- To add wallpaper that is in another folder, just click the plus icon below the thumbnails and then in pop-up window, select the path to our custom folder and choosen the picture inside of it.

- Changing Ubuntu theme:

  - Ubuntu also has an option to change the Desktop theme, which in one click will change the entire way your computer looks.
  - To do that, click on the drop down menu below the wallpaper Thumbnails and choose between. Ambiance, Radiance or high contrast.

  - Ambiance is a light theme that looks a bit more like Radiance is the darker brown theme used in ubuntu by default.
  - change the size or rotation of screen.
  - you can change how big things appear on the screen by changing the screen resolution.
  - you can change which way up things appear by changing the rotation.

Select your location:

- If you are connected to the internet, this should be done automatically. Check your location is correct & click "forward" to proceed. If you are unsure of your you are in or click on the map and we will help you find it.



Select your preferred keyboard layout.

Click on the language option you need. If you're not sure, click the "detect keyboard layout" button for help.

- Enter your login & password details.

- Learn more about ubuntu while the system installs.

That's it! That's led is to understand your computer and start enjoying ubuntu.

- All that's led is to understand your computer and start enjoying ubuntu.

- Steps to change background settings of ubuntu.

- We advice you to select & download your software while installing & install the third-party
- You should also they connected to the internet when so you can install the latest update if you install connected to the internet
- If you will be not asked to select a software network if available, We advise you to connect during the installation

**Allocate disk space:**

- Use the checkbox to choose whether you want like to install Ubuntu alongside another operating system that your existing operating system and replace it with Ubuntu, or if your are an advanced user choose the something else option.

- Begin the installation
  - Depending on your previous selections you are now ready for you to begin the install in this way would like to help to install Ubuntu
  - The installation process will begin when you click the Install Now button
  - Ubuntu needs about 15GB to install, so add extra GB to allow for your files

# Practical-10 LINUX
## Practical - 1

Aim - Installation of Ubuntu and background changing.

steps to install ubuntu :

Using a USB drive.

- Most newer computer can boot from USB you should see a welcome screen prompting you to choose your language and giving you the option to install ubuntu or try it form the USB.
- If your computer doesn't automatically do so, you might need to press the FR key to bring up the boot menu, but be careful not to hold it down that can cause an error message.

Prepare do install Ubuntu:-

- We recommend you plug your computer into a power source.
- You should also make a sure you have enough space on your computer to install ubuntu.
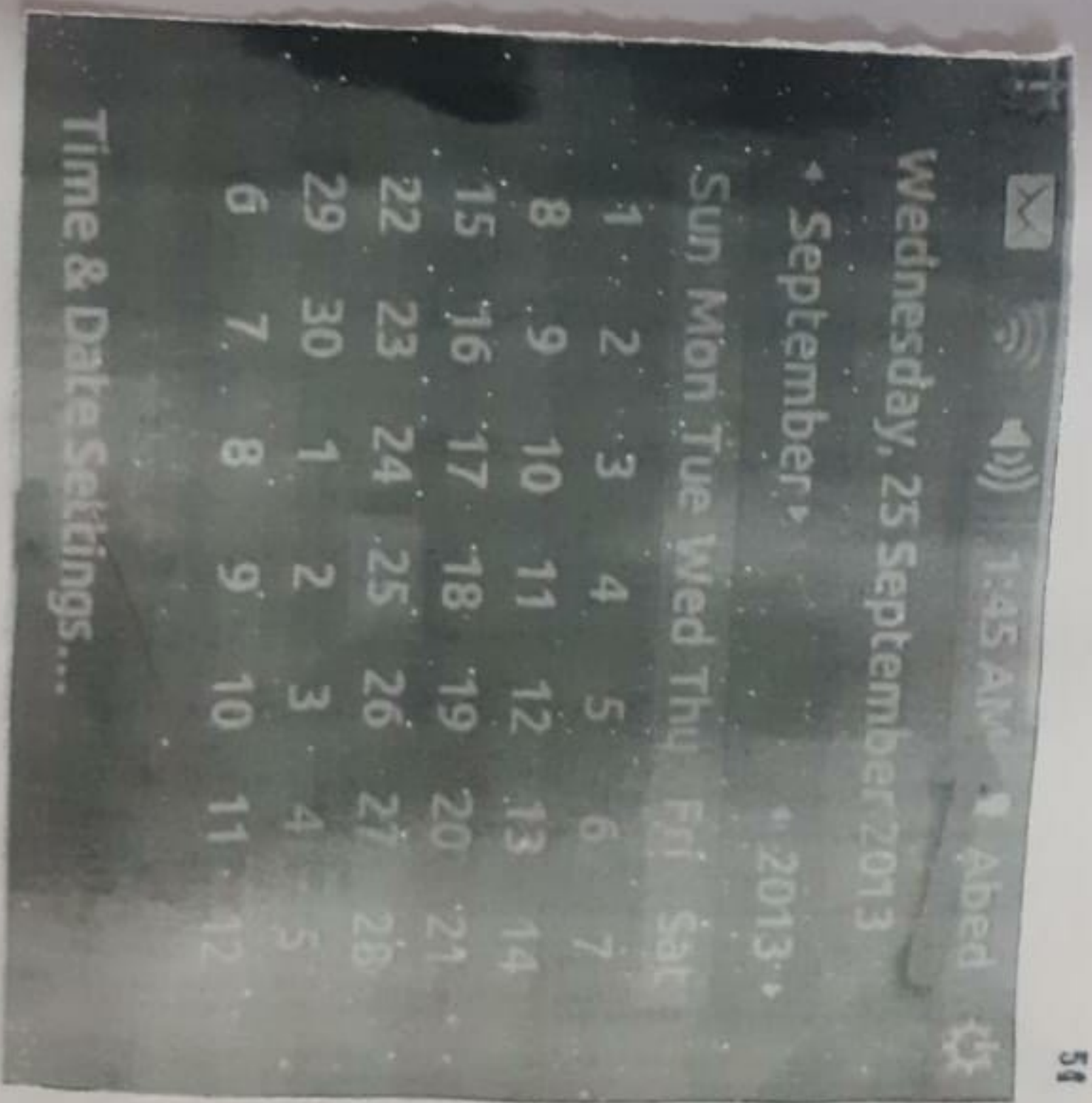
Accessing Appearance settings:

