

MODULE 2- LINUX

Environment Variable

1. How can you know what is the secondary command prompt set your system?
How can you change the secondary command prompt from the default to your username?

```
user@user-VirtualBox:~$ echo $PS2
>
user@user-VirtualBox:~$ PS1="$LOGNAME"
user
```

2. How can you ensure that the mv command (used for renaming a file) always asks for permission before overwriting an existing destination file?
[Hint: use alias command]

```
user@user-VirtualBox:~$ touch source.txt
user@user-VirtualBox:~$ touch destination.txt
user@user-VirtualBox:~$ alias Cdmv="mv source.txt destination.txt"
user@user-VirtualBox:~$ Cdmv
mv: overwrite 'destination.txt'? y
user@user-VirtualBox:~$ cat destination.txt
user@user-VirtualBox:~$ echo "WELCOME">source.txt
user@user-VirtualBox:~$ Cdmv
mv: overwrite 'destination.txt'? y
user@user-VirtualBox:~$ cat destination.txt
WELCOME
user@user-VirtualBox:~$ █
```

Basics Of System Administration in Linux

- 1) Create a new user account and home directory called "Duck"

```
user@user-VirtualBox:~$ sudo adduser duck
Adding user `duck' ...
Adding new group `duck' (1002) ...
Adding new user `duck' (1002) with group `duck' ...
Creating home directory `/home/duck' ...
Copying files from `/etc/skel' ...
New password:
BAD PASSWORD: The password contains the user name in some form
Retype new password:
passwd: password updated successfully
Changing the user information for duck
Enter the new value, or press ENTER for the default
    Full Name []: DUCK
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] Y
```

- 2) Set the user account "Duck's" expiry date as 07 - 01 - 2015

```
user@user-VirtualBox:~$ sudo usermod -e 2024-01-07 duck
```

- 3) find the id of the user account "Duck"

```
duck@user-VirtualBox:/home/user$ id -u
1002
duck@user-VirtualBox:/home/user$
```

- 4) Type df and du commands and see the output on your terminal.

```
duck@user-VirtualBox:~$ touch abc.txt
duck@user-VirtualBox:~$ touch def.txt
duck@user-VirtualBox:~$ du -s *.txt
0      abc.txt
0      def.txt
duck@user-VirtualBox:~$ du -ch *.txt
0      abc.txt
0      def.txt
0      total
```

```
duck@user-VirtualBox:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           196M  1.7M  195M   1% /run
/dev/sda3       24G   17G   6.4G  73% /
tmpfs           980M    0   980M   0% /dev/shm
tmpfs           5.0M  4.0K   5.0M   1% /run/lock
/dev/sda2       512M   6.1M  506M   2% /boot/efi
tmpfs           196M  140K  196M   1% /run/user/1000
```

- 5) Type this command on the terminal and see the output :
du -ch *.txt

```
duck@user-VirtualBox:~$ du -ch *.txt
0      abc.txt
0      def.txt
0      total
```

- 6) Delete the user account "Duck" permanently along with its home folder.

```
duck@user-VirtualBox:~$ logout
user@user-VirtualBox:~$ sudo userdel -r duck
userdel: duck mail spool (/var/mail/duck) not found
user@user-VirtualBox:~$ ls /home/
user
user@user-VirtualBox:~$
```

