UNIX AND SHELL PROGRAMMING

1 EXPERIMENT

1(a)Study of Unix/Linux general purpose utility command list: man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date, time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown.

Aim: to purpose utility commands list

1.man command:***man*** command in Linux is used to display the user manual of any command that we can run on the terminal.

1.**Syntax:** man [option(s)] keyword(s)

For example,

-a, --all

same as -b -d --login -p -r -t -T -u

-b, --boot
time of last system boot
-d, --dead
print dead processes
-H, --heading
print line of column headings
-l, --login
print system login processes
--lookup
attempt to canonicalize hostnames via DNS
-m only hostname and user associated with stdin
-p, --process
print active processes spawned by init
-q, --count
all login names and number of users logged on
-r, -- runlevel
print current runlevel
-s, --short
print only name, line, and time (default)
-t, --time
print last system clock change
-T, -w, --mesg
add user's message status as +, - or ?
-u, --users
list users logged in
Manual page who(1) line 1

2.who command: it prints the information who currently logged on.

Syntax:who[option]….[file|Arg1 Arg2]

```
[20A91A05CSE@Linux ~]$ who
exam41   pts/3        2021-10-27 09:16 (172-7-139-
250.lightspeed.irvnca.sbcglobal.net)
20A91A0502 pts/4       2021-10-27 11:09 (172-7-139-
250.lightspeed.irvnca.sbcglobal.net)
 20A91A0551 pts/5       2021-10-27 10:18 (172-7-139-
250.lightspeed.irvnca.sbcglobal.net)
20A91A0513 pts/6       2021-10-27 09:52 (172-7-139-
250.lightspeed.irvnca.sbcglobal.net)
20A91A0547 pts/7       2021-10-27 09:54 (172-7-139-
250lightspeed.irvnca.sbcglobal.net
```

3.cat command: the purpose of this command is

a.to create a file

b.to display the content of the file

c.to append a new content in the file existing content in a file

a. To create a file syntax::

cat><file name> example:

```
[20A91A05CSE@linux~]$ cat>file1.txt
Welcome
To unix and shell programming lab
```

b. To display the content of the file syntax::

cat <filename.extension> example:

```
[20A91A05CSE@linux~]$  cat file1.txt
  Welcome
To unix and shell programming lab
```

c.to append a new content in the file existing content in a file

syntax: cat>><filename.extension>

example:

```
[20A91A05CSE@linux~]$  cat>FILE
```

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[20A91A05CSE@linux~]$ cat sushma

Welcome

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4.cd: to change the directory

Syntax: cd<directoryname>

Example:

[20A91A05CSE@linux~]$mkdir file

[20A91A05CSE@linux~]$ cd file

[20A91A05CSE@linux file]$

5.cp: it copies the content from source file to destination file.

Syntax: cp<sourcefilename><destination filename>

Example:

[20A91A05CSE@linux~]$ cp file1 file2

[20A91A05CSE@linux~]$ cat file2

Welcome

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6.ps: short for process is a command line utility that is used to display

Or view information related to the process running in a liunx system.

Syntax::ps

[20A91A05CSE@linux~]$ps

Pio	tty	time	cmd
25740	pts/7	0: 00:00	bash
29001	pts/57	0:00:00	ps

7) ls :

ls it displays the list directory contents

Syntax: ls

Example

[20A91A05CSE@linux~]$ ls

add.ccosx.cfile.cabc.c

8)mv:

it moves the content from the source file to distination file

Syntax: mv <sourcefile><destination filename>

Example

[20A91A05CSE@linux~]$ mv file1 file2

[20A91A05CSE@linux~]$ cat file2

Welcome

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9.rm: it is used to remove the files

Syntax: rm<filename>

Example

[20A91A05CSE@linux~]$rm file2

10.mkdir: it is used to create a directory

Syntax: mkdir<directory name>

Example

[20A91A05CSE@linux~]$mkdirkmss

11.rmdir: to remove a directory

Syntax: rm<directory name>

[20A91A05CSE@linux~]$rmdirkmss

[20A91A05CSE@linux~]$

12.echo: it is used to display the line of text/string that are passed as an argumanet

