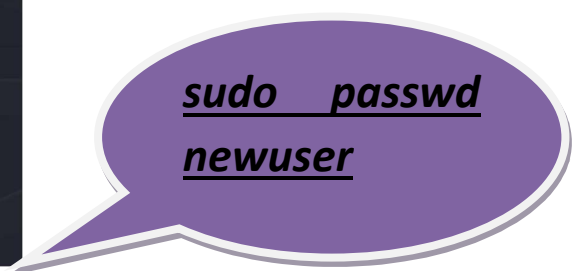
```
File Actions Edit View Help
kali@kali:~$ sudo usermod -aG newgroup newuser
[sudo] password for kali:
kali@kali:~$
```

**`sudo usermod -aG  
newgroup newuser`**

20- What Command Would You Use To Change The Password For The User 'newuser'??



```
(kali㉿kali)-[~]  
$ sudo passwd newuser  
[sudo] password for kali:  
New password:
```



sudo passwd  
newuser

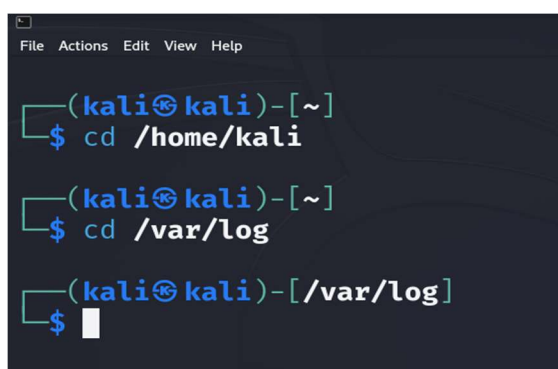
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21- Describe The Steps You Would Take To Install A Linux **Distribution On A Virtual Machine ??**

- 1- Choose a Virtualization Software
- 2- Download the Linux Distribution
- 3- Install Virtualization Software
- 4- Create a New Virtual Machine
- 5- Configure Virtual Machine Settings
- 6- Start the Virtual Machine
- 7- Install the Linux Distribution
- 8- Complete the Installation
- 9- Access the Linux Distribution
- 10- Update and Install Software

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22- If You Are In The '/home/user' Directory , What Command Would You Use To Navigate To '/var/log' ??



```
(kali㉿kali)-[~]  
$ cd /home/kali  
  
(kali㉿kali)-[~]  
$ cd /var/log  
  
(kali㉿kali)-[/var/log]  
$
```



cd /var/log

## 23- How Do You Display The Contents Of The Current Directory In A Human Readable Format??

```
kali@kali: ~/Desktop
$ ls -lh
total 28K
drwxr-xr-x 2 root root 4.0K Jul 20 16:36 Ahmed
-rw-r--r-- 1 kali kali 21 Jul 26 11:46 Ahmed.txt
-rw-r--r-- 1 kali kali 0 Aug 2 10:43 backup_
-rw-r--r-- 1 kali kali 0 Aug 2 10:44 backup_testfile.txt
drwxr-xr-x 2 kali kali 4.0K Jul 20 13:48 Mohammed
drwxr-xr-x 2 kali kali 4.0K Jul 26 11:46 Mohammedd
-rw-r--r-- 1 kali kali 0 Jul 27 14:09 Mohammed.txt,cc.txt
-rw-r--r-- 1 kali kali 1 Jul 27 11:02 nano.44212.save
-rw-r--r-- 1 kali kali 0 Aug 2 10:56 newfile.txt
drwxr-xr-x 2 kali kali 4.0K Aug 2 11:20 testdir1
-rw-r--r-- 1 kali kali 0 Aug 2 11:21 testfile
-rw-r--r-- 1 kali kali 0 Aug 2 12:50 testfile.txt
-rw-r--r-- 1 kali kali 4 Jul 27 14:07 xaa
```

**ls -lh**

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## 24-Explain What The Following Command Does:

'cp -r /home/user/docs/home/user/docs\_backup'??

we Use This Command In When We Want To Copy The Directory /home/user/docs And All Of Its Contents To A New Location , Which Is: /home/user/docs\_backup

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## 25-What Is The Difference Between The 'rm' and 'rm -r' commands??

We Use 'rm' To Remove The Directory if it Its Empty  
&& We Use 'rm -r' To Remove The Directory With Withe Its Content

## 26-Explain The Significance Of The '/etc' Directory In Linux??

The /etc directory in Linux holds significant importance as it contains system-wide configuration files and directories that are essential for the operating system and installed applications to function properly Like:

- 1- Configuration Files**
- 2- System Settings**
- 3- User Management**
- 4- System Security**
- 5- Standardization**
- 6- Initialization Scripts**