Simple Filters's Assignment

Assignment For Topic	Questions
Head	
Assignment i	Try what is shown on the video
Assignment ii	1. Try to get the first 10 lines from /etc/passwd 2. try to get just the first 3 lines from /etc/passwd
Tail	
Assignment i	Try what is shown on the video
Assignment ii	1. Try to get the Last 10 lines from /etc/passwd 2. Try to get just the Last 3 lines from /etc/passwd 3. Try to follow the log file /var/log/auth.log
Sort	
Assignment i	Try what is shown on the video
Assignment ii	1. Try to sort the file /etc/passwd in assending order. 2. Try to sort the file /etc/passwd in decending order. 3. Try to sort the file /etc/passwd in assending order based on the 3 rd column. 4. Try to sort the file /etc/passwd in assending order based on the 3 rd column and ask sort to look at the thrid column as a whole number.
Cut	
Assignment i	Try what is shown on the video
Assignment ii	1. Try to cut just the usernames from the file /etc/passwd
Paste	
Assignment i	Try what is shown on the video
Assignment ii	1. Create a file alphabets.txt and key in all the 26 alphabets each one in a new line. 2. Create a file number.txt and key in 1 to 26 each one in a new line. 3. Try to paste those two files, to see which letter appears at what number. <i>Paste alphabets.txt numbers.txt</i>

```

Activities  Terminal  Oct 12 19:58
user@user-VirtualBox: ~

user@user-VirtualBox:~$ ls
ASSIGN_LINUX1.odt  files  'MODULE 5.odt'  out_file.txt  redirr.sh  souce.txt  testb.txt
'ASSIGN_LINUX1 word.docx'  here.sh  'MODULE 5 word.docx'  Pictures  redir.sh  test  test.sh
desktop  info.txt  Newfile.txt  process_info.txt  sample1.txt  test2.txt  X_file.txt
destination.txt  'MODULE 3.odt'  numbers.txt  qwerty  snap  testa.txt

user@user-VirtualBox:~$ cat numbers.txt
1
2
22
2
4
6
7
8
99
10
11
12

user@user-VirtualBox:~$ head numbers.txt
1
2
22
2
4
6
7
8
99
10

user@user-VirtualBox:~$ head -n5 numbers.txt
1
2
22
2
4

user@user-VirtualBox:~$ tail numbers.txt
2
4
6

```

```

Activities  Terminal  Oct 12 19:58
user@user-VirtualBox: ~

user@user-VirtualBox:~$ tail numbers.txt
2
4

user@user-VirtualBox:~$ tail -n5 numbers.txt
99
10
11
12

user@user-VirtualBox:~$ tail -f /var/log/auth.log
Oct 12 19:44:30 user-VirtualBox sudo: pam_unix(sudo:auth): auth could not identify password for [duck]
Oct 12 19:44:30 user-VirtualBox sudo: duck : user NOT in sudoers ; TTY=pts/0 ; PWD=/home/duck ; USER=root ; COMMAND=/usr/sbin/userdel -r duck
Oct 12 19:45:52 user-VirtualBox sudo: duck : user NOT in sudoers ; TTY=pts/0 ; PWD=/home/duck ; USER=root ; COMMAND=/usr/bin/passwd duck
Oct 12 19:47:07 user-VirtualBox su: pam_unix(su-l:session): session closed for user duck
Oct 12 19:47:22 user-VirtualBox sudo: user : TTY=pts/0 ; PWD=/home/user ; USER=root ; COMMAND=/usr/sbin/userdel -r duck
Oct 12 19:47:22 user-VirtualBox sudo: pam_unix(sudo:session): session opened for user root(uid=0) by (uid=1000)
Oct 12 19:47:22 user-VirtualBox userdel[32138]: delete user 'duck'
Oct 12 19:47:22 user-VirtualBox userdel[32138]: removed group 'duck' owned by 'duck'
Oct 12 19:47:22 user-VirtualBox userdel[32138]: removed shadow group 'duck' owned by 'duck'
Oct 12 19:47:23 user-VirtualBox sudo: pam_unix(sudo:session): session closed for user root

```

```

user@user-VirtualBox:~$ su user
Password:
su: Authentication failure
user@user-VirtualBox:~$ date
Thursday 12 October 2023 08:06:29 PM IST
user@user-VirtualBox:~$

