



LAB RECORD

SUBMITTED BY:

DEEPALI

ID: BTBTI20137

ROLL NO.: 2016736

BRANCH: B.TECH. IT (A) SEM - 5

SUBMITTED TO: Dr. DEEPAK KUMAR

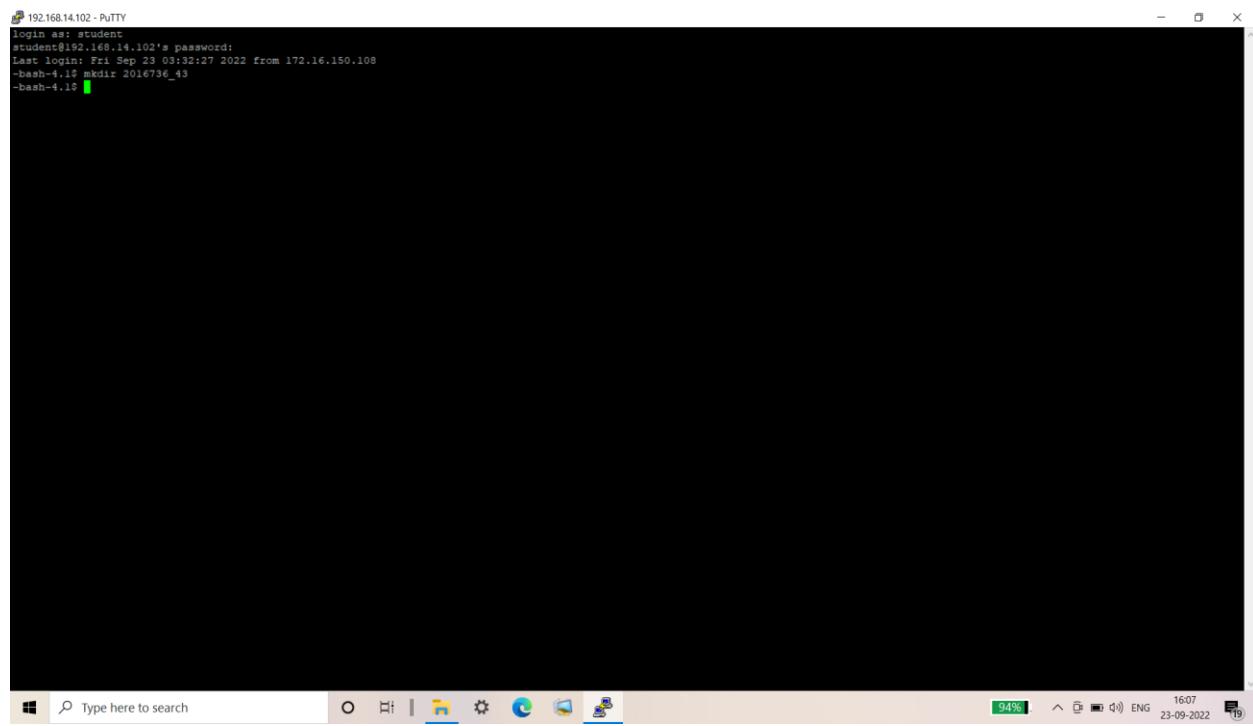
SUBJECT: OPERATING SYSTEMS LAB

SUBJECT CODE: CS308L

TOTAL PAGES SUBMITTED: 87

DATE OF SUBMISSION: 15-11-2022

