AMITY SCHOOL OF ENGINEERING AND TECHNOLOGY

AMITY UNIVERSITY , NOIDA

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING

OPERATING SYSTEM LAB FILE

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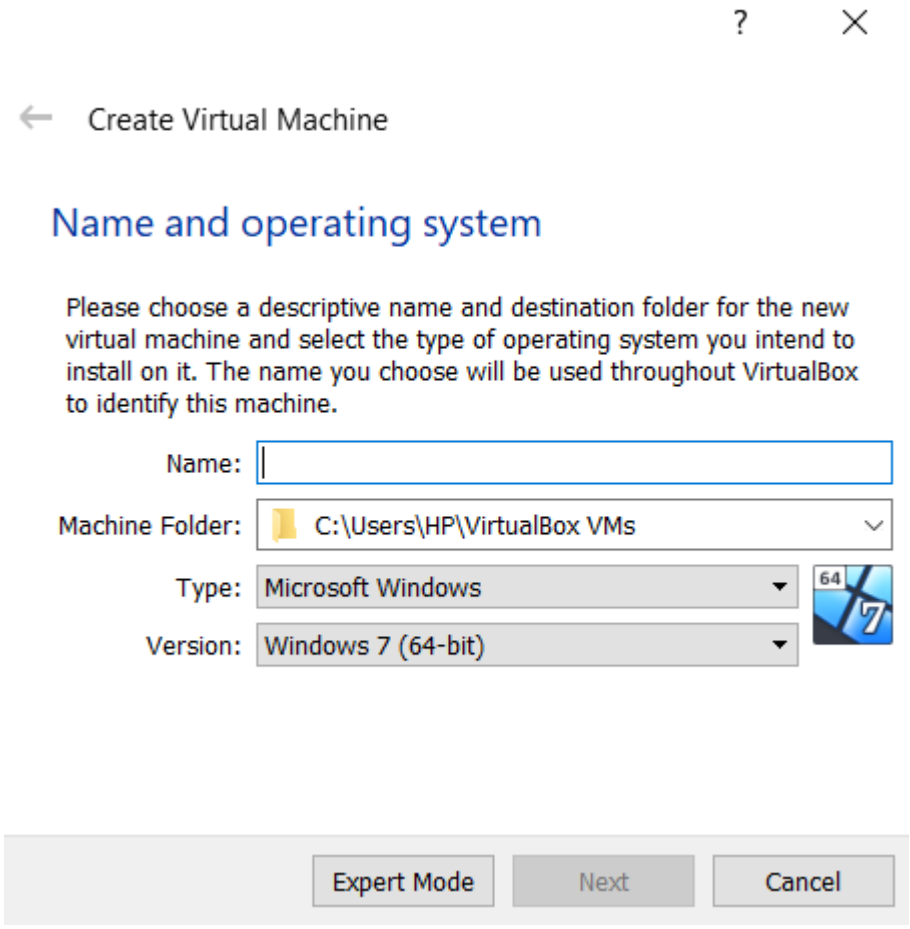