Syntax: echo example

[20A91A05CSE@linux~]$ echo

Hello hello”echo”world

World

13.more: it is used to view the text files in command prompt displaying one screen at a time in case the file is large

Syntax:

More[-options] [-num][*/pattern][*line-num][filename] example

[20A91A05CSE@linux~]$ more

14.date: it display the system date and time

Syntax: date

Example: [20A91A05CSE@linux~]$ date

Wed oct 27 10:16:27 ist 2021

15.kill: it is used to terminate the process manually.

Syntax: kill -1

Example: [20A91A05CSE@linux~]$ kill -1

Sizhupsizo

Sizabrisizpwr

Siguitsizrtmay

16.history: it is used to view the previously executed command

Syntax: history Example:

[20A91A05CSE@linux~]$ history

Dear

Ln-s

Clear

Echo

17.chmod: it is used to the access mode of file

Syntax: chmod [refernce] [operator][mode] file…..

[20A91A05CSE@linux~]$chmodo+w list text

[20A91A05CSE@linux~]$ ls-1

Total 12 **:**

Dr xr-xt-xt-x-2 root root 4086 dec 31 07:16 text

Syntax: chown[option]…[owner][:[group]file

Example

[20A91A05CSE@linux~]$ ls-1 file.txt

-rw-r…r-1 root 66 feb 4 20:85 list text…

[20A91A05CSE@linux~]$chown master file.txt

Dr xr-xt-xt-x-2 root root 4086 feb 12 07:16 file. text

[20A91A05CSE@linux~]$

19.finger: it gives the details of all the users logged in

Syntax :finger<user name>

[20A91A05CSE@linux~]$ ls-1 finger bala

Example

Login balaname:bala

Directory: /home/sai/bala/ shell :/bin/bash

On since sun may 3 20:32 on: 0 from 0

No mail

No plan

[20A91A05CSE@linux~]$

20.pwd: it shows the present working directory

Syntax: pwd Example:

[20A91A05CSE@linux~]$cd cse

[20A91A05CSE@linux~]$pwd /home/20A91A05CSE/sai/cse

21.cal: it displays the calender

Syntax: cal Example:

[20A91A05CSE@linux~]$cal

October 2021
Su Mo Tue We Thu 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
16 25 26 27 28 29 30
31

22.logout: it allows you to programmatically logout from your session.

Syntax: session-logout[options]

Example:

To logout from the current session

[20A91A05CSE@linux~]$ logout

No output on the screen

23.shutdown: it is used to shutdown the system in a safe way only root user can execute shutdown command.

Syntax: shutdown[optons][time][message]

[20A91A05CSE@linux~]$sudo +10"system"

Shutdown scheduled for sat 2021 04:20

15:43:06 iDT use,' shutdown-c' to cancel

[20A91A05CSE@linux~]$ shutdown-c

16.time: it is used to execute a command and prints a summary of real time,usercpu time and system cpu time spent by executing a command when it terminates

Syntax: time[option]