```

```

Activities  Terminal  Oct 12 20:05
user@user-VirtualBox: ~
user@user-VirtualBox:~$ tail -f /var/log/auth.log
Oct 12 19:45:52 user-VirtualBox sudo:    duck : user NOT in sudoers ; TTY=pts/0 ; PWD=/home/duck ; USER=root ; COMMAND=/usr/bin/pas
swd duck
Oct 12 19:47:07 user-VirtualBox su: pam_unix(su-l:session): session closed for user duck
Oct 12 19:47:22 user-VirtualBox sudo:    user : TTY=pts/0 ; PWD=/home/user ; USER=root ; COMMAND=/usr/sbin/userdel -r duck
Oct 12 19:47:22 user-VirtualBox sudo: pam_unix(sudo:session): session opened for user root(uid=0) by (uid=1000)
Oct 12 19:47:22 user-VirtualBox userdel[32138]: delete user 'duck'
Oct 12 19:47:22 user-VirtualBox userdel[32138]: removed group 'duck' owned by 'duck'
Oct 12 19:47:22 user-VirtualBox userdel[32138]: removed shadow group 'duck' owned by 'duck'
Oct 12 19:47:23 user-VirtualBox sudo: pam_unix(sudo:session): session closed for user root
Oct 12 20:00:11 user-VirtualBox su: pam_unix(su:auth): authentication failure; logname= uid=1000 euid=0 tty=/dev/pts/0 ruser=user rh
ost= user=user
Oct 12 20:00:14 user-VirtualBox su: FAILED SU (to user) user on pts/0
Oct 12 20:01:19 user-VirtualBox su: pam_unix(su:auth): authentication failure; logname= uid=1000 euid=0 tty=/dev/pts/0 ruser=user rh
ost= user=user
Oct 12 20:01:22 user-VirtualBox su: FAILED SU (to user) user on pts/0

```

```

Activities  Terminal  Oct 12 20:09
user@user-VirtualBox: ~
1
2
2
4
6
7
8
10
11
12
22
99
user@user-VirtualBox:~$ sort -rn numbers.txt
99
22
12
11
10
8
7
6
4
2
2
1
user@user-VirtualBox:~$ sort -run numbers.txt
99
22
12
11
10
8
7
6
4
2
2
1
user@user-VirtualBox:~$

```

```
Activities Terminal Oct 12 20:08 user@user-VirtualBox: ~
^C
user@user-VirtualBox:~$ sort numbers.txt
1
10
11
12
2
2
22
4
6
7
8
99
user@user-VirtualBox:~$ sort -n numbers.txt
1
2
2
4
6
7
8
10
11
12
22
99
```

```
Activities Terminal Oct 12 20:15 user@user-VirtualBox: ~
user@user-VirtualBox:~$ sort MARK.txt -t " " -k2
sort: cannot read: MARK.txt: No such file or directory
user@user-VirtualBox:~$ sort MARKS.txt -t " " -k2
40 Avir
100 Bala
60 Pradeep
95 Somu
85 Vijay
user@user-VirtualBox:~$ sort MARKS.txt -t " " -k2
40 Avir
100 Bala
60 Pradeep
95 Somu
85 Vijay
user@user-VirtualBox:~$ sort MARKS.txt -k2
40 Avir
100 Bala
60 Pradeep
95 Somu
85 Vijay
user@user-VirtualBox:~$ cat MARKS.txt
100 Bala
60 Pradeep
85 Vijay
40 Avir
95 Somu
user@user-VirtualBox:~$
```

```
user@user-VirtualBox:~$ cut MARKS.txt -d " " -f2
Bala
Pradeep
Vijay
Avir
Somu
```

```
Activities Terminal Oct 12 20:21 user@user-VirtualBox: ~  
Somu  
user@user-VirtualBox:~$ cut MARKS.txt -f2  
100 Bala  
60 Pradeep  
85 Vijay  
40 Avir  
95 Somu  
user@user-VirtualBox:~$ paste numbers.txt MARKS.txt  
1 100 Bala  
2 60 Pradeep  
22 85 Vijay  
2 40 Avir  
4 95 Somu  
6  
7  
8  
99  
10  
11  
12  
user@user-VirtualBox:~$ paste numbers.txt MARKS.txt > concatfile.txt  
user@user-VirtualBox:~$ cat concatfile.txt  
1 100 Bala  
2 60 Pradeep  
22 85 Vijay  
2 40 Avir  
4 95 Somu  
6  
7  
8  
99  
10  
11  
12  
user@user-VirtualBox:~$ paste -s numbers.txt MARKS.txt  
1 2 22 2 4 6 7 8 99 10 11 12  
100 Bala 60 Pradeep 85 Vijay 40 Avir 95 Somu  
user@user-VirtualBox:~$
```

```
Open MARKS.txt ~/  
1 100 Bala  
2 60 Pradeep  
3 85 Vijay  
4 40 Avir  
5 95 Somu  
  
MARKS.txt x  
1 1  
2 2  
3 22  
4 2  
5 4  
6 6  
7 7  
8 8  
9 99  
10 10  
11 11  
12 12  
13
```