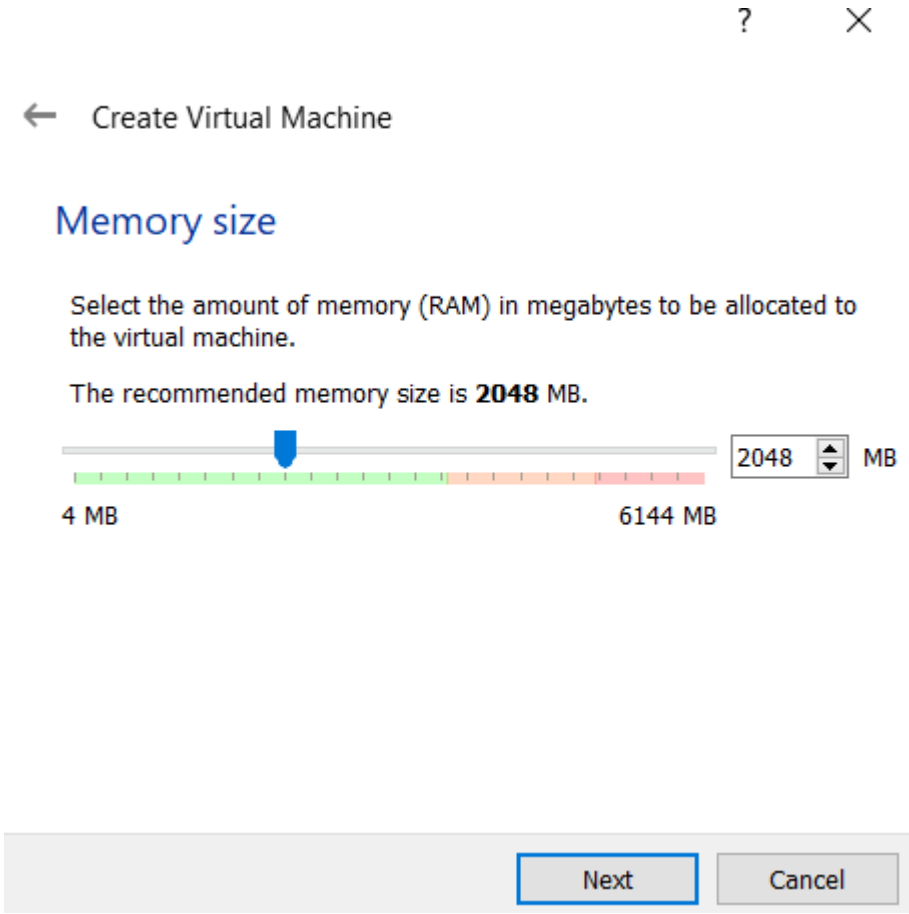
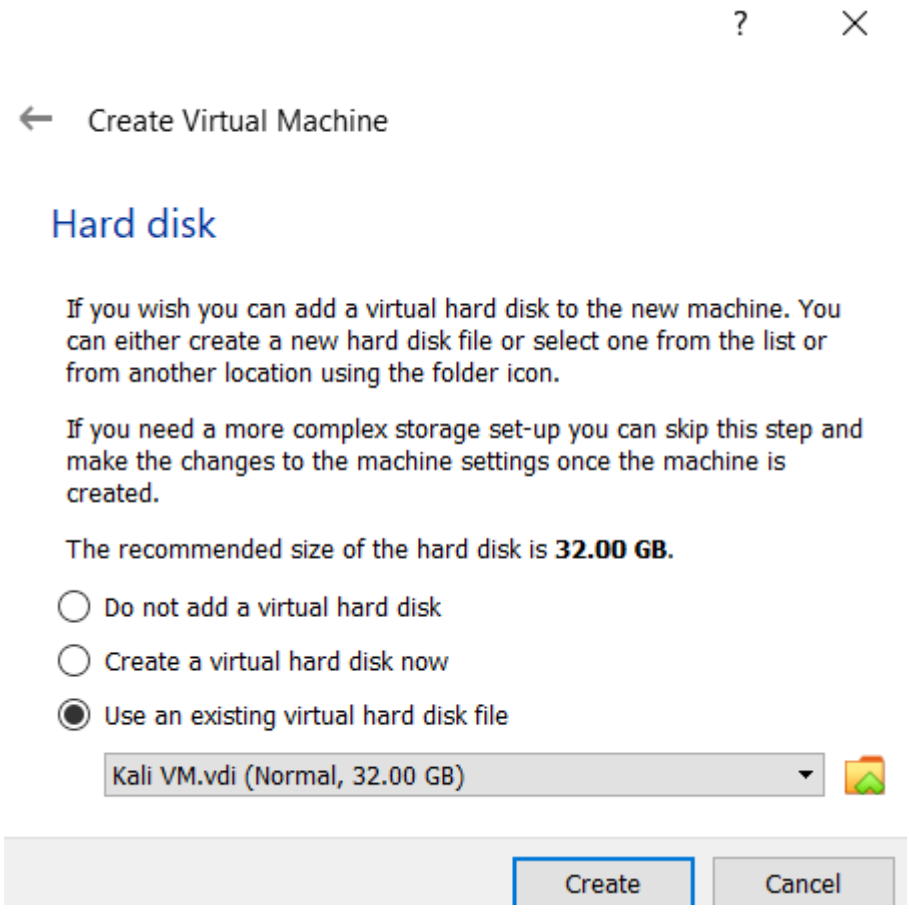
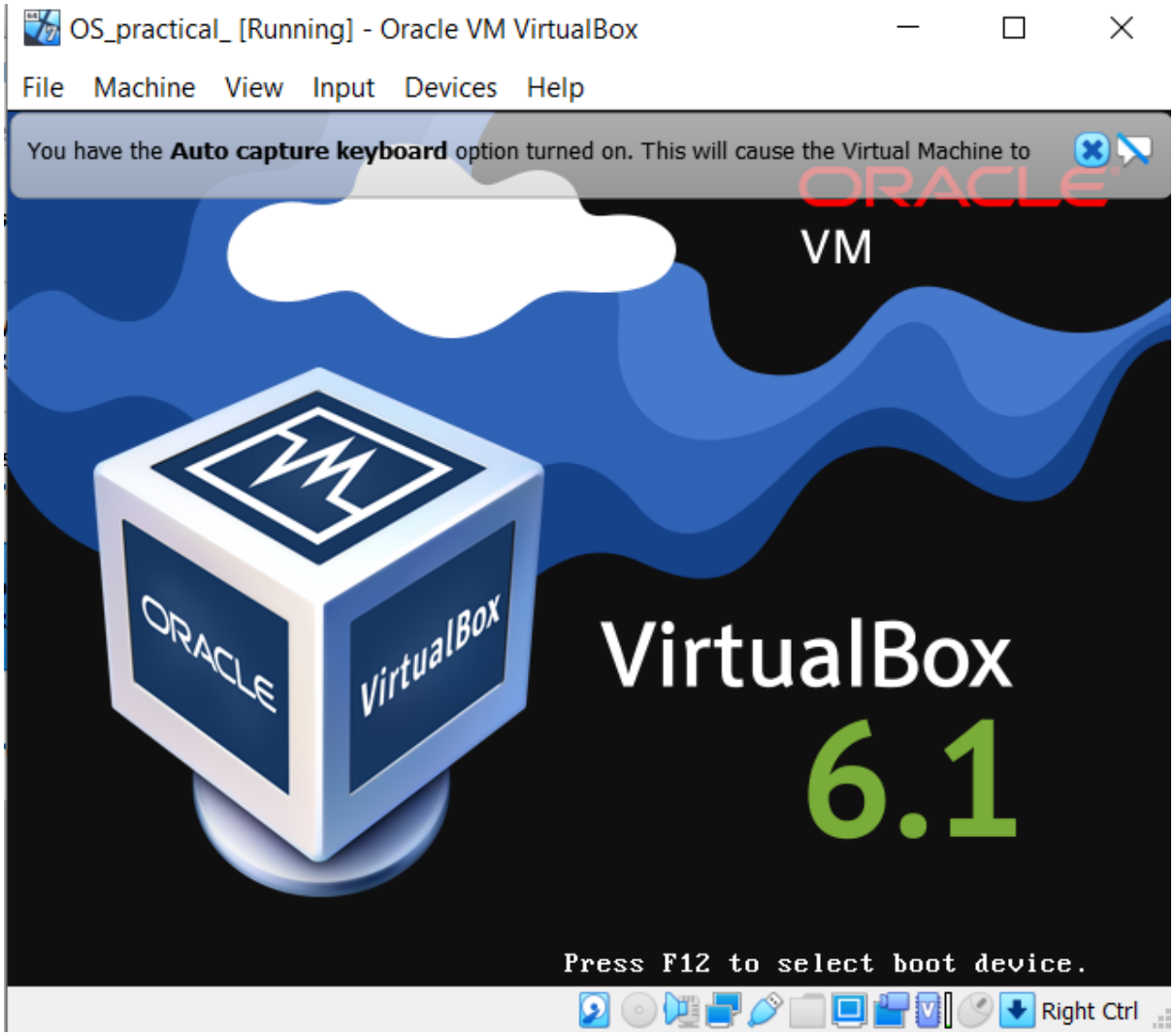
EXP 1 – My options to access Linux OS terminal for unix commands