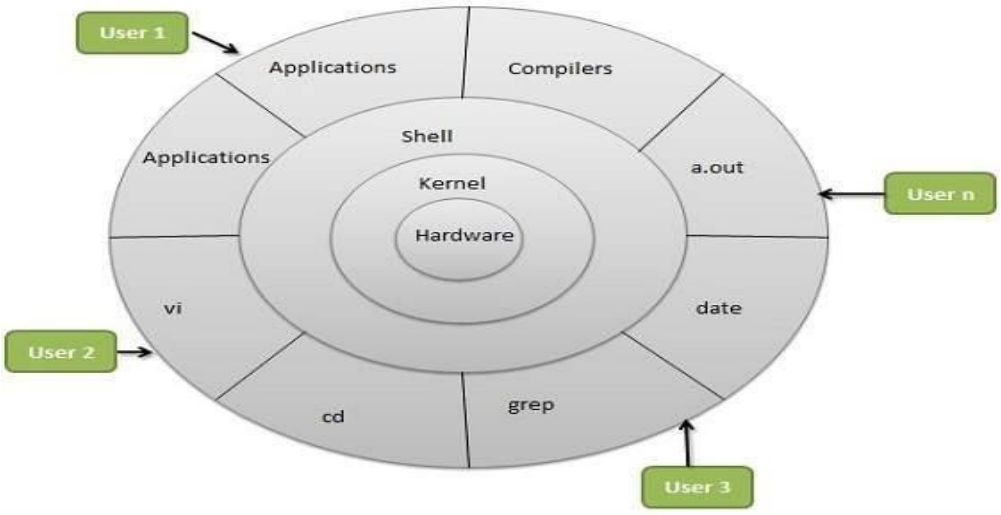
Example: [20A91A05CSE@linux~]$time

Real om3.003s

1 b) Study of Bash shell, Bourne shell and C shell in Unix/Linux operating system.

Introduction to Shells:

- Shell is an environment in which we can run our commands, programs, and shell scripts. There are different types of a shell, like different types of operating systems. Each shell has its own set of recognized commands and functions.
- Every Unix system has at least one shell. A shell is a program that consists on the kernal and acts as an agent or interface between the users and the kernal and hence the hardware. It is similar to the command.com in the MS-DOS environment.
- A **Shell** provides user with an interface to the Unix system. It gathers input from user and executes programs based on that input. When a program finishes executing, it displays that program's output.
- A **Shell** is a command interpreter or a processor .As the system is booted successfully , the shell presents a command the prompt ($ or % symbols) at which the user can type in any unix command.
- After accepting the command , the shell generates a readily executable simple command line by parsing it, evaluating variables, performs command substitution, interprets meta characters like * and ? and identifies the PATH.
- The prompt, **$**, which is called the **command prompt**, is issued by the shell. While the prompt is displayed, you can type a command.
- **Example :**$date



Types of Shells

- **Bourne shell** − If you are using a Bourne-type shell, the **$** character is the default prompt.
- The Bourne Shell has the following sub categories −
- **Bourne shell (sh)**
- **Korn shell (ksh)**

- **Bourne Again shell (bash)**
- **POSIX shell (sh)**
- **C shell** − If you are using a C-type shell, the % character is the default prompt.
- The different C-type shells follow −
- **C shell (csh)**

  TENEX/TOPS C shell (tcsh)

- **Bourne shell (sh) :**This is the most common shell available on Unix systems and the first major shell to be developed . The shell is widely used. It has been named its author Stephen Bourne at AT&T Bell labs. This shell is distributed as the standard shell on all Unix systems.
- **Korn shell (ksh) :**Itwas developed by David Korn at AT&T Bell labs. Basically it is built on the Bourne shell. It is one of the widely used shells. It is freely available.
- **Bourne Again shell (bash) :**It was developed by B Fox and C Ramey at free software foundations. Certain Linux os variants come with this shell as its default .