Reference 1->

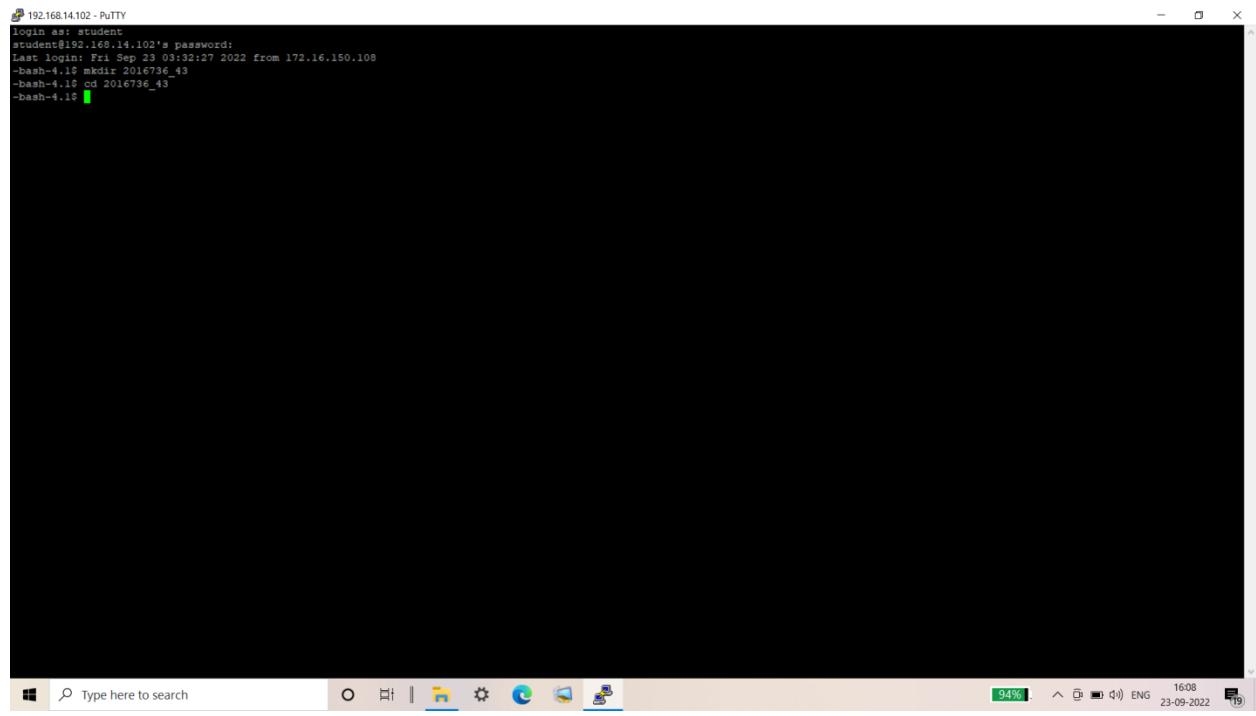


A screenshot of a Windows desktop environment. In the center is a terminal window titled "192.168.14.102 - PuTTY". The window displays a command-line session:

```
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$
```