- To access appearance setting in ubuntu 14
  the click on usa menu at the top of
  appear on top menu bar and select System
  settings....

- A window will be up with all 3 settings
  divided into personal hardware and system
  option icons. Tick first select the Appearance
  icon.

Changing wallpaper picture:

- On the top left side of Background part,
  you can see your current wallpaper.

- On the right side is part where we can
  select one of ubuntu wallpapers. Clicking
  on any thumbnail our wallpapers will
  be changed right away with a
  fading effect.

If you want to select wallpaper that
your picture folder, click the drop d
menu above thumbnails and select b
picture folder.

- You will see all the picture in
  pictures folder as thumbnails, whose
  can select them as your wallpaper.

---

1] Click the icon on the very right of the menu bar and select system setting.

2] Open screen Display.

3] If you have multiple display on each display. Select a display in the privie area.

4] Select your the new settings will be applied for 30 seconds.

Time setting change time zone of your system
• If you are currently in Indian time. Note that the time change, change the time zone back to your local time zone.

• Just click on the clock on the top of bar, choose Time & Date settings & choose from map, & change automatic.

# Practical-02

Aim: Installing and removing software

a) Install gcc package; verify that it runs and then remove it:

Step 1 - First type 'gcc -v' to know if you have already installed gcc compiler or not if the output is blank Then it means that you don't have gcc installed.

Step 2 - Type: sudo - apt-get install gcc'. After typing the following comment installation will take place.

Step 3 - Type 'sudo apt-get install build -essential This will install all the libraries required for c & c++ programming language.

b] Now to uninstall the gcc compiler

In Gcc 5.1.0, although there is no toplevel uninstall target, some dictionaries do have in partition gcc, so you can do:

Type : cd build/gcc
sudo make uninstall

This does not remove everything that was installed, built remove major executable like gcc, g++, cpp... contained in that directory.

02/03

# Poactical-3

Aim: Utilization of grep, man commands documentation.

a] Finding info documentation from the command line bring up the info page for the grep command. Bring up the usage section.

Ans] To find info about any command, 'info' command used. The syntax of info command is info (command name). We are going to find the info about The grep command:
Open The terminal (Ctrl + Alt + T) and type into grep. After typing this command, o/p with be displayed onto your screen.

You can also scroll though your pages using (space = up) A backspace = down) keys. More suphmrised from od showing info is The map command. The command is same as info, but required data.

Output - This is the info menu. A few useful, info commands,
'q' quits.
'?' lists all the info commands.
'h' starts the info tutorial.
'n' Text info RET visits the Text info manual etc.

Manual Sections.
The standard section of the manual in

1) User commands.
2) System all calls.
3) C library functions.
4) Devices and special files
5) File formats and conventions.
6) Games of c-ol.
7) Miscellaneous
8) System administration tool.

Distribution customize the manual section to their which often include additional sections.

