

## Practical-1:

### AIM: Linux Installation

- a) Install your choice of Linux distribution  
e.g. ubuntu, fedora, debian
- b) Customize desktop environment by changing different default options like changing 'default background' theme, screensaver.
- c) Changing appearance settings.
  - To change appearance settings in ubuntu, let's click on menu at the top right corner, go to the left menu bar and select 'system settings'.
  - A window will pop up with all settings divided into personal hardware and system appearance tabs. Let's first select the appearance tab.
- d) changing wallpaper picture.
  - on the left side of 'background' part, you can see your current wallpaper.
  - on the right side is part where we can select one of ubuntu wallpaper.
  - clicking on any thumbnail our wallpaper will be changed right away with a fading effect.

330

- Now**

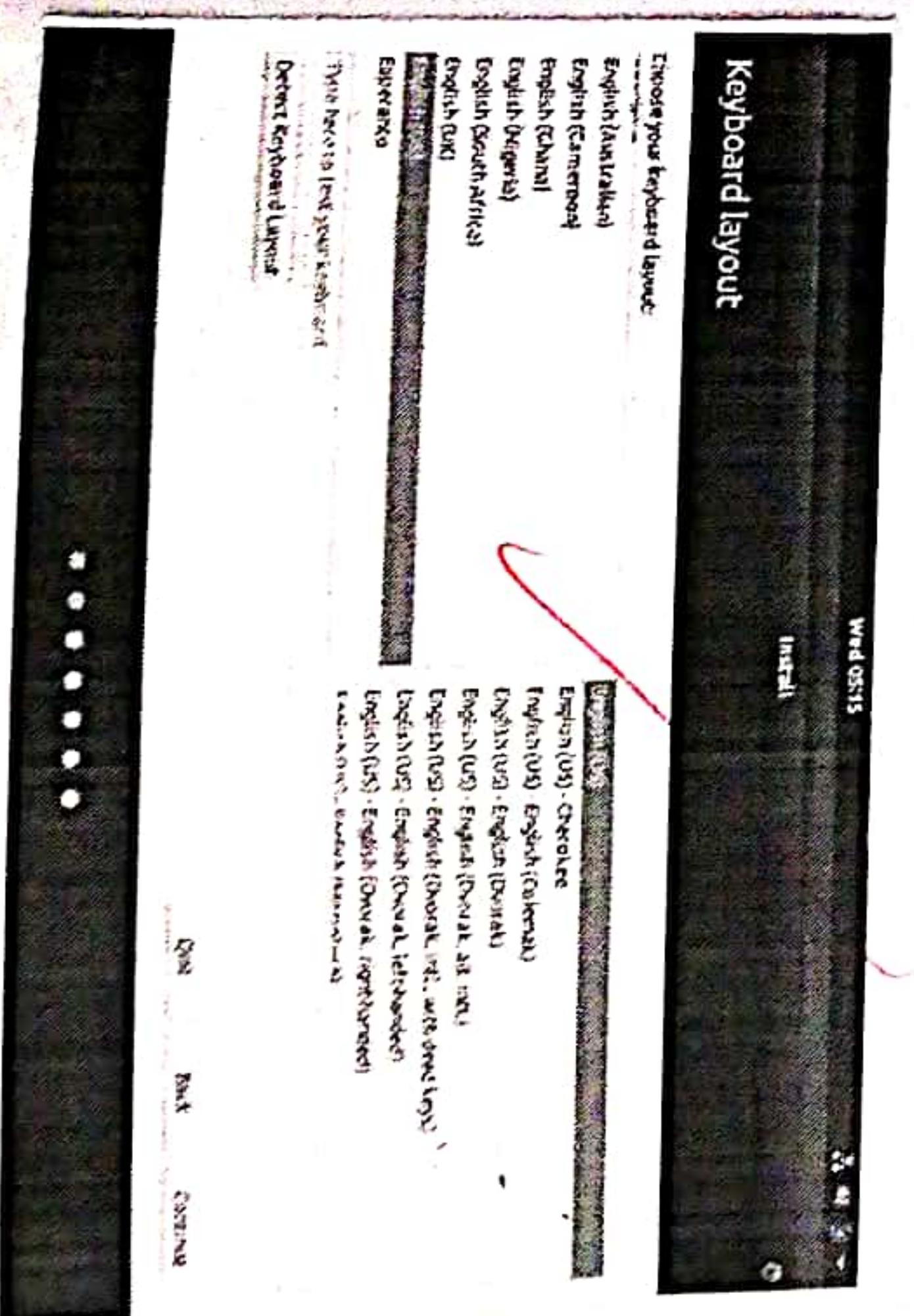
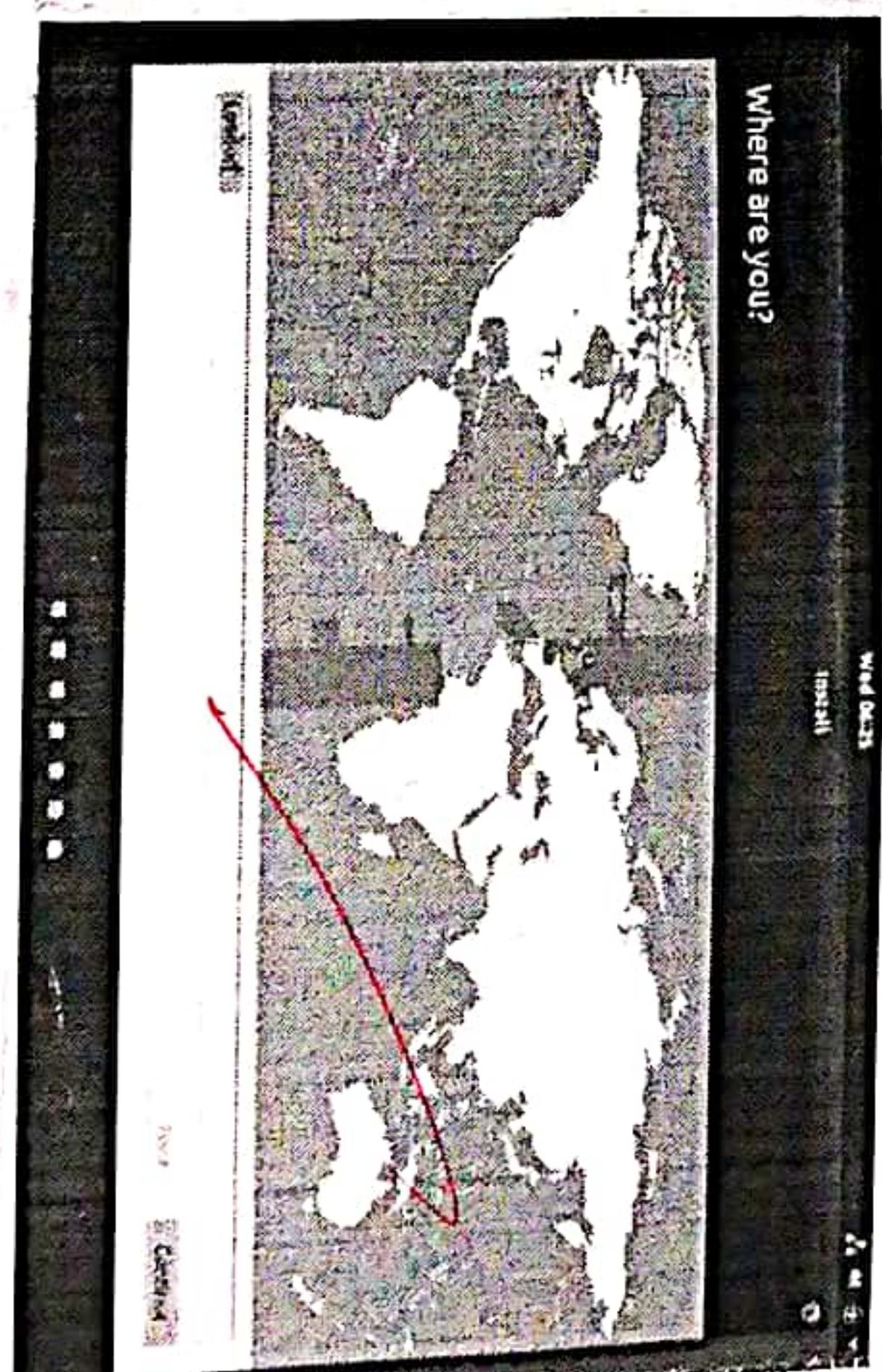
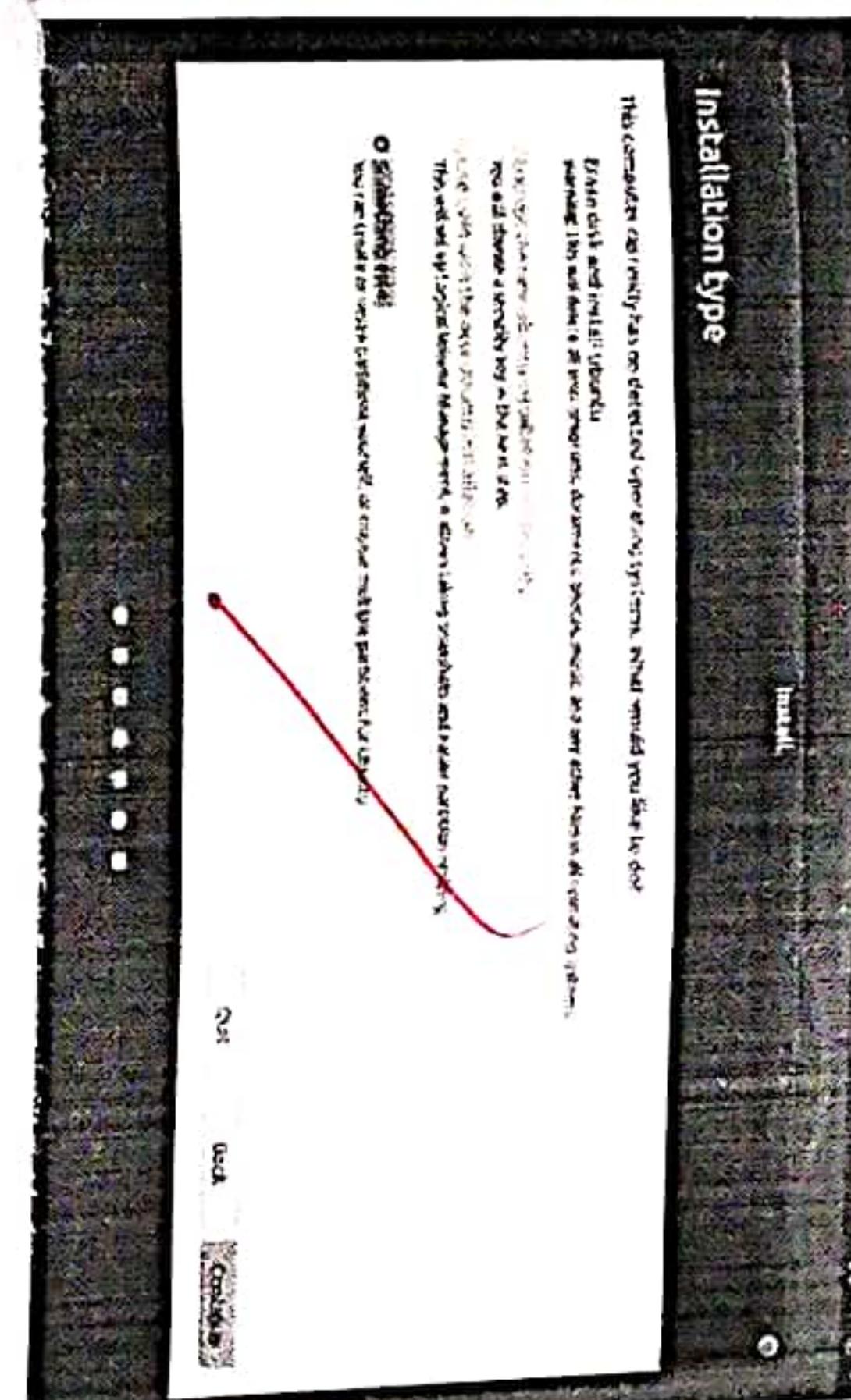