The grep command

1) Explore some other commands like -E, + and ?

```
user@user-VirtualBox:~$ grep -E "X?" grepdemo.txt
A001|Anirban Roy Choudhury|computers|95|Pass|8000
A002|Ankit Pilania|electronics|98|Pass|8900
C003|Ankit Saraf|civil|32|Fail|2000
S004|Goutam dhar choudhuree|chemical|77|Pass|7700
A005|Mani Chowdhari|electrical|23|Fail|2000
X006|Mohan|computers|67|Incomplete|0
W007|Sandeep|civil|2|Fail|0
A008|Yogesh|computers|91|Pass|8000
S009|Yojna chaudhury|electronics|38|Incomplete|1000
A010|Zubin|Computers|12|Fail|1500
C011|Mira Nair|electronics|66|Pass|7000
X012|Meera Banik|civil|76|Pass|6300
W013|Meeraa Roy|civil 41|Pass|4000
```

```
user@user-VirtualBox:~$ chmod +x grepdemo.txt
user@user-VirtualBox:~$ grep -E "e+" grepdemo.txt
A001|Anirban Roy Choudhury|computers|95|Pass|8000
A002|Ankit Pilania|electronics|98|Pass|8900
S004|Goutam dhar choudhuree|chemical|77|Pass|7700
A005|Mani Chowdhari|electrical|23|Fail|2000
X006|Mohan|computers|67|Incomplete|0
W007|Sandeep|civil|2|Fail|0
A008|Yogesh|computers|91|Pass|8000
S009|Yojna chaudhury|electronics|38|Incomplete|1000
A010|Zubin|Computers|12|Fail|1500
C011|Mira Nair|electronics|66|Pass|7000
X012|Meera Banik|civil|76|Pass|6300
W013|Meeraa Roy|civil 41|Pass|4000
```

grepdemo.txt

```
1 A001|Anirban Roy Choudhury|computers|95|Pass|8000
2 A002|Ankit Pilania|electronics|98|Pass|8900
3 C003|Ankit Saraf|civil|32|Fail|2000
4 S004|Goutam dhar choudhuree|chemical|77|Pass|7700
5 A005|Mani Chowdhari|electrical|23|Fail|2000
6 X006|Mohan|computers|67|Incomplete|0
7 W007|Sandeep|civil|2|Fail|0
8 A008|Yogesh|computers|91|Pass|8000
9 S009|Yojna chaudhury|electronics|38|Incomplete|1000
10 A010|Zubin|Computers|12|Fail|1500
11 C011|Mira Nair|electronics|66|Pass|7000
12 X012|Meera Banik|civil|76|Pass|6300
13 W013|Meeraa Roy|civil 41|Pass|4000
```