Date : 22/12/2020




Create Virtual Machine
Memory size
Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.
The recommended memory size is 2048 MB.
2048
MB
4 MB
6144 MB
Next
Cancel


Create Virtual Machine
Hard disk
If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.
If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.
The recommended size of the hard disk is 32.00 GB.
Do not add a virtual hard disk
Create a virtual hard disk now
Use an existing virtual hard disk file
Kali VM.vdi (Normal, 32.00 GB)
Create
Cancel


OS_practical_ [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to
ORACLE
VM
VirtualBox
6.1
Press F12 to select boot device.
Right Ctrl

EXP 2 – INTRODUCTION –UNIX OPERATING SYSTEM AND DIRECTORY STRUCTURE

Date 05/01/2021

The UNIX operating system has for many years formed the backbone of the Internet, especially for large servers and most major university campuses. However, a free version of UNIX called **Linux** has been making significant gains against Macintosh and the Microsoft Windows 95/98/NT environments, so often associated with personal computers. Developed by a number of volunteers on the Internet such as the Linux group and the GNU project, much of the open-source software is copyrighted, but available for free. This is especially valuable for those in educational environments where budgets are often limited.
UNIX commands can often be grouped together to make even more powerful commands with capabilities known as **I/O redirection** (< for getting input from a file input and > for outputing to a file) and **piping** using | to feed the output of one command as input to the next. Please investigate manuals in the lab for more examples than the few offered here. The following charts offer a summary of some simple UNIX commands. These are certainly not all of the commands available in this robust operating system, but these will help you get started.

. The UNIX operating system is made up of three parts; the kernel, the shell and the programs.

The kernel

The kernel of UNIX is the hub of the operating system: it allocates time and memory to programs and handles the filestore and communications in response to system calls.
As an illustration of the way that the shell and the kernel work together, suppose a user types **rm myfile** (which has the effect of removing the file **myfile**). The shell searches the filestore for the file containing the program **rm**, and then requests the kernel, through system calls, to execute the program **rm** on **myfile**. When the process **rm myfile** has finished running, the shell then returns the UNIX prompt % to the user, indicating that it is waiting for further commands.