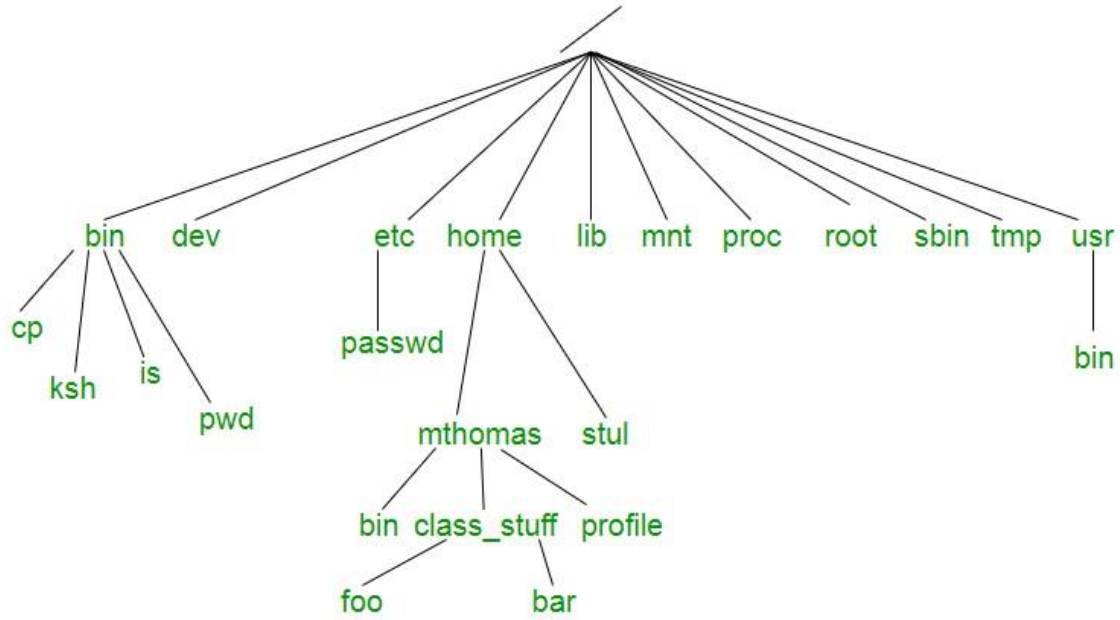
C shell − Bill Joy created it at the University of California at Berkeley. It is called C shell because its syntax and usage is very similar to the C Programming language. Unfortunately this shell is not available

UNIX contains a system variable, SHELL that identifies the path to your login shell. We can check it with the command as follows: Finding shell

- $ echo $SHELL.
- $ echo $0

  $ cat /etc/shells

1.c) Study of Unix/Linux file system (tree structure).



A file system is a logical collection of files on a partition or disk UNIX uses a hierarchical file system structure, much like an upside-down tree, with root (/) at the base of the file system and all other directories spreading from there.

A UNIX filesystem is a collection of files and directories that has the following properties :

1. It has a root directory (/) that contains other files and directories.
2. Each file or directory is uniquely identified by its name, the directory in which it resides, and a unique identifier, typically called an inode.
   - By convention, the root directory has an inode number of 2 and the lost+found directory has an inode number of 3. Inode numbers 0 and 1 are not used. File inode numbers can be seen by specifying the -i option to ls command.
   - It is self contained. There are no dependencies between one filesystem and any other. The directories have specific purposes and generally hold the same types of information for easily locating files. Following are the directories that exist on the major versions of Unix :

Directory	Description
/	This is the root directory which should contain only the directories needed at the top level of the file structure
/bin	This is where the executable files are located. They are available to all user.
/dev	These are device drivers.
/etc	Supervisor directory commands, configuration files, disk configuration files, valid user lists, groups, ethernet, hosts, where to send critical messages

Directory	Description
/lib	Contains shared library files and sometimes other kernel-related files
/boot	Contains files for booting the system.
/home	Contains the home directory for users and other accounts
/mnt	Used to mount other temporary file systems, such as cdrom and floppy for the CDROM drive and floppy diskette drive, respectively
/proc	Contains all processes marked as a file by process number or other information that is dynamic to the system
/tmp	Holds temporary files used between system boots
/user	Used for miscellaneous purposes, or can be used by many users. Includes administrative commands, shared files, library files, and others
/var	Typically contains variable-length files such as log and print files and any other type of file that may contain a variable amount of data
/sbin	Contains binary (executable) files, usually for system administration. For examplefdisk and ifconfig utlities.
/kernel	Contains kernel files

1.d) Study of .bashrc, /etc/bashrc and Environment variables.