There are certain terms that have different page in different sections (eg: 'print f') as a command appears in section as a 'stdlib' function appears in section 5), in cases like that you can pass the section as.

    $ man 1 print f
    $ man 3 print f
    $ man -e print f
    $ man -k print f

print f (1) - format
print f (1 p) - write and print data
print f (3p) - point formulated output.
You can tell what section n terms tells in what command - line help list section n terms tell

b) Finding man page from the and file & Bring up the man page for the 'ls' comm and scroll down to the eg:- section.

Ans- To use the 'man' command simply type 'man command name );
Now we are going to find the manual for is simply type 'man is'.

c) Finding man pages by topic: What man pages are available that documents file compression.

Ans- 'Tar', 'zip' are same man pages which are available for document file compress Siaple type: man zip
man tar

name → zip - package
synopsis → zip clooks (see separate man page)
zipnote ("      "    ")
zipsplit ("      "    ")

Facts

output: Name + ls: list directory contexts.

synopsis → ls [OPTION] ... [FILE] ...

Description:

-a, ... all
   do not ignore entries starting with.

- A, -- almost -all
   do not list implied, and ...

-b, --- escape
   print c-style escape for nanographic characters.

-c list . entries by columns

-d, ... directory.
   list directories themselves, not their contents.

④ delete (-d) → select entries in an existing archive and delete then.

⑤ copy (-u) → select entries in an existing archive and copy them to a new archieve.

d) Finding man pages by section from the and lines; bring up the man pages for the point did and which manual page section are library function found!

Ans - The number corresponds to what section of the manual page from 1 is user the mine stuff. 9

ls: /bin /lib/usr/share/man/man1 to /g²

\# where is ps

ps: /bin/ps/usr/share/man/maps:/bin/ps/usr/share/man/man1/ps1g²

\# where is bash

bash: /bin/bash /etc/bash-bashrc/usr/share/man/man1/
bash/g².

· /usr/bin passwd
· /etc/pam.d/passwd
· /etc/passwd

Find the password file /bl~sub-dredires
level ²
a find - max depth 3 maxdepth -name passw
· /usr/bin/passwd
· /etc/pam.d/passwd
· /etc/passwd

1) Create a symbolic link to the file your
found in Next step

\# ln -s file1 file2

c) create an empty file example.txt or most
to tmp directory using relative
pathname.

\# touch example.txt
\# mv example.txt/tmp

1) delete the file moved to /tmp in previous
step
obsolute method.

\# rm/tmp/example.txt in previous
of 15, ps, bash commands

g) find the location of ls, ps, bash commands
\# where is ls.

# Practical - 4

Command line operations :

a] Install new package on your system.

   Sudo apt - get install (package name)

b] Remove the package installed.

   Sudo apt - get remove (packge name)

c) Find the password file in/using find comnand.

   # find /- name passwd
   • / user / share / doc / nss - ldop⁻253/pam.d / pass wd
   • / usr / bin / passwd
   • / etc / pamd / passwd
   • / etc / passwd.

Find the directory passwd file under root and one level down

   # find / - max depth 2 -name passwd
   • / etc / passwd.

find the passwd file under root and 2 level down.
   # find / - mo, depth 3 - name passwd.

22.

6) Use patch command to patch a file. And analyse the patch using patch command again.

```
jeba@jeba-VirtualBox:~/jeb$ cat >hi.txt
hi
hi
hi
^C
jeba@jeba-VirtualBox:~/jeb$ cat >hii.txt
hello
hello
hello
^C
jeba@jeba-VirtualBox:~/jeb$ diff -u hi.txt hii.txt >sam.patch
jeba@jeba-VirtualBox:~/jeb$ patch ;sam.patch
^C
jeba@jeba-VirtualBox:~/jeb$ patch <sam.patch
patching file hi.txt
jeba@jeba-VirtualBox:~/jeb$ cat sam.patch
--- hi.txt      2020-01-08 22:14:55.463569834 +0530
+++ hii.txt     2020-01-08 22:15:16.259898738 +0530
@@ -1,3 +1,3 @@
-hi
-hi
-hi
+hello
+hello
+hello
jeba@jeba-VirtualBox:~/jeb$
```

02/03

3) Copy text from files
-> cp command, mv command

```
jeba@jeba-VirtualBox:~$ ls
Desktop  examples.desktop  Music  Pictures  Public  Templates  Videos
jeba@jeba-VirtualBox:~$ cd jeb
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat >gg.txt
Linux
^C
jeba@jeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt dd.txt
Linux
Welcome
Linux
Welcome
jeba@jeba-VirtualBox:~/jeb$
```

```
jeba@jeba-VirtualBox:~/jeb$ touch ss.txt
jeba@jeba-VirtualBox:~/jeb$ ls
jeba@jeba-VirtualBox:~/jeb$ mv gg.txt ss.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
cat: gg.txt: No such file or directory
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt
Linux
Welcome
jeba@jeba-VirtualBox:~/jeb$
```