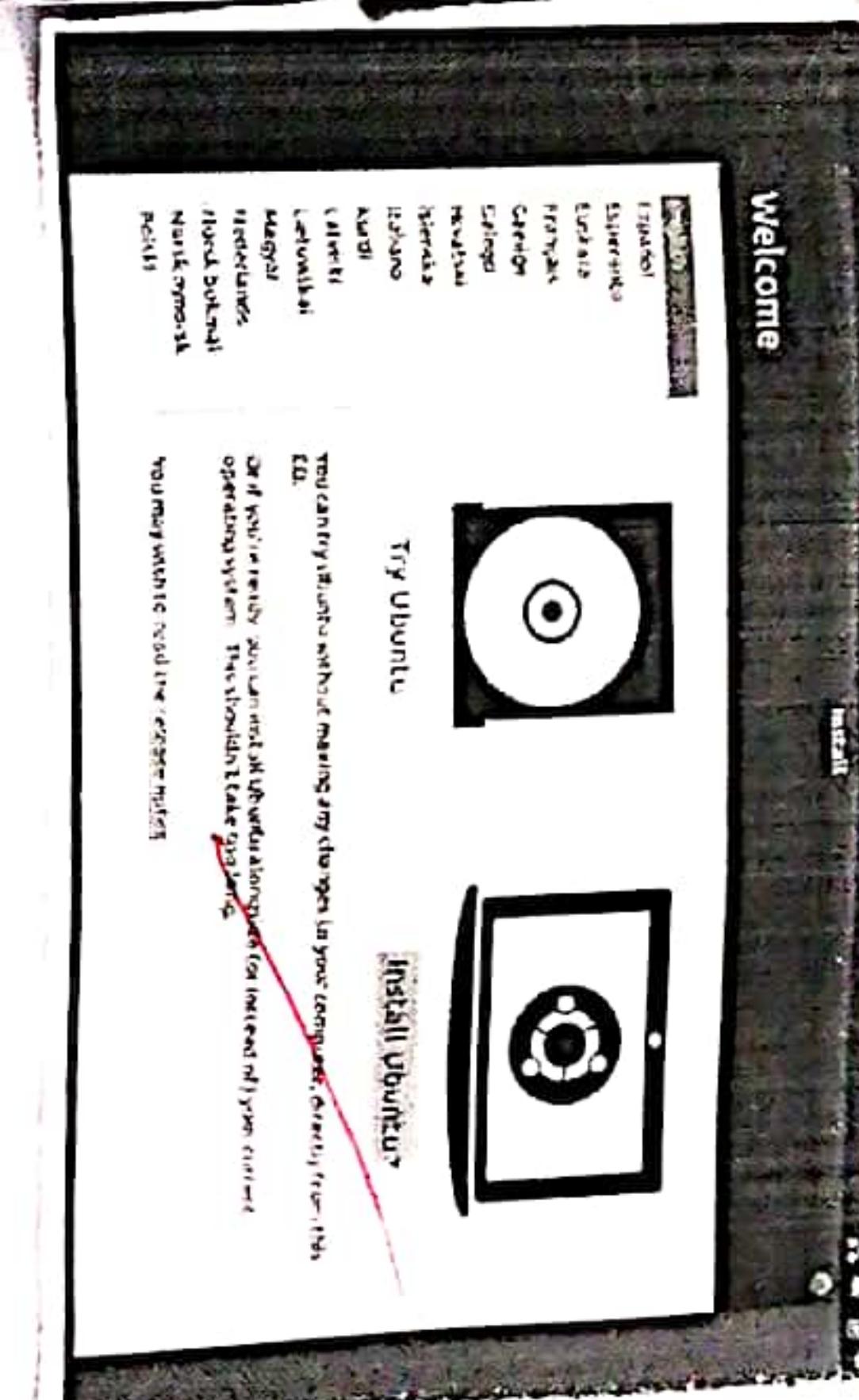
  - If you want to select wallpaper from your desktop menu about pictures of elder, click the drop down menu as you thumb nail where you can see the wallpaper that is in another folder.
  - To add wallpaper below the thumbnails just click the plus icon, select the path by just click the plus up window, select the pictures icon and then in pop-up window choose the pictures icon and custom folder and choose the pictures icon.