AIM: Study of .bashrc, /etc/bashrc and Environment variables

- The /etc/bashrc is executed for both interactive and non-interactive shells. /etc/bashrc or /etc/bash.bashrc is the systemwide bash per-interactive-shell startup file. Is is used system wide functions and aliases. However, environment stuff goes in /etc/profile file.the /etc/profile is executed only for interactive shells
- .bashrc is a shell script that Bash runs whenever it is started interactively. It initializes an interactive shell session.
- .bashrc runs on every interactive shell launch.

- UNIX contains a system variable, SHELL that identifies the path to your login shell. We can check it with the command as follows:

Following is the partial list of important environment variables :-

- **DISPLAY :**Contains the identifier for the display that X11 programs should use by default.
- **HOME :**Indicates the home directory of the current user: the default argument for the cd built-in command.
- **IFS :**Indicates the Internal Field Separator that is used by the parser for word splitting after expansion.
- **LANG :**LANG expands to the default system locale; LC_ALL can be used to override this. For example, if its value is pt_BR, then the language is set to (Brazilian) Portuguese and the locale to Brazil.
- **LD_LIBRARY_PATH :**On many Unix systems with a dynamic linker, contains a colonseparated list of directories that the dynamic linker should search for shared objects when building a process image after exec, before searching in any other directories.
- **PATH :**Indicates search path for commands. It is a colon-separated list of directories in which the shell looks for commands.
- **PWD :**Indicates the current working directory as set by the cd command.
- **RANDOM :**Generates a random integer between 0 and 32,767 each time it is referenced.
- **SHLVL :**Increments by one each time an instance of bash is started. This variable is useful for determining whether the built-in exit command ends the current session.
- **TERM :**Refers to the display type
- **VZ :**Refers to Time zone. It can take values like GMT, AST, etc.
- **UID :**Expands to the numeric user ID of the current user, initialized at shell startup.

2.EXPERIMENT

a) Use the cat command to create a file containing the following data.Call it mytable use tabs to separatethe fields.

1425 Ravi 15.65

4160 Ramu 26.27

6830 Sita 36.15

1450 Raju 21.86

b) Study of vi editor

c) Use the cat command to display the file, my table.

d) Use the vi command to correct any errors in the file, my table.

e) Use the sort command to sort the file my table according to the first field. Call the sorted file my table (same name).

f) Print the file my table.

a)create a table using cat command

[20A91A05CSE@Linux ~]$ cat>mytable

1425 Ravi 15.65

4160 Ramu 26.27

6830 Sita 36.15

1450 Raju 21.86

2.b)Study of vi editor

Aim: To Study of vi editor

vi is generally considered the de facto standard in Unix editors because −

- It's usually available on all the flavours of unix system.
- Its implementations are very similar across the board.
- It requires very few resources.
- It is more user-friendly than other editors such as the **ed** or the **ex**.

You can use the **vi** editor to edit an existing file or to create a new file from scratch. You can also use this editor to just read a text file.

Syntax: vi filename

.vi editor has three modes

1)command mode

2)insert mode

3)exit mode

1)Command mode:

Once a file is open you are in the command mode .From command mode you can:

- Invoke insert mode
- Issue editing commands
- Move cursor to a different position in the file
- Save and exit the current version of file

2)Insert mode:

In insert mode you can enter new text in the file press esc key to exit insert mode and return to command mode.

The following commands invoke the insert mode:

- a Append after cursor

A Append at the end of line

- i Insert before cursor
- l Insert at beginning of line
- r Replace character under cursor
- Open a newline above current line

3)Lastline mode:

The last vi mode is known as vi last line mode. The following command invoke exit mode.