4) removing the ____ _____ directory using
-> gzip filename and bzip2 commands.
-> gzip filename .txt.
-> bzip filename txt.

```
jeba@jeba-VirtualBox:~/jeb$ bzip2 ss.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat ss.txt.bz2
BZh91AY&SY ...
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ gzip dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt.gz
...xzjeba@jeba-VirtualBox:~/jeb$
```

5) Use diff command to create diff of two files
-> diff filename, filename2

```
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt.gz  ss.txt.bz2
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
hello world
^C
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
hello world
^C
jeba@jeba-VirtualBox:~/jeb$ ls
this ls Linux
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt
hello world
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt
^C
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
1c1
< hello world
---
> this ls Linux
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt
jeba@jeba-VirtualBox:~/jeb$ gzip aa.txt
jeba@jeba-VirtualBox:~/jeb$ gzip bb.txt
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt.gz bb.txt.gz
Binary files aa.txt.gz and bb.txt.gz differ
```

```
jeba@jeba-VirtualBox:~$ tar -cvf data.tar /mnt
tar: data.tar: Cannot open: Permission denied
tar: Error is not recoverable: exiting now
jeba@jeba-VirtualBox:~$ sudo tar -cvf data.tar /mng
/mng/
tar: Removing leading '/' from member names
jeba@jeba-VirtualBox:~$ ls
data.tar ...
jeba@jeba-VirtualBox:~$ ls
bin    lib          mnt    opt  run  srv  usr
boot   lost+found   proc   sbin sys  var
dev    media        root   snap     vmlinuz
etc
jeba@jeba-VirtualBox:/$ cd /
root@jeba@jeba-VirtualBox:/$ cat data.tar
root@root:/mnt/hd/0000755000000...
000000000000000001360537655570103655 0ustar root root jeba@jeba-VirtualBox:/$
```

# Practical - 5

## File Operations.

Explore mounted file system on your computer
Ans: df -k

```
jeba@jeba-VirtualBox:~$ df -k
Filesystem     1K-blocks     Used Available Use% Mounted on
udev              494436        0    494436   0% /dev
tmpfs             102416     3676     98740   4% /run
/dev/sda1        7092728  3383372   3326024  51% /
tmpfs             512076      216    511860   1% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
tmpfs             512076        0    512076   0% /sys/fs/cgroup
tmpfs             102416       48    102368   1% /run/user/1000
jeba@jeba-VirtualBox:~$
```

what are the different ways of exploring mounted file system on linux.

Mount

```
jeba@jeba-VirtualBox:~$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
udev on /dev type devtmpfs (rw,nosuid,relatime,size=494436k,nr_inodes=123609,mode=755)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,gid=5,mode=620,ptmxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,noexec,relatime,size=102416k,mode=755)
/dev/sda1 on / type ext4 (rw,relatime,errors=remount-ro,data=ordered)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relatime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev)
tmpfs on /run/lock type tmpfs (rw,nosuid,nodev,noexec,relatime,size=5120k)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,mode=755)
cgroup on /sys/fs/cgroup/systemd type cgroup (rw,nosuid,nodev,noexec,relatime,xattr,releas
e_agent=/lib/systemd/systemd-cgroups-agent,name=systemd,nsroot=/)
pstore on /sys/fs/pstore type pstore (rw,nosuid,nodev,noexec,relatime)
cgroup on /sys/fs/cgroup/cpuset type cgroup (rw,nosuid,nodev,noexec,relatime,cpuset,nsroot
=/)
cgroup on /sys/fs/cgroup/net_cls,net_prio type cgroup (rw,nosuid,nodev,noexec,relatime,net
_cls,net_prio,nsroot=/)
cgroup on /sys/fs/cgroup/pids type cgroup (rw,nosuid,nodev,noexec,relatime,pids,nsroot=/)
cgroup on /sys/fs/cgroup/freezer type cgroup (rw,nosuid,nodev,noexec,relatime,freezer,nsro
ot=/)
cgroup on /sys/fs/cgroup/cpu,cpuacct type cgroup (rw,nosuid,nodev,noexec,relatime,cpu,cpua
cct,nsroot=/)
cgroup on /sys/fs/cgroup/devices type cgroup (rw,nosuid,nodev,noexec,relatime,devices,nsro
ot=/)
cgroup on /sys/fs/cgroup/memory type cgroup (rw,nosuid,nodev,noexec,relatime,memory,nsroot
=/)
cgroup on /sys/fs/cgroup/blkio type cgroup (rw,nosuid,nodev,noexec,relatime,blkio,nsroot=/
)
cgroup on /sys/fs/cgroup/perf_event type cgroup (rw,nosuid,nodev,noexec,relatime,perf_even
t,nsroot=/)
cgroup on /sys/fs/cgroup/hugetlb type cgroup (rw,nosuid,nodev,noexec,relatime,hugetlb,nsro
ot=/)
systemd-1 op /proc/sys/fs/binfmt_misc type autofs (rw,relatime,fd=37,pgrp=1,timeout=0,minp
roto=5,maxproto=5,direct)
hugetlbfs on /dev/hugepages type hugetlbfs (rw,relatime)
```

```
jeba@jeba-VirtualBox:~$ sudo cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
```