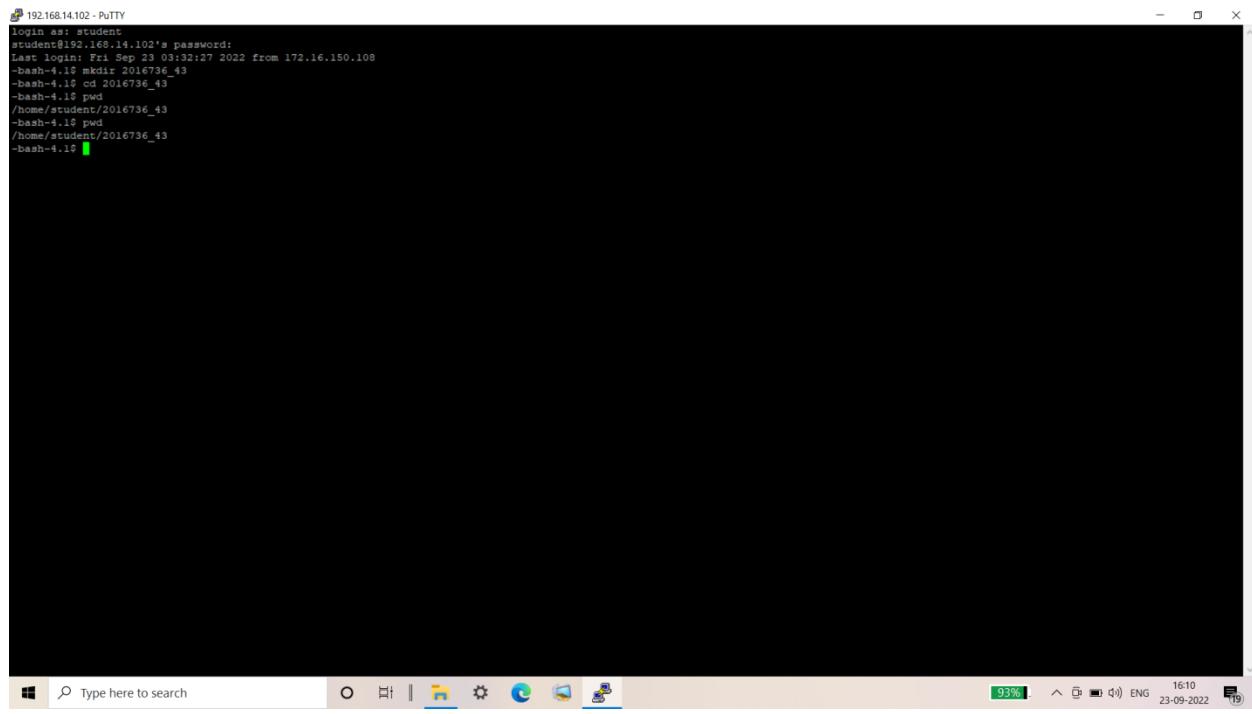
The terminal window has a black background and white text. The desktop taskbar at the bottom shows the Start button, a search bar with placeholder text "Type here to search", and several pinned icons. The system tray on the right shows battery level (94%), signal strength, and the date and time (23-09-2022, 16:07).