More on grep command

1) List those entries that are 5 letters long and starts with Y

```
user@user-VirtualBox:~$ chmod +x grepdemo.txt
user@user-VirtualBox:~$ grep "Y...." grepdemo.txt
A008|Yogesh|computers|91|Pass|8000
S009|Yojna chaudhury|electronics|38|Incomplete|1000
user@user-VirtualBox:~$
```

grepdemo.txt

```
1 A001|Anirban Roy Choudhury|computers|95|Pass|8000
2 A002|Ankit PIlania|electronics|98|Pass|8900
3 C003|Ankit Saraf|civil|32|Fail|2000
4 S004|Goutam dhar choudhuree|chemical|77|Pass|7700
5 A005|Mani Chowdhari|electrical|23|Fail|2000
6 X006|Mohan|computers|67|Incomplete|0
7 W007|Sandeep|civil|2|Fail|0
8 A008|Yogesh|computers|91|Pass|8000
9 S009|Yojna chaudhury|electronics|38|Incomplete|1000
10 A010|Zubin|Computers|12|Fail|1500
11 C011|Mira Nair|electronics|66|Pass|7000
12 X012|Meera Banik|civil|76|Pass|6300
13 W013|Meeraa Roy|civil 41|Pass|4000
```

The sed command

```
user@user-VirtualBox:~$ gedit seddemo.txt
user@user-VirtualBox:~$ chmod +x seddemo.txt
user@user-VirtualBox:~$ sed -n '6,12p' seddemo.txt
X006|Mohan Kumar|computers|67|Incomplete|0
W007|Sandeep|civil|2|Fail|0
A008|Yogesh|computers|91|Pass|8000
S009|Yojna chaudhury|electronics|38|Incomplete|1000
A010|Zubin|Computers|12|Fail|1500
C011|Mira Nair|electronics|66|Pass|7000
X012|Meera Banik|civil|76|Pass|6300
```

seddemo.txt

```
1 A001|Anirban Roy Choudhury|computers|95|Pass|8000
2 A002|Ankit Pilania|electronics|98|Pass|8900
3 C003|Ankit Saraf|civil|32|Fail|2000
4 S004|Goutam kumar Kumar|chemical|77|Pass|7700
5 A005|Mani Chowdhari|electrical|23|Fail|2000
6 X006|Mohan Kumar|computers|67|Incomplete|0
7 W007|Sandeep|civil|2|Fail|0
8 A008|Yogesh|computers|91|Pass|8000
9 S009|Yojna chaudhury|electronics|38|Incomplete|1000
10 A010|Zubin|Computers|12|Fail|1500
11 C011|Mira Nair|electronics|66|Pass|7000
12 X012|Meera Banik|civil|76|Pass|6300
13 W013|Meeraa Roy|civil|41|Pass|4000
```

More on sed command

```
user@user-VirtualBox:~$ sed 's/[Aa]nkit/Ashish/g' seddemo.txt
A001|Anirban Roy Choudhury|computers|95|Pass|8000
A002|Ashish PIlania|electronics|98|Pass|8900
C003|Ashish Saraf|civil|32|Fail|2000
S004|Goutam kumar Kumar|chemical|77|Pass|7700
A005|Mani Chowdhari|electrical|23|Fail|2000
X006|Mohan Kumar|computers|67|Incomplete|0
W007|Sandeep|civil|2|Fail|0
A008|Yogesh|computers|91|Pass|8000
S009|Yojna chaudhury|electronics|38|Incomplete|1000
A010|Zubin|Computers|12|Fail|1500
C011|Mira Nair|electronics|66|Pass|7000
X012|Meera Banik|civil|76|Pass|6300
W013|Meeraa Roy|civil|41|Pass|4000
```

seddemo.txt

```
1 A001|Anirban Roy Choudhury|computers|95|Pass|8000
2 A002|Ankit PIlania|electronics|98|Pass|8900
3 C003|Ankit Saraf|civil|32|Fail|2000
4 S004|Goutam kumar Kumar|chemical|77|Pass|7700
5 A005|Mani Chowdhari|electrical|23|Fail|2000
6 X006|Mohan Kumar|computers|67|Incomplete|0
7 W007|Sandeep|civil|2|Fail|0
8 A008|Yogesh|computers|91|Pass|8000
9 S009|Yojna chaudhury|electronics|38|Incomplete|1000
10 A010|Zubin|Computers|12|Fail|1500
11 C011|Mira Nair|electronics|66|Pass|7000
12 X012|Meera Banik|civil|76|Pass|6300
13 W013|Meeraa Roy|civil|41|Pass|4000
```