a) Create alias to most commonly used commands.
Alias command instructs the shell to replace one string with another string while executing the commands.

Ans - alias label = " command".

```
jeba@jeba-VirtualBox:~$ alias m="mkdir new"
jeba@jeba-VirtualBox:~$ m
jeba@jeba-VirtualBox:~$ ls
Desktop     Downloads    Music      Pictures  Templates
Documents   examples.desktop  new  Public    Videos
jeba@jeba-VirtualBox:~$
```

c) Get your current working directory.
Ans - pwd

```
jeba@jeba-VirtualBox:~
jeba@jeba-VirtualBox:~$ pwd
/home/jeba
jeba@jeba-VirtualBox:~$
```

d) Explore different ways of getting command history, how to run previously executed command without typing it.
→ History

!line number.

```
jeba@jeba-VirtualBox:~$ history
jeba@jeba-VirtualBox:~
1  who
2  whoami
3  who -1
4  clear
5  -s
6  w -h
7  w
8  w -f
9  clear
10 cat /etc/shadow
11 sudo cat /etc/shadow
12 clear cat /etc/shadow
13 sudo cat /etc/passwd
14 pwd
15 clear
16 history
jeba@jeba-VirtualBox:~$ !3
who -1
```

d/
02/03

- **Username**: up to 8 characters. Case-sensitive, usually all lowercase. A direct match to the username.
- **Password**: 13 character encrypted. A blank entry (e.g. ::) indicates the account has been disabled.
- The number of days (since January 1, 19...) since the password was last changed.
- The number of days before the password may be changed (0 indicates it may be changed at any time)
- The number of days after which the password must be changed (99999 indicates user can keep his or her password unchanged for many...)
- The number of days to warn user of an expiring password (7 for... till users...)
- The number of days after password expires that account is disabled.
- The number of days since January 1, 19... since an account has been disabled.
- A reserved field for possible future use.

---

field in a passwd entry is separated... borders, and are as follows:

- **Username**: up to 8 characters, all lowercase
- An 'x' in the password field. Shows in the "/etc/shadow" file.
- Numeric user id. This is assigned by the /etc/... script. Unix uses this field, the following group field, in identifying which files belong to the user.
- Numeric group id. Red Hat uses group id's in a fairly unique manner for enhanced file security of user.
- Full name of user. I'm not sure what the maximum length for this field is, but try to keep it reasonable (under 30 characters)
- User's home directory. Usually /home/username
  (e.g. /home/smithj). All users' personal files, web pages, mail forwarding etc. will be stored here.
- User's shell account. Often set to "/bin/bash" to provide access to the bash shell (my personal favourite shell)

## Practical - 7

a) Create, modify, search and navigate a file in edit

i) **creating a file.**
   To create a file, on the terminal type vi followed by filename.

ii) **Modifying the file:**
   To modify a file, on the vi editor, type 'o' to modify a file, on the vi editor, type 'o'

iii) **Search in a file:**
   To find a word (forward search) press / followed by a word to search.

iv) **Navigate:**
   Movements in four directions.

| Key | Action |
| --- | --- |
| j | Moves cursor up |
| k | Moves cursor down |
| h | Moves cursor left |
| l | Moves cursor right |

o) Learn all essential commands like search, replace, highlight highlight, show line numbers.

   i) Replace.