The shell

The shell acts as an interface between the user and the kernel. When a user logs in, the login program checks the username and password, and then starts another program called the shell. The shell is a command line interpreter (CLI). It interprets the commands the user types in and arranges for them to be carried out. The commands are themselves programs: when they terminate, the shell gives the user another prompt (% on our systems).
The adept user can customise his/her own shell, and users can use different shells on the same machine. Staff and students in the school have the **tcsh shell** by default.
The tcsh shell has certain features to help the user inputting commands.
Filename Completion - By typing part of the name of a command, filename or directory and pressing the [**Tab**] key, the tcsh shell will complete the rest of the name automatically. If the shell finds more than one name beginning with those letters you have typed, it will beep, prompting you to type a few more letters before pressing the tab key again.
History - The shell keeps a list of the commands you have typed in. If you need to repeat a command, use the cursor keys to scroll up and down the list or type history for a list of previous commands.

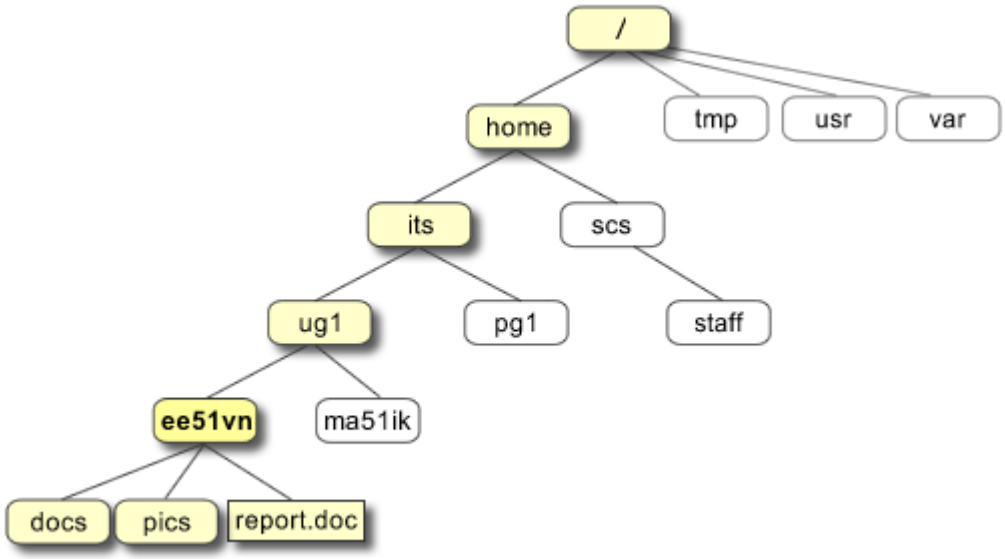
Files and processes

Everything in UNIX is either a file or a process.
A process is an executing program identified by a unique PID (process identifier).
A file is a collection of data. They are created by users using text editors, running compilers etc.
Examples of files:

- a document (report, essay etc.)
- the text of a program written in some high-level programming language
- instructions comprehensible directly to the machine and incomprehensible to a casual user, for example, a collection of binary digits (an executable or binary file);
- a directory, containing information about its contents, which may be a mixture of other directories (subdirectories) and ordinary files.