- :q to quit (short for quit)
- :q! to quit without saving
- :wq to write and quit
- :wq! To write and quit even if file has only read permission
- X to read and quit
- :qa to quit all (short for :quit all)

Example:[20A91A05532linux~]vi factorial.sh

c) display the table using cat command

[20A91A05CSE@Linux ~] $ cat mytable

1425 Ravi 15.65

4160 Ramu 26.27

6830 Sita 36.15

1450 Raju 21.86

d)use vi command to edit

[20A91A05CSE@Linux kmss]$ vi mytable

e)use sort command to sort

[20A91A05CSE@Linux ~]$ sort -f +0 -1 mytable>new.txt

[20A91A05CSE@Linux ~]$ cat new.txt

1425 Ravi 15.65

1450 Raju 21.86

4160 Ramu 26.27

6830 Sita 36.15

f) print file my table

[20A91A05CSE@Linux ~]$ cat mytable

1425 Ravi 15.65

4160 Ramu 26.27

6830 Sita 36.15

1450 Raju 21.86

3.EXPERIMENT

a) use the appropriate command to determine your login shell.

b) use the who command and redirect result to the file called myfile1,use the more command to see the content of myfile1.

c) use the date and who command in sequence such that the output of date command will display on the screen and the output of who command is redirected to a file called myfile 2.

d)use the more command to check the content of myfile2.

a) to determine login shell

[20A91A05CSE@Linux ~]$ echo $SHELL

/bin/bash

b)who command and more command redirect to my file 1

[20A91A05CSE@Linux ~]$ who >myfile1

[20A91A05CSE@Linux ~]$ cat myfile1

20A91A0533 pts/0 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0534 pts/1 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0510 pts/2 2021-10-27 09:55 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

exam41 pts/3 2021-10-27 09:53 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

[20A91A05CSE@Linux ~]$ more myfile1

20A91A0533 pts/0 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0534 pts/1 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0510 pts/2 2021-10-27 09:55 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

exam41 pts/3 2021-10-27 09:53 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

c)date and who command on same file

[20A91A05CSE@Linux ~] $ date; who >myfile2

Wed Oct 27 11:20:57 IST 2021

[20A91A05CSE@Linux ~] $ cat myfile2

20A91A0533 pts/0 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0534 pts/1 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0510 pts/2 2021-10-27 09:55 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

d)more command to check content in myfile 2

[20A91A05CSE@Linux ~] $ more myfile2

20A91A0533 pts/0 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0534 pts/1 2021-10-27 09:42 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

20A91A0510 pts/2 2021-10-27 09:55 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

exam41 pts/3 2021-10-27 09:53 (172-7-139-250.lightspeed.irvnca.sbcglobal.net)

4. Shell Script

a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file or something else

Aim: to a shell script that takes a command –line argument and reports on whether it is directory, a file or something else

[20A91A05CSE@Linux~] $ vi program.sh

```
echo "Enter a file name:"
read file
if [ -f $ file ]
then
echo "  yes  it is a File"
elif [ -d $file ]
then
echo "yes it is a Directory"
else
echo "name not in the list"
fi
```

OUTPUT:

[20A91A05CSE@Linux~]$ sh program.sh

```
Enter a file name:
kmss
yes it is a Directory
```

b) write a shell script to find Factorial of a number

[20A91A05CSE@Linux ~]$ vi fact.sh

```
echo "enter a number:"
read num
i=1
counter=1
fact=1
while [ $num -ge $counter ]
do
fact=`expr $fact \* $counter`
counter=`expr $counter + 1`
done
echo "the factorial of $num is : $fact"
```

OUTPUT:

[20A91A05CSE@Linux ~]$ sh fact.sh

```
enter a number:
5
the factorial of 5 is : 120
```

5. Shell Script

a) Write a shell script that determines the period for which a specified user is working on the system.

Aim: to a shell script that determines the period for which a specified user is working on the system .