---

Navigation:

**Key** | **Action**

| Key | Action |
| --- | --- |
| b | Moves back to the beginning |
| e | Moves back to the end of the word |
| w | Moves forward to the beginning |
| o | Moves to first character of the line |
| $ | Move to the end of line |

**Scrolling.**

| Key | Action |
| --- | --- |
| ctrl + f | Scroll forward |
| ctrl + b | Scrolls backward |
| ctrl + d | Scrolls half page |
| ctrl + u | Scrolls half page backward |

Syntax: :/g1 used to be replaced /s/line→word



:g/my/s/our/gc

Hello
This is my linux example
Welcome
This is vi Editor
Thank you

Hello
This is our linux example
Welcome
Welldone
This is vi Editor
Thank you

ii) Highlight
   Use set hisearch

iii) Show the line number
    Use set nu

:set hisearch

Hello
This is our linux example
Welcome
Welldone
This is vi Editor
Thank you

:set nu

**ss -E :-** Expiration Date

- -m : Minimum number of days before password change.
- -M : Number of days password is valid.
- -I : Account inactive.
- -w : Number of days of warning before a password change is required.

b) Delete newly added user

```
jeba@jeba-VirtualBox ~
jeba@jeba-VirtualBox:~$ sudo userdel user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ su user1
No passwd entry for user 'user1'
jeba@jeba-VirtualBox:~$
```

# Practical-8

## Linux Security

**a)** Use of sudo to change user privileges to root.

Create on user named user1

```
Jeba@jeba-VirtualBox:~
jeba@jeba-VirtualBox:~$ sudo useradd user1
[sudo] password for jeba:
jeba@jeba-VirtualBox:~$ sudo passwd user1
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
jeba@jeba-VirtualBox:~$
```

To give some users root privileges edit /etc/sudoers using visudo. Enter new line as highlighted

```
Please consider adding local content in /etc/sudoers.d/ instead of
directly modifying this file.

See the man page for details on how to write a sudoers file.

Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/us
...

# Host alias specification

# User alias specification

# Cmd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL
```

```
jeba@jeba-VirtualBox:~$ su user1
Password:
user1@jeba-VirtualBox:/home/jeba$ mkdir folder1
mkdir: cannot create directory 'folder1': Permission denied
user1@jeba-VirtualBox:/home/jeba$ sudo mkdir folder1
[sudo] password for user1:
user1 is not in the sudoers file. This incident will be reported.
```

**c)** Modify expiration date for new user using passwd ageing.

```
jeba@jeba-VirtualBox:~
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                                    : Jan 20, 2020
Password expires                                        : never
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 99999
...er of days of warning before password expires        : 7
```

```
jeba@jeba-VirtualBox:~$ sudo chage user1
Changing the aging information for user1
Enter the new value, or press ENTER for the default

        Minimum Password Age [0]: 100
        Maximum Password Age [99999]: 200
        Last Password Change (YYYY-MM-DD) [2020-01-20]: 2020-01-21
        Password Expiration Warning [7]: 5
        Password Inactive [-1]:
        Account Expiration Date (YYYY-MM-DD) [-1]: 2020-01-31
jeba@jeba-VirtualBox:~$ sudo chage -l user1
```

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                                    : Jan 21, 2020
Password expires                                        : Aug 08, 2020
Password inactive                                       : never
Account expires                                         : Jan 31, 2020
Minimum number of days between password change          : 100
Maximum number of days between password change          : 200
Number of days of warning before password expires       : 5
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ sudo chage -E 25/01/2020 -m 10 -M 30 -W 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change                            : Jan 21, 2020
Password expires                                : Apr 20, 2020
Password inactive                               : May 20, 2020
Account expires                                 : Jan 01, 2022
Minimum number of days between password change  : 10
Maximum number of days between password change  : 30
Maximum number of days between password change  : 30
```

**b)** Identify operators that require sudo privileges.

## c) Use ping to check the network connectivity to remote machines

```
jeba@jeba-VirtualBox:~$ ping www.google.com
PING www.google.com (172.217.31.190) 56(84) bytes of data.
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=
97.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=
82.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=
84.8 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=
87.1 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=
93.5 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=
86.9 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=
98.0 ms
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=
90.9 ms
^Z
[1]+  Stopped                 ping www.google.com
jeba@jeba-VirtualBox:~$
```

## 1) Use of dig command

```
jeba@jeba-VirtualBox:~$ dig www.google.com

; <<>> DiG 9.10.3-P4-Ubuntu <<>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 52608
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;www.google.com.                 IN      A

;; ANSWER SECTION:
www.google.com.         91      IN      A       172.217.166.100

;; Query time: 152 msec
;; SERVER: 127.0.0.1:1853(127.0.0.1.1)
;; WHEN: Mon Jan 20 22:40:06 IST 2020
;; MSG SIZE  rcvd: 59
jeba@jeba-VirtualBox:~$
```

## Troubleshooting network using traceroute, route, arp and ...