↳ changing -bank menu

- Ubuntu 11.10 - The interface  
theme which I'd been waiting  
way too long for looks

Toile that, stuck up his right arm down menu  
fellow, the wallpaper turned out, and chose  
between Ambrose, Radical or bright centralist

- ~~• Ambiguity is a light theme that looks a bit more  
marked where Redclaw is the darker yellow  
theme used if Ambiguity by default.~~



080

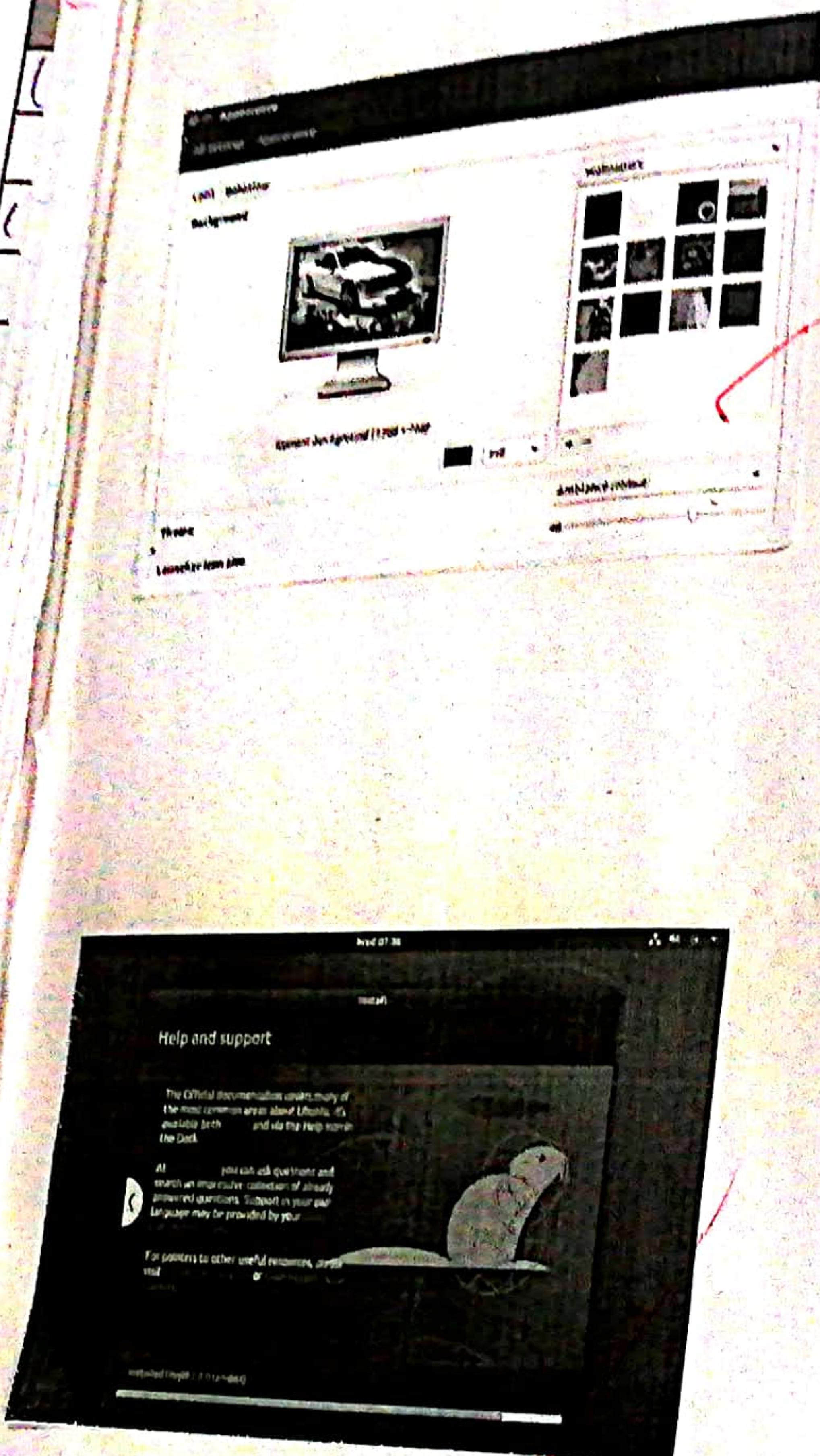
↳ After setting the time change, change the time zone back to your local time zone.