[20A91A05CSE@Linux~]$ vi user.sh

```
echo "enter the login of the user:"
read name
logindetails=`who|grep -w "$name"|grep "tty"`
if [$? -ne 0]
then
echo "$name has not logged in yet"
exit
fi

loginhours=`echo "$logindetails"|cut -c 26,27`
loginminutes=`echo "$logindetails"|cut -c 29-30`
hournow=`date|cut -c 12,13`
minnow=`date|cut -c 15,16`
hour=`expr $loginhours-$hournow`
min=`expr $loginminute-$minnow`
echo "$name is working since $hour hrs $min minutes"
```

output:

[20A91A05CSE@Linux~]$ sh user.sh

```
enter the login of the user:
20A91A05CSE
20A91A05CSE is working since -11 hrs -07 minutes
```

5 b)shell script that accepts a file name ,starting and ending line numbers as arguments and display all the lines between the given lines

Aim:to a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.

[20A91A05CSE@Linux ~]$ vi displaylines.sh

```
echo "enter a filename:"
read file
echo "enter the starting line:"
read s
echo "enter the ending line:"
read n
sed -n $s,$n\p $file|cat >newline
cat newline
```

OUTPUT

```
[20A91A05CSE@Linux ~]$ sh displaylines.sh
enter a filename:
mss
enter the starting line:
1
enter the ending line:
4
hi
hello
aditya hi
RK hi
```

6. Shell Script Write a shell script that computes the gross salary of a employee according to the following rules:

i) If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.

ii) If basic salary is >=1500 then HRA =Rs500 and DA=98% of the basic. The basic salary is entered interactively through the key board.

Aim: a shell script that computes the gross salary of a employee according to the following rules

[20A91A05CSE@Linux ~] $ vi salary.sh

```
echo "enter basic salary:"
read bs
if [ $bs -lt 1500 ]
then
hra=`echo $bs\*10/100|bc`
da=`echo $bs\*90/100|bc`
else
hra=500
da=`echo $bs\*98/100|bc`
fi
gs=`echo $bs+$hra+$da|bc`
echo "DA $da"
echo "HRA $hra"
echo "gross salary $gs"
```

OUTPUT:

```
[20A91A05CSE@Linux ~]$ sh salary.sh
enter basic salary:
100
DA 90
HRA 10
gross salary 200
```

Q)GREP SCRIPT THAT ASKS FOR A WORD AND A FILE NAME AND TELLS HOW MANY LINES CONTAINS THAT FILE

[20A91A05CSE@Linux~]$ vi hlines.sh

```
echo "enter a word:"
read w
echo "enter a file name:"
read f
no1=`grep -c "$w" $f`
echo "the number of lines are :"$no1
```

OUTPUT:

[20A91A05CSE@Linux~]$ shhlines.sh

```
enter a word:
hi
enter a file name:
mss
the number of lines are :8
```

Q) TO FIND LENGTH OF A STRING USING SHELL SCRIPT

[20A91A05CSE@Linux~] $ vi length.sh

```
echo "enter a string:"
read string
l=`echo $string|wc -c`
echo "length of string is =$l"
```

OUTPUT:

```
[20A91A05CSE@Linux~]$ sh length.sh
enter a string:
aditya
length of string is =6
```

Q)SHELL SCRIPT TO CONCATENATE TWO STRINGS

[20A91A05CSE@Linux ~] $ vi concatenate.sh

```
echo "enter a first string:"
read s1
echo "enter a second string:"
read s2
s3=$s1$s2
echo "concatenated string is $s3"
```

OUTPUT:

```
[20A91A05CSE@Linux ~]$ sh concatenate.sh
enter a first string:
aditya
enter a second string:
engg
concatenated string is adityaengg
```

Q) Write a shell script to accept emp no, emp name, basic salary and find the DA, HRA, TA, PF, IT using the following rules