```
jeba@jeba-VirtualBox:~$ traceroute www.google.com
traceroute to www.google.com (172.217.166.100), 30 hops max, 60 byte packets
1  10.0.2.2 (10.0.2.2)  0.190 ms  0.143 ms  0.151 ms
2  * * *
3  10.0.2.2 (10.0.2.2)  68.568 ms  68.486 ms  68.405 ms
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         10.0.2.2        0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0        *               255.255.255.0   U     100    0        0 enp0s3
link-local      *               255.255.0.0     U     1000   0        0 enp0s3
jeba@jeba-VirtualBox:~$
```

## Use of arp command

```
jeba@jeba-VirtualBox:~$ arp
Address                  Hwtype  Hwaddress           Flags Mask            Iface
10.0.2.2                 ether   52:54:00:12:35:02   C                     enp0s
```

## Use of host command

```
jeba@jeba-VirtualBox:~$ host -V
host 9.10.3-P4-Ubuntu
jeba@jeba-VirtualBox:~$
```

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# Practical - 9

## Network Management

1) Get IP address of your machine using ifconfig.

```
jeba@jeba-VirtualBox ~
jeba@jeba-VirtualBox:~$ ifconfig
enp0s3    Link encap:Ethernet  HWaddr 08:00:27:0e:6b:69
          inet addr:10.0.2.15  Bcast:10.0.2.255  Mask:255.255.255.0
          inet6 addr: fe80::c8cd:53a0:d5a3:848e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2 errors:0 dropped:0 overruns:0 frame:0
          TX packets:73 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1180 (1.1 KB)  TX bytes:8518 (8.5 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:53240 errors:0 dropped:0 overruns:0 frame:0
          TX packets:53240 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:4225072 (4.2 MB)  TX bytes:4225072 (4.2 MB)
```

2) Get hostname of your machine

```
jeba@jeba-VirtualBox ~
jeba@jeba-VirtualBox:~$ hostname
jeba-VirtualBox
jeba@jeba-VirtualBox:~$ █
```

```
jeba@jeba-VirtualBox: ~
jeba@jeba-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address          State
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type         State           I-Node   Path
unix  2      [ ]         DGRAM                        42149    /run/user/1000/system
d/notify
unix  2      [ ]         DGRAM                        9694     /run/systemd/journal/
syslog
unix  16     [ ]         DGRAM                        9695     /run/systemd/journal/
dev-log
unix  7      [ ]         DGRAM                        9704     /run/systemd/journal/
socket
unix  3      [ ]         DGRAM                        9684     /run/systemd/notify
unix  3      [ ]         STREAM       CONNECTED       44042    @/tmp/dbus-CymTeI7AQG
unix  3      [ ]         STREAM       CONNECTED       43331
unix  3      [ ]         STREAM       CONNECTED       42988    @/tmp/dbus-CymTeI7AQG
unix  3      [ ]         STREAM       CONNECTED       42690    @/tmp/dbus-CMGGc6G7PS
unix  3      [ ]         STREAM       CONNECTED,      13242    /run/systemd/journal/
stdout
unix  3      [ ]         STREAM       CONNECTED .     43113    /run/systemd/journal/
stdout
unix  3      [ ]         STREAM       CONNECTED *     43013
unix  3      [ ]         STREAM       CONNECTED       42935
```

```
jeba@jeba-VirtualBox:~$ nmap www.google.com

Starting Nmap 7.01 ( https://nmap.org ) at 2020-01-20 22:51 IST
Nmap scan report for www.google.com (216.58.196.68)
Host is up (0.044s latency).
Other addresses for www.google.com (not scanned): 2404:6800:4007:811::2004
rDNS record for 216.58.196.68: bom05s11-in-f4.1e100.net .
Not shown: 998 filtered ports
PORT     STATE SERVICE
80/tcp   open  http
443/tcp  open  https

Nmap done: 1 IP address (1 host up) scanned in 20.32 seconds
jeba@jeba-VirtualBox:~$
```

chmod 777 filename.sh [for making the script executable]
or ./filename.sh [for running the script]

Program to display your name.