Reference 2->



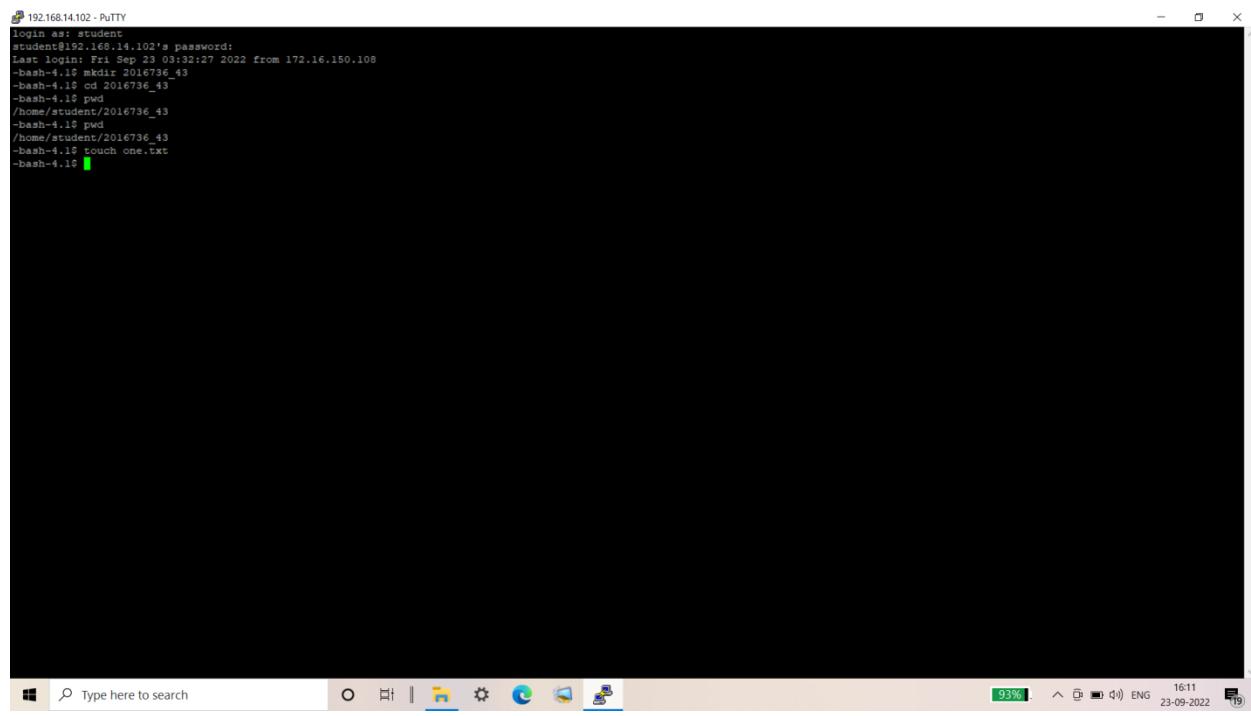
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$
```

Reference 3->



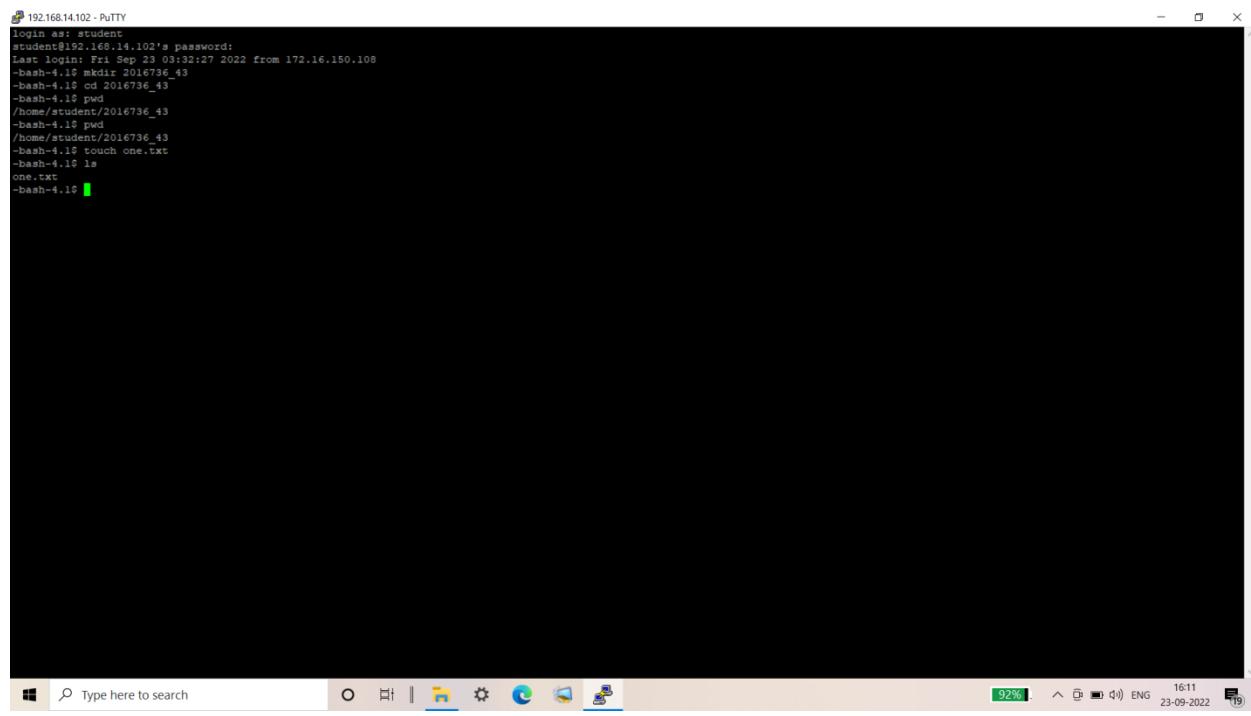
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$
```

Reference 4->