↳ Just click on the clock on the top bar and choose 'Time and Date settings', once time and date settings open, choose manually, so you can change the time and date manually, otherwise click 'Get your time zone from the map' and choose automatic.



18/01  
08/01

081



### Practical - 2(b).

**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 you don't have gcc installed.

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

**Step 3:** Type 'sudo apt-get install build-essential'. This will install all the libraries required for C and C++ programming language.

Now to uninstall gcc compiler.

In gcc 5.1.0 although there is no top-level uninstall target, some directories to have it in particular gcc, so you can do.

280

Type : cd build / gcc  
sudo make uninstall

This does not remove everything that was installed,  
but it removes major executable like `cc119t+`,  
`APP...` contained in that directory.

~~pp  
out~~

036

### Practical - 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 is 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:  
info grep

After typing this command following output will be displayed onto your screen.

You can also scroll through pages using (space = up) & (backspace = down) keys.

Another more summarized form of showing info is the 'man' command. The info is same as 'command'.

Q38

do like the cd out  
then we can have  
page in different when in big - print & also  
when when appear in when 3); so  
the one before the page name is decide which is  
you want by the name; so then they matching  
page to a file.

You can kill after when a home fall in  
with command - k (equivalent to approach  
command). It will do nothing match too,  
so you need to all item to user it.

b) command line help list the available options  
for the mkdir command : How can you do  
this

~~! mkdir -p@ - your directory name~~

27  
28

## 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 (package name)
- c) Find the passwd file in Linux using find command  
• /# find | -name passwd  
• /usr/share/doc/nss\_ldap-2.8.3/pamd/passwd  
• /usr/bin/passwd  
• /etc/pam.d/passwd  
• /etc/passwd
- d) Find the passwd under root and 2 level down  
- /usr/bin/passwd  
- /etc/pam.d/passwd  
- /etc/passwd
- e) Find the password file below sub-direction  
# find | -maxdepth 3 -maxdepth 5 -name passwd  
• /usr/bin/passwd  
• /etc/pam.d/passwd

Q4

- Create a symbolic link to the file you found ,  
in left step:

# ln -s file1 file2 .

- Create an empty file example.txt and move it to /tmp directory using relative pathname:

# touch example.txt

# mv example.txt /tmp

- delete the file moved to /tmp in previous step by absolute method

# rm /tmp/example.txt

- (g) Find the location of ls, ps, bash commands

# whereis ls

ls: /bin/ls /usr/share/man/man1/ls  
1: 92

# whereis ps

ps: /bin/ps /usr/share/maps:/bin/ps/  
usr/share/man/man1/ps: 92

# where bash

bash: /bin/bash /etc/bashrc /usr/share/  
man/man1/bash : 92

30

## Anticholinesterase

*Male and Female*

and the regions of the genome containing the genes for the proteins involved in the synthesis of the proteins.

A row of four small, colorful, crystalline mineral specimens, likely tourmaline, showing various crystal habits and colors (pink, purple, yellow, and brown).

~~and the original manuscript, which is now located in the British Library.~~

**→** **Antennal**

NAME	ADDRESS	PHONE	NAME	ADDRESS	PHONE
John Doe	123 Main St.	555-1234	Jane Doe	456 Elm St.	555-2345
Bob Smith	789 Oak St.	555-3456	Susan Lee	234 Pine St.	555-4321
Mike Johnson	543 Cedar St.	555-5678	David Wilson	987 Birch St.	555-6789
Carol Brown	321 Maple St.	555-7890	Emily Davis	654 Chestnut St.	555-8901
Tom Jones	210 Spruce St.	555-9876	Frank Wilson	123 Birch St.	555-0987
Patricia Green	432 Chestnut St.	555-1234	Robert Lee	543 Birch St.	555-2345
Jeffrey Davis	789 Cedar St.	555-3456	Sarah Wilson	234 Birch St.	555-4321
Mary Johnson	543 Maple St.	555-5678	James Lee	987 Birch St.	555-6789
David Brown	321 Chestnut St.	555-7890	Elizabeth Davis	654 Birch St.	555-8901
Carolyn Green	123 Cedar St.	555-9876	Robert Lee	543 Birch St.	555-0987