```
#!/bin/bash
Echo "Enter your name:"
Read name
Echo "My name is: $name"
```

- Chmod 777 filename.sh
- ./filename.sh

Step to write and execute a shell script:

Shell script is just a simple text file with .sh extension, having executable permission.

a) Open terminal.
b) Navigate to the place where you want to create the script using cd.
c) To create filename.sh
d) vi filename.sh [you can use your favou...
editor to edit the script]

# Practical - 10

# SHELL SCRIPTING

Basics of shell scripting
  a) To get a shell, you need to start a terminal.
  b) To see what shell you have, run:
     echo $SHELL
  c) In linux, the dollar sign ($) stands for shell variable.
  d) The echo command just returns whatever you type in.
  e) # ! /bin/bash - IU is called shebang. It is written at the top of a shell script and it passes the instruction to the program /bin/bash.

Echo $SHELL

```
tcsc@tcsc-VirtualBox:~$ echo $SHELL
/bin/bash
tcsc@tcsc-VirtualBox:~$
```
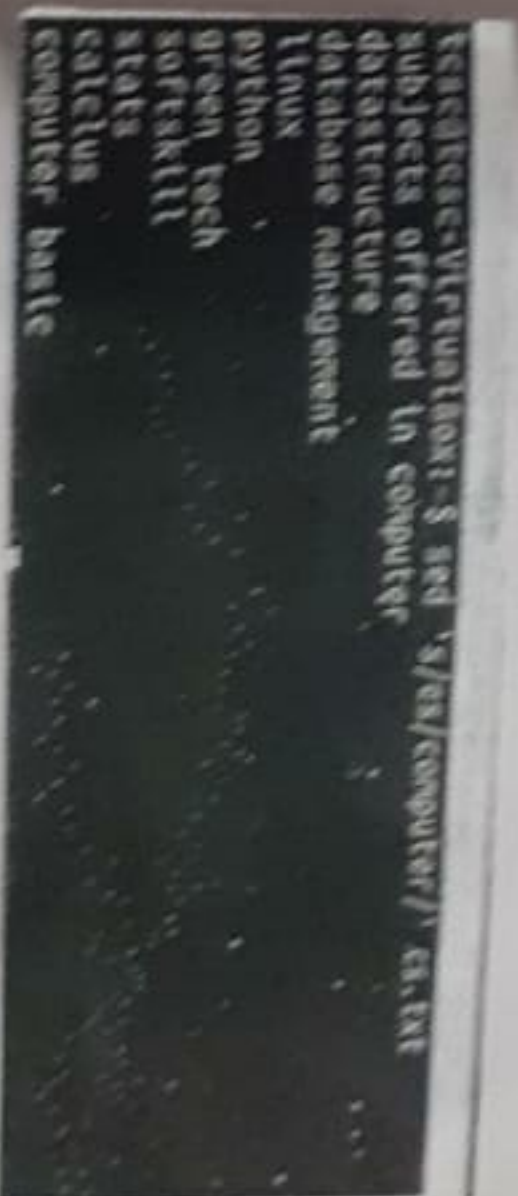
...delete a line, use line number followed by 'd'

```
kac@kac-VirtualBox:~
kac@kac-VirtualBox:~$ vi linux.sh
kac@kac-VirtualBox:~$ chmod 777 linux.sh
kac@kac-VirtualBox:~$ ./linux.sh
THIS IS LINUX.
kac@kac-VirtualBox:~$
```

**Search and Replace a string**
's' option is for search a word

```
kac@kac-VirtualBox:~$ sed 's/ex/computer/' ex.txt
subjects offered in computer
data structure
database management
linux
python
green tech
softskill
stats
catGus
computer baste
```

**Replace a string on a particular line**, to replace a string on a particular line number with 's' option

) **Displaying content text of a file**, to view only content of a file, then seeing whole file, so they then seeing whole file.

```
kac@kac-VirtualBox:~$
```

2) Displaying all specific line, to display all specific line except...
, some pattern, use option if a file except

Program to find the sum of two variables.

vi filename.sh

```
#!/bin/bash
a = 100
b = 25
Sum= $(($a + $b))
echo "Sum is: $Sum"
```





Program to find the sum of two Numbers
(values passed during execution).

---

22: commands or Stream Editor is very powerful
utility offered. Basically Linux system. It is mainly
used for text substitution, find & replace held
can perform other text manipulations. Sed is
insertion, deletion, search, etc. Disk. Sed is
un-edited complete files without actually
having to open it.

**8]** Add a line after/before the matched line
or add a new line with some content after
any pattern match use option 'a'.



```
subjects offered in cs
datastructure
database management
lthux
python
green tech
softskill
stats
calclus
computer baste
```



```
ccsgtcsc-VirtualBox:~$ sed -e '/.../' cs.txt
Thanks subjects offered in cs
Thanks datastructure
Thanks database management
Thanks lthux
Thanks python
Thanks green tech
Thanks softskill
Thanks stats
Thanks calclus
Thanks computer baste
```

To add a new line with some content before
every match, use option 'i'.

Appending lines.
To add some content before
line with sed, use 'a' and 'i' kills...



**9]** To change a whole line with matched pattern.
To change a whole line do a new line when
a search pattern matches use option 'c'.

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