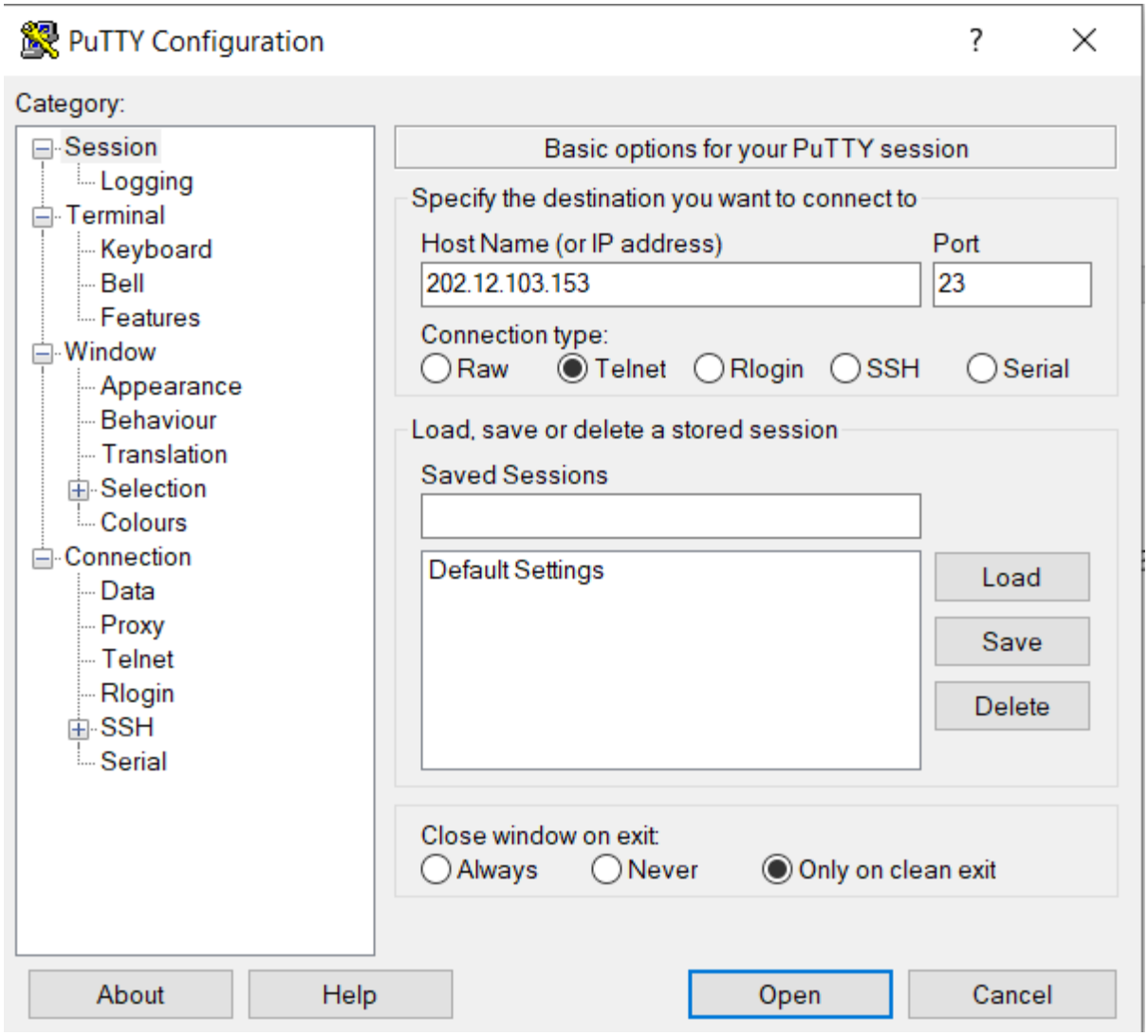
The Directory Structure

All the files are grouped together in the directory structure. The file-system is arranged in a hierarchical structure, like an inverted tree. The top of the hierarchy is traditionally called **root** (written as a slash /)



EXP 3 - Executing basic commands on linux server accesing amity virtual lab

Date 12/01/2021



PuTTY (inactive)

```
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

 System information disabled due to load higher than 4.0

 * Introducing self-healing high availability clusters in MicroK8s.
   Simple, hardened, Kubernetes for production, from RaspberryPi to DC.

     https://microk8s.io/high-availability

 * Canonical Livepatch is available for installation.
   - Reduce system reboots and improve kernel security. Activate at:
     https://ubuntu.com/livepatch

41 packages can be updated.
7 updates are security updates.

New release '20.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


*** System restart required ***
aib@pamoli-virtual-machine:~$ tput clear
aib@pamoli-virtual-machine:~$ who
tanvis   pts/0        2021-01-08 15:31 (106.207.128.227)
anirudhd pts/2        2021-01-08 15:54 (103.84.81.65)
merugun  pts/3        2021-01-08 15:15 (49.37.152.215)
rishabhk pts/4        2021-01-08 15:15 (59.99.161.144)
aib      pts/7        2021-01-08 15:57 (49.36.169.148)
aib      pts/6        2021-01-08 15:43 (45.251.42.233)
aib      pts/9        2021-01-08 15:51 (103.57.85.246)
aib      pts/12       2021-01-08 15:38 (abts-north-dynamic-102.199.69.182.airtel
broadband.in)
rishabhk pts/25       2021-01-08 16:04 (59.99.161.144)
saras    pts/16       2021-01-08 16:04 (223.230.163.126)
aib      pts/21       2021-01-08 15:50 (49.37.81.244)
aib      pts/17       2021-01-08 15:52 (49.36.165.214)
aib      pts/18       2021-01-08 15:23 (157.44.172.66)
aib      pts/24       2021-01-08 15:54 (47.29.52.116)
aib      pts/23       2021-01-08 15:54 (106.214.64.114)
aib      pts/26       2021-01-08 15:49 (223.181.54.121)
aib      pts/20       2021-01-08 15:48 (abts-kk-static-ilp-054.78.181.122.airtel
.in)
khitiza  pts/14       2021-01-08 15:16 (103.87.57.149)
manavp   pts/13       2021-01-08 15:15 (abts-north-dynamic-154.50.177.122.airtel
broadband.in)
aib      pts/15       2021-01-08 15:15 (49.36.143.0)
vishalc  pts/28       2021-01-08 15:27 (117.212.35.38)
aib      pts/30       2021-01-08 15:37 (49.36.135.220)
aib      pts/32       2021-01-08 15:35 (103.50.146.189)
```

$ps

```
aib@pamoli-virtual-machine:~$ ps
  PID TTY          TIME CMD
26068 pts/90   00:00:00 bash
26134 pts/90   00:00:00 ps
```