1. If basic salary>5000 then

HRA=18% OF BASICSAL

PF=13% OF BASICSAL

IT=14% OF BASICSAL

TA=10% OF BASICSAL

DA=35% OF BASICSAL

2. If basic salary<5000 then

HRA=550

PF=13% OF BASICSAL

IT=14% OF BASICSAL

TA=10% OF BASICSAL

DA=35% OF BASICSAL

[**20A91A05CSE@Linux ~]$ vi employe.sh**

```
echo "enter employee no:"
read empno
echo "enter employee name:"
read empname
echo "enter basic salary:"
read bs
if [ $bs -lt5000 ]
then
hra=550
da=`echo $bs\*35/100|bc`
pf=`echo $bs\*13/100|bc`
it=`echo $bs\*14/100|bc`
ta=`echo $bs\*10/100|bc`
else
hra=`echo $bs\*18/100|bc`
da=`echo $bs\*35/100|bc`
```

```
pf=`echo $bs\*13/100|bc`
it=`echo $bs\*14/100|bc`
ta=`echo $bs\*10/100|bc`
fi
gs=`echo $bs+$hra+$da+$pf+$it+$ta|bc`
echo "DA $da"
echo "HRA $hra"
echo "PF $pf"
echo "IT $it"
echo "TA $ta"
echo "GROSS SALARY $gs"
```

OUTPUT:

```
[20A91A05CSE@Linux ~]$sh employe.sh
enter employee no:
123
enter employee name:
aditya
enter basic salary:
15000
DA 5250
HRA 2700
PF 1950
IT 2100
TA 1500
GROSS SALARY 28500

[20A91A05CSE@Linux ~]$sh employe.sh
enter employee no:
456
enter employee name:
```

RK

enter basic salary:

1200

DA 420

HRA 550

PF 156

IT 168

TA 120

GROSS SALARY 2614

7. Shell Script

a) Write a shell script that accepts two integers as its arguments and computes the value of first number raised to the power of the second number.

Aim:to a shell script that accepts two integers as its arguments and computes the value of first number raised to the power of the second number.

[20A91A05CSE@Linux ~]$ vi power.sh

```
if [ $# -ne 2 ]
then
echo "invalid number of arguments"
exit
fi
pwr=`echo $1^$2|bc`
echo "$1 raised to $2 is $pwr"
```

OUTPUT:

```
[20A91A05CSE@Linux ~]$sh power.sh 2 3
2 raised to 3 is 8
```

7 b) Write a shell script which will display Armstrong number from given arguments.

Aim: to ashell script which will display Armstrong number from given arguments.

[20A91A05CSE@Linux ~]$ vi armstrong.sh

```
for n in $*
do
t=$n
sum=0
while [ $n -ne 0 ]
do
r=`expr $n % 10`
sum=`expr $sum + $r \* $r \* $r`
n=`expr $n / 10`
done
if [ $t -eq $sum ]
then
echo $t is aarmstrong number
else
echo $t is not aarmstrong number
fi
done
```

OUTPUT:

```
[20A91A05CSE@Linux ~]$sh armstrong.sh 153
153 is aarmstrong number
[20A91A05CSE@Linux ~]$sh armstrong.sh 125
125 is not aarmstrong number
```

8.

Shell Script

Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.

[20A91A05CSE@Linux ~]$ vi filehandling.sh

```
echo 1.copy
echo 2.rename
echo 3.remove
echo 4.link
echo 5.exit
echo "enter your choice"
read ch
case $ch in
1) echo "enter the source file"
read s
echo "enter the destination file"
read d
cp $s $d
;;
2) echo "enter old file name"
read of
echo "enter the new filename"
read nf
mv $of $nf
;;
3) echo "enter the filename to delete"
read df
rm $df
;;
```

```
4) echo "enter file 1"
read f1
echo "enter file 2"
read f2
ln $f1 $f2
;;
5) exit 0
;;
esac
```

OUTPUT

```
[20A91A05CSE@Linux ~]$sh filehandling.sh
1.copy
2.rename
3.remove
4.link
5.exit
enter your choice
1
enter the source file
a.txt
enter the destination file
b.txt

[20A91A05CSE@Linux ~]$sh filehandling.sh
1.copy
2.rename
3.remove
4.link
5.exit
enter your choice
2
```

enter old file name

b.txt

enter the new filename

d.txt