An aerial photograph showing a vast agricultural field divided into numerous long, narrow, parallel plots. The plots are color-coded, likely representing different treatments or varieties. The field extends from the foreground into the distance, with a dark, possibly paved road visible along the top edge.

```
jeba@jeba-VirtualBox:~$ ls
Desktop  Downloads  Music  Public  Videos
Documents  Examples,desktop  Pictures  Templates
jeba@jeba-VirtualBox:~$ cd jeb
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
welcome
Linux
^C
jeba@jeba-VirtualBox:~/jeb$ touch dd.txt
jeba@jeba-VirtualBox:~/jeb$ ls
dd.txt  gg.txt
jeba@jeba-VirtualBox:~/jeb$ cp gg.txt dd.txt
jeba@jeba-VirtualBox:~/jeb$ cat gg.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ cat dd.txt
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ ■

jeba@jeba-VirtualBox:~/jeb$ touch ss.txt
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
welcome
Linux
jeba@jeba-VirtualBox:~/jeb$ ■
```

```
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 /mnt  
tar: Removing leading '/' from member names  
/mnt/  
/mnt/hd/  
jeba@jeba-VirtualBox:/$ ls  
bin  data.tar  etc  lib  mnt  opt  run  srv  usr  
boot  dd  home  lost+found  mnt  proc  sbin  sys  var  
cdrom  dev  initrd.img  media  mnt1  root  snap  vmlinuz  
jeba@jeba-VirtualBox:/$ cat data.tar  
mnt/0000755000000000000000000000000013605376557010365 5ustar  rootrootmnt/hd/0000755000000000000000000000000013605376557010760 5ustar  rootrootjeba@jeba-VirtualBox:/$
```

103) Copying text from files  
→ cp command | mv command

(Q4) Archiving and back up the work directory using tar, gzip and bzip 2 commands!

→ gzip filename.txt

Bzip ~~file name~~ .txt

50

(Q5) use diff command to create diff of two files  
→ diff filename1 filename2

(Q6) Use patch command to patch a file. And analyze the patch using command again.

043

```
jeba@jeba-VirtualBox:~/jeb$ ls  
dd.txt.gz ss.txt.bzz  
jeba@jeba-VirtualBox:~/jeb$ cat >aa.txt  
hello world  
^C  
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt  
this is linux^C  
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt  
1de  
< hello world  
jeba@jeba-VirtualBox:~/jeb$ cat >bb.txt  
^C  
this is Linux  
jeba@jeba-VirtualBox:~/jeb$ diff aa.txt bb.txt  
1ic1  
< hello world  
-->  
> this is Linux  
jeba@jeba-VirtualBox:~/jeb$ gzip aa.txt  
jeba@jeba-VirtualBox:~/jeb$ gzip bb.txt  
Binary files aa.txt.gz and bb.txt.gz differ
```

```
jeba@jeba-VirtualBox:~/jeb$ cat >hi.txt  
hi  
hi  
hi  
^C  
jeba@jeba-VirtualBox:~/jeb$ cat >hil.txt  
hello  
hello  
hello  
^C  
jeba@jeba-VirtualBox:~/jeb$ diff -u hi.txt hil.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  
+++ hil.txt 2020-01-08 22:15:16.259898738 +0530  
@@ -1,3 +1,3 @@  
-hi  
-hi  
-hi  
+hello  
+hello  
+hello  
jeba@jeba-VirtualBox:~/jeb$ █
```

8/02

```
jeba@jeba-VirtualBox:~$ who
jeba    tty7      2020-01-15 20:32 (:0)
jeba@jeba-VirtualBox:~$ whoami
jeba
jeba@jeba-VirtualBox:~$ who -l
LOGIN   tty1      2020-01-15 20:30
jeba@jeba-VirtualBox:~$ [REDACTED]

jeba@jeba-VirtualBox:~$ w
20:35:04 up 4 min, 1 user, load average: 0.79, 0.79, 0.38
USER   TTY      FROM          LOGIN   IDLE   JCPU   PCPU WHAT
jeba   tty7      :0           20:32   4:28   8.19s  0.33s /sbin/upstart -
jeba@jeba-VirtualBox:~$ w -s
20:35:14 up 4 min, 1 user, load average: 0.69, 0.77, 0.37
USER   TTY      FROM          LOGIN   IDLE   JCPU   PCPU WHAT
jeba   tty7      :0           4:38   /sbin/upstart --user
jeba@jeba-VirtualBox:~$ w -n
jeba   tty7      :0           20:32   4:44   8.67s  0.33s /sbin/upstart -
jeba@jeba-VirtualBox:~$ w -f
20:36:12 up 5 min, 1 user, load average: 0.41, 0.69, 0.37
USER   TTY      FROM          LOGIN   IDLE   JCPU   PCPU WHAT
jeba   tty7      20:32   5:36   9.02s  0.33s /sbin/upstart --user
```

## Practical : 6 (use environment)

(a) which account you are logged in. How do you find out?

Ans: Who command and who am i  
 ↵

b) Display /etc/shadow file using cat command and understand the importance of shadow file.  
 How it's different than passwd file

Ans: Cat /etc/shadow

As with the passwd file, each field in the shadow file is also separated with ":" characters and are as follows:

- Username, up to 8 characters (are sensitive, usually all lowercase). A direct match to the username in the /etc/passwd file.
- Password, 13 character encrypted. A blank entry (eg: "") indicates a password is not required to login (usually a bad idea) and "+" entry (eg: "+") indicates the account has been disabled.
- The number of days (since January 1, 1970) since the password was last changed.