$ls

```
aib@pamoli-virtual-machine:~$ ls
 1                                 mehak.c.14923.17166
 123.c.14923.17166                 Message.c.14923.17166
 1.sh                              mihir
 2                                 mridul123
 56                                music
 a1                                mydir
 a2                                naman.c.14923.17166
 aayush                            naman.txt.14923.17166
 aayushi                           name
 abc                               name.14923.17166
 abcdefghijtanya.c                 namrata
 abdur                             natasha
 abhi.c.14923.17166                natasha11
 abhi_dir1                         New1
 abhimanyu                         newbase
 abhimanyuv2.txt.14923.17166       new.c
 abhimanyuv.txt.14923.17166        new.c.14923.17166
 abhiv2.txt.14923.17166            newdir
 addy                             '[Newdir]'
 ADITI                             newdr1
 aditi9120                         newdr2
 Aditya                            newfile
 aditya.c.14923.17166              newfile.txt
 aditya.cpp.14923.17166            newprog.c
 AdityaGoyal                       newprog.out
 adityaj                           newpython.py
 adityarenamed.txt.14923.17166     nidhish
 akshat                            nik.c
 aku                               nikh.c
 aman                              nikhil.c
 Amisha                            ninad
 anand                             nisarg
```

$ls>list

```
aib@pamoli-virtual-machine:~$ ls>list
```

$x=5

$echo x

```
aib@pamoli-virtual-machine:~$ x=5
aib@pamoli-virtual-machine:~$ echo x
x
aib@pamoli-virtual-machine:~$ echo $x
5
```

$echo hello world

```
aib@pamoli-virtual-machine:~$ echo hello world
hello world
```

$ls -l

```
aib@pamoli-virtual-machine:~$ ls -l
total 1600
drwxrwxr-x  2 aib aib  4096 Jan  4 16:19  1
-rw-rw-r--  1 aib aib    67 Jan  4 16:40  123.c.14923.17166
-rw-rw-r--  1 aib aib   149 Jan  8 16:09  1.sh
drwxrwxr-x  2 aib aib  4096 Jan  5 09:45  2
drwxrwxr-x  2 aib aib  4096 Jan  4 14:31  56
drwxrwxr-x  2 aib aib  4096 Jan  5 22:30  a1
drwxrwxr-x  2 aib aib  4096 Jan  5 22:30  a2
drwxrwxr-x  5 aib aib  4096 Jan  6 12:20  aayush
drwxrwxr-x  2 aib aib  4096 Jan  8 16:10  aayushi
drwxrwxr-x  2 aib aib  4096 Jan  4 16:59  abc
-rw-rw-r--  1 aib aib   197 Jan  7 22:48  abcdefghijtanya.c
drwxrwxr-x  2 aib aib  4096 Jan  6 11:47  abdur
-rw-rw-r--  1 aib aib    94 Jan  4 16:20  abhi.c.14923.17166
drwxrwxr-x  2 aib aib  4096 Jan  5 21:07  abhi_dir1
drwxrwxr-x  3 aib aib  4096 Jan  4 16:38  abhimanyu
-rw-rw-r--  1 aib aib    51 Jan  4 16:48  abhimanyuv2.txt.14923.17166
-rw-rw-r--  1 aib aib    51 Jan  4 16:11  abhimanyuv.txt.14923.17166
-rw-rw-r--  1 aib aib    17 Jan  4 16:16  abhiv2.txt.14923.17166
drwxrwxr-x  5 aib aib  4096 Jan  6 12:37  addy
drwxrwxr-x  3 aib aib  4096 Jan  5 10:54  ADITI
drwxrwxr-x  4 aib aib  4096 Jan  8 12:45  aditi9120
drwxrwxr-x  5 aib aib  4096 Jan  6 12:24  Aditya
-rw-rw-r--  1 aib aib    68 Jan  4 16:44  aditya.c.14923.17166
-rw-rw-r--  1 aib aib     1 Jan  4 16:34  aditya.cpp.14923.17166
drwxrwxr-x  2 aib aib  4096 Jan  8 16:11  AdityaGoyal
drwxrwxr-x  5 aib aib  4096 Jan  4 19:33  adityaj
-rw-rw-r--  1 aib aib    43 Jan  4 16:18  adityarenamed.txt.14923.17166
drwxrwxr-x  2 aib aib  4096 Jan  4 16:35  akshat
drwxrwxr-x  5 aib aib  4096 Jan  6 12:44  aku
drwxrwxr-x  2 aib aib  4096 Jan  7 12:48  aman
drwxrwxr-x  6 aib aib  4096 Jan  7 21:58  Amisha
```

$ cal month year

```
aib@pamoli-virtual-machine:~$ cal 02 2009
   February 2009
Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7
 8  9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
```

$ cal | less

```
   February 2009
Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7
 8  9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28


aib@pamoli-virtual-machine:~$ cal | less
```

$whoami

```
aib@pamoli-virtual-machine:~$ whoami
aib
```

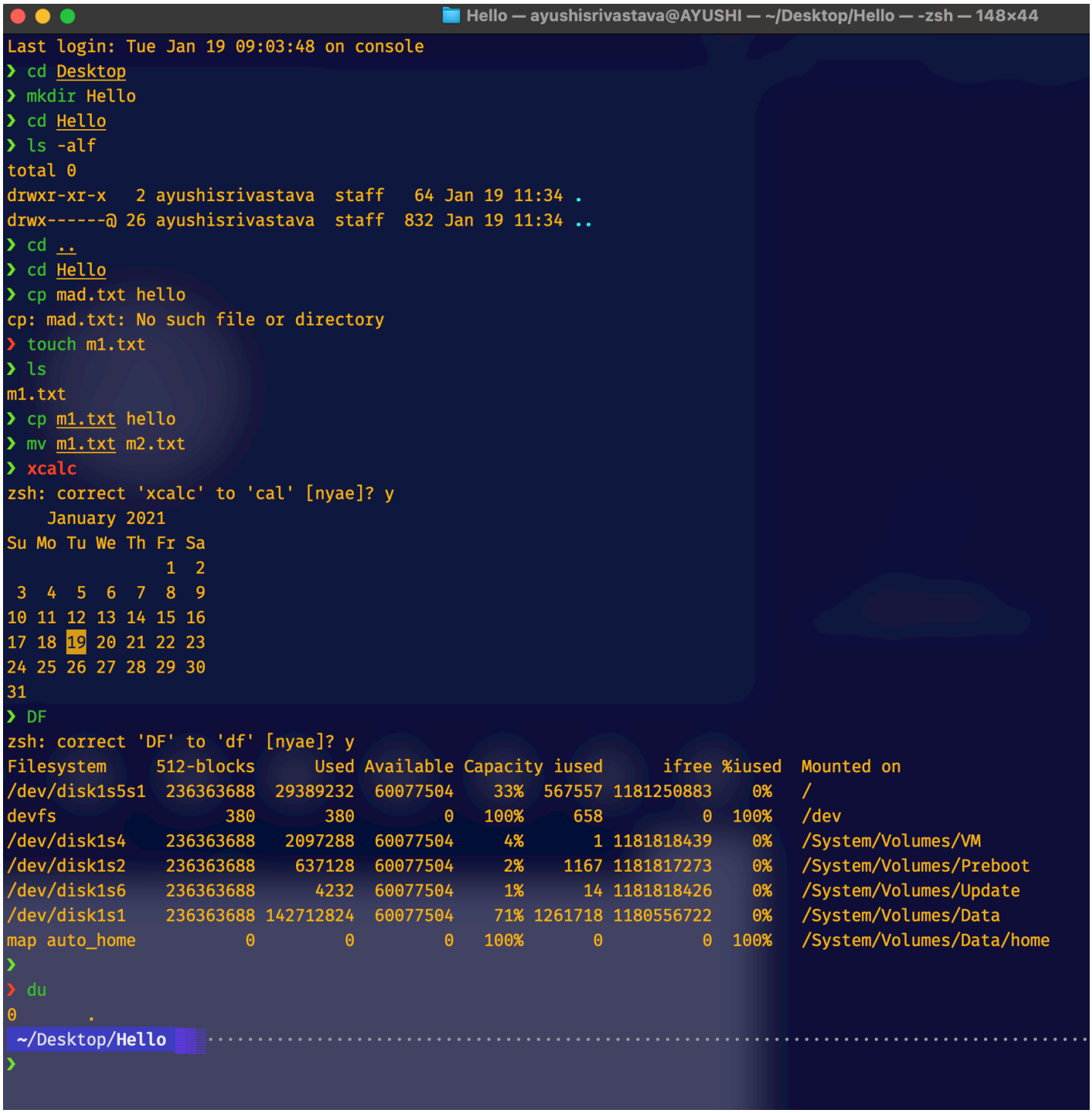
$ uname ; $uname -r ; $uname -n;

```
aib@pamoli-virtual-machine:~$ uname
Linux
aib@pamoli-virtual-machine:~$ uname -r
4.15.0-128-generic
aib@pamoli-virtual-machine:~$ uname -n
pamoli-virtual-machine
```