240

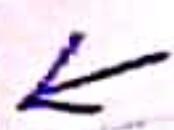
```
jeba@jeba-VirtualBox:~$ pwd  
/home/jeba  
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ history  
1 who  
2 whoami  
3 who -l  
4 clear  
5 w  
6 w -s  
7 w -h  
8 w -f  
9 clear  
10 cat /etc/shadow  
11 sudo cat /etc/shadow  
12 clear  
13 sudo cat /etc/passwd  
14 pwd  
15 clear  
16 history  
jeba@jeba-VirtualBox:~$ 13  
who -l  
LOGIN tty1 2020-01-15 20:30  
jeba@jeba-VirtualBox:~$
```

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

046

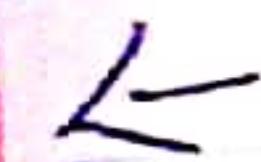
c) Yet your current working directory  
Ans Pwd



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

Ans : history

! line number



e) Create alias to most commonly used command

Ans : alias ls='ls -l'



BB  
08/02

## Practical - 7

Aim: Linux Editors vi

a) Create, modify, search and navigate a file in editor.

(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')

(iii) Search in a file:-

→ To find a word (forward search) press / followed by the word to search.

(iv) Navigate:-

Movement in four directions.

Key	Action
k	Moves cursor up
j	Moves cursor down
h	Moves cursor left
i	Moves cursor right

```
jeba@jeba-VirtualBox ~
Hello
This is my Linux example
Welcome
Welldone
This is vi Editor
Thank you
~
```

```
jeba@jeba-VirtualBox ~
Hello
This is my Linux example
Welcome
Welldone
This is vi Editor
Thank you
~
```

replace with our (y/n/a/q/l/^E/^Y)?

```
jeba@jeba-VirtualBox ~
```

```

$ cd /home/vagrant/VirtualBox
$ cat example
Hello
this is our Linux example
Welcome
Welldone
This is Vi Editor
Thank you
$ set hlssearch

```

## Word Navigation

Key

b

Action

Moves back to the beginning of word

c

Moves forward to the end of the word

w

Moves forward to the beginning of the word

0 (zero)

Moves to first character of a line

5

Moves to the end of line

## Scrolling:

(i) Learn all essential commands like search | replace  
highlight, show list numbers

(ii) Replace

Syntax: /g | word to be replaced | s/g new word/ . g

(iii) Highlight

use set hlsrch

Q50

```
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:~$
```

```
# 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:/usr/bin:/sbin:/bin"  
  
# Host alias specification  
  
# User alias specification  
  
# Cmnd alias specification  
  
# User privilege specification  
root    ALL=(ALL:ALL) ALL  
  
user1  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.
```

Q50

Practical 9  
Aim:- Linux security

- a) Use of sudo to change user privileges to root  
→ Create an user named user1

- To give some users root privileges edit /etc/sudoers using vi sudo - under new line at highlighted below

- b) Identify operation that requires sudo privilege

(c) Modify expiration date for new user using password ageing.

t → expiration date

m → minimum number of days before passed

N → Number of days password is valid

I → Account inactive

w → Number of days of warning before a password change is required.

(d) Delete newly added user.

✓  
✓  
✓  
✓  
✓

```
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 28, 2028
Password expires     : Never
Account expires       : Never
Minimum number of days between password change : 0
Maximum number of days between password change : 99999
Number 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]: 180
      Maximum Password Age [99999]: 200
      Last Password Change (YYYY-MM-DD) [2028-01-28]: 2028-01-21
      Password Expiration Warning [7]: 5
      Password Inactive [-1]:
      Account Expiration Date (YYYY-MM-DD) [-1]: 2028-01-31
Last password change : Jan 21, 2028
Password expires     : Aug 08, 2028
Account expires       : Never
Minimum number of days between password change : 30
Maximum number of days between password change : 180
Number of days of warning before password expires: 5
jeba@jeba-VirtualBox:~$
```

```
jeba@jeba-VirtualBox:~$ sudo chage -E 25/01/2026 -m 10 -M 98 -I 30 -W 30 user1
jeba@jeba-VirtualBox:~$ sudo chage -l user1
Last password change : Jan 21, 2028
Password expires     : Apr 28, 2028
Account expires       : May 28, 2028
Minimum number of days between password change : 10
Maximum number of days between password change : 98
Number of days of warning before password expires: 30
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:~$
```

```
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:1188 (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)
```

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

## Practical 9

Aim: Network Management

(a) List IP address of your machine using ifconfig



(b) Get host name of your machine



(c) Use ping to check the network connecting to remote machines.



050

(d) use of dig command

(e) Troubleshooting command using tracert route

(f) use of arp command

053

```
jeba@jeba-VirtualBox:~$ ping www.google.com
PING www.google.com (172.217.31.196) 56(84) bytes of data.
4 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=1 ttl=54 time=7.8 ns
4 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=2 ttl=54 time=32.0 ns
4 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=3 ttl=54 time=44.8 ns
4 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=4 ttl=54 time=87.1 ns
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=5 ttl=54 time=93.5 ns
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=6 ttl=54 time=86.9 ns
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=7 ttl=54 time=98.0 ns
64 bytes from maa03s28-in-f4.1e100.net (172.217.31.196): icmp_seq=8 ttl=54 time=98.9 ns
^Z
[1]+ Stopped ping www.google.com
```

```
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: 52068
; 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.
; ANSWER SECTION:
www.google.com. 91 IN A 172.217.166.100
; Query time: 152 msec
; SERVER: 127.0.1.1#53(127.0.1.1)
; WHEN: Mon Jan 26 22:48:06 IST 2020
; MSG SIZE rcvd: 59
jeba@jeba-VirtualBox:~$
```

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:~$ 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:~$
```

A close-up photograph of a dark, textured surface, likely a book cover or endpaper, featuring a repeating pattern of small, light-colored floral motifs.

This image shows a close-up of a dark green, textured surface, possibly a book cover or endpaper. The surface is decorated with a repeating pattern of small, white, five-petaled flowers arranged in horizontal rows. A vertical strip of lighter-colored material, which appears to be a different type of paper or fabric, runs down the center of the frame. The lighting highlights the texture of the green material and the delicate details of the flower patterns.

A photograph showing a collection of small, dark, cylindrical items, likely batteries or similar components, stacked in two distinct rows. The items are dark grey or black with some lighter, metallic-looking highlights. They are arranged on a light-colored, textured surface, possibly a table or a mat. The lighting is somewhat dim, creating shadows and highlights that emphasize the cylindrical shape of the objects.

This image shows a close-up of a dark, textured material, possibly a book cover or endpaper. The surface is covered in a repeating pattern of small, light-colored, circular or floral motifs. The material appears aged, with visible wear, discoloration, and some faint red or brown stains, particularly towards the edges. The lighting is somewhat dim, highlighting the texture and the subtle variations in the pattern.

With love from  
John & Anna

054

full of numbers  
written by Sherman and sold at

John

180

## Practical 10:-

### AIM: SHELL SCRIPTING

#### • Basic of shell scripting

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

#### • Echo \$!\$HELL

→ vi file name .sh

• #!/bin/bash

echo "This is LINUX!"

185

```
tcsc@tcsc-VirtualBox:~$ echo $!$HELL
tcsc@tcsc-VirtualBox:~$
```

```
tcsc@tcsc-VirtualBox:~$ echo "THIS IS LINUX!"
tcsc@tcsc-VirtualBox:~$
```

"linux.sh" [New File]

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

Q20

- Program to find the sum of two variables.

vi filename.sh

```
#!/bin/bash  
a=100  
b=25
```

```
sum=$((a+b))  
echo "sum is : $sum"
```

```
tcsctcsc@tcsctcsc-VirtualBox:~$ vi filename.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ chmod 777 filename.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ ./filename.sh  
sum is:125  
tcsctcsc@tcsctcsc-VirtualBox:~$
```

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

→ SED :-

SED command or Stream Editor is very powerful utility offered by Linux system. It is mainly used for text substitution, find and replace but it can perform other text manipulations like insertion, deletion, search, etc. With sed, we can edit complete files without actually having to open it.

Consider the following text file.

```
tcsctcsc@tcsctcsc-VirtualBox:~$ vi lin.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ chmod 777 lin.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ ./lin.sh 50 70  
sum is:120  
lin.sh" 3 lines, 46 characters  
tcsctcsc@tcsctcsc-VirtualBox:~$
```

```
tcsctcsc@tcsctcsc-VirtualBox:~$ vi lin.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ chmod 777 lin.sh  
tcsctcsc@tcsctcsc-VirtualBox:~$ ./lin.sh 50 70  
sum is:120  
tcsctcsc@tcsctcsc-VirtualBox:~$
```

14) Search and replacing a string :-

's' option is for searching a word

```
tcsc@tcsc-VirtualBox:~$ sed 's/cs/computer/' cs.txt
subjects offered in computer
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
```

15) Replace a string on a particular line:-

- To replace a string on a particular line, use line number with 's' option.

```
tcsc@tcsc-VirtualBox:~$ sed '6 s/cs/computer system /' cs.txt
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
```

16) Add a line after/before the matched string

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

```
tcsc@tcsc-VirtualBox:~$ sed "y/s/a/this is linux/" cs.txt
subjects offered in cs
>this is linux"
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
tcsc@tcsc-VirtualBox:~$
```

```
tcsc@tcsc-VirtualBox:~$ sed "y/s/i/this is linux/" cs.txt
>this is linux"
subjects offered in cs
datastructure
database management
linux
python
green tech
softskill
stats
calculus
computer basic
tcsc@tcsc-VirtualBox:~$
```

82

```
tcsc@tcsc-VirtualBox:~$ sed '/linux/c "this is linux"' cs.txt  
subjects offered in cs  
datastructure  
database management  
java & linux  
python  
green tech  
softskill  
stats  
calculus  
computer basic
```

```
tcsc@tcsc-VirtualBox:~$ sed -e 's/.*/Thanks &/' cs.txt  
Thanks subjects offered in cs  
Thanks datastructure  
Thanks database management  
Thanks linux  
Thanks python  
Thanks green tech  
Thanks softskill  
Thanks stats  
Thanks calculus  
Thanks computer basic
```

83

- (i) To change a whole line with matched pattern.
- To change a whole line to a new line when search pattern matches, use option `c`.
- (ii) Appending Lines
- To add some content before every line with sed, use `*` and `>` as follows:

83  
84