$ tty

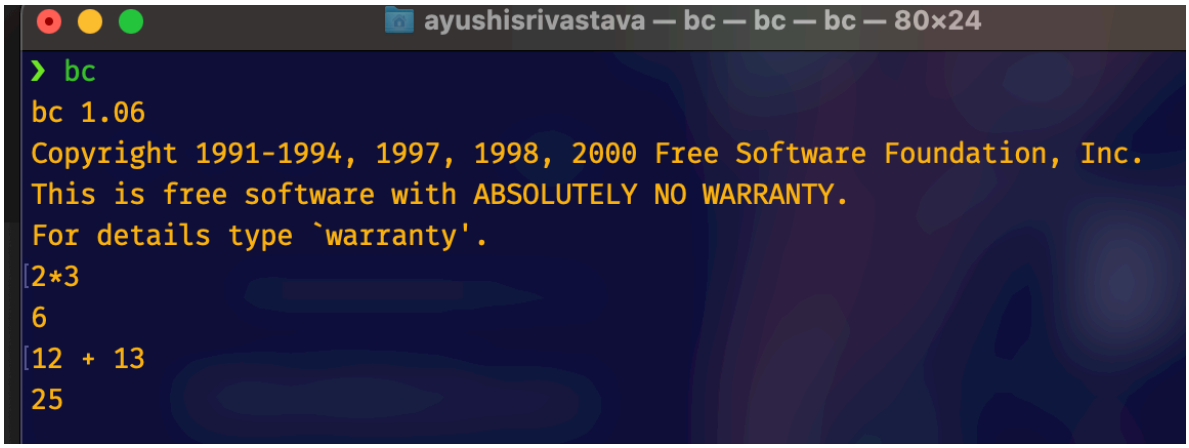
```
aib@pamoli-virtual-machine:~$ tty
/dev/pts/90
```

Exp 4 Executing Commands on my choice ubuntu / Linux Server

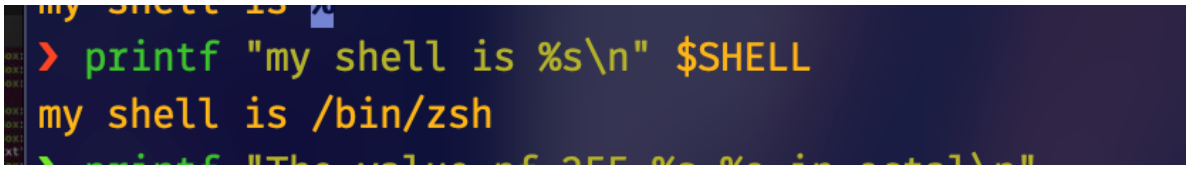


EXP : 5 EXPLORING UNIX COMMANDS

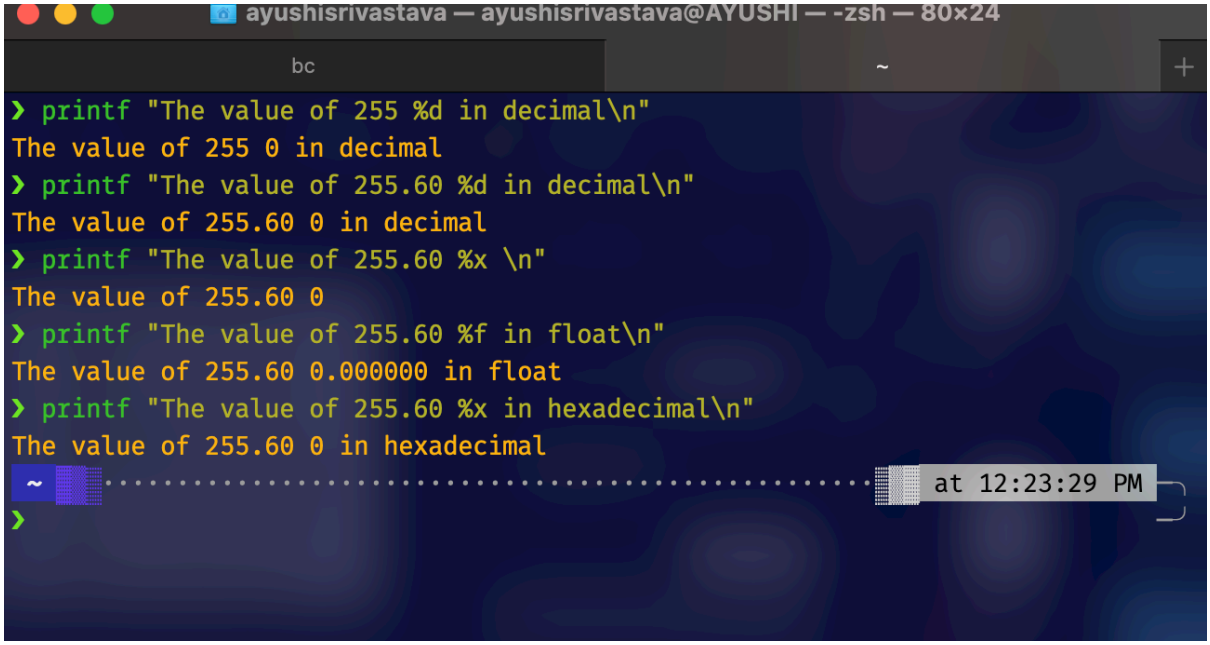
$bc



Printf “my shell is %s\n” $SHELL



Printf “The value of 255 is %d in decimal \n”



$date +%m

$date + %h

$date + “%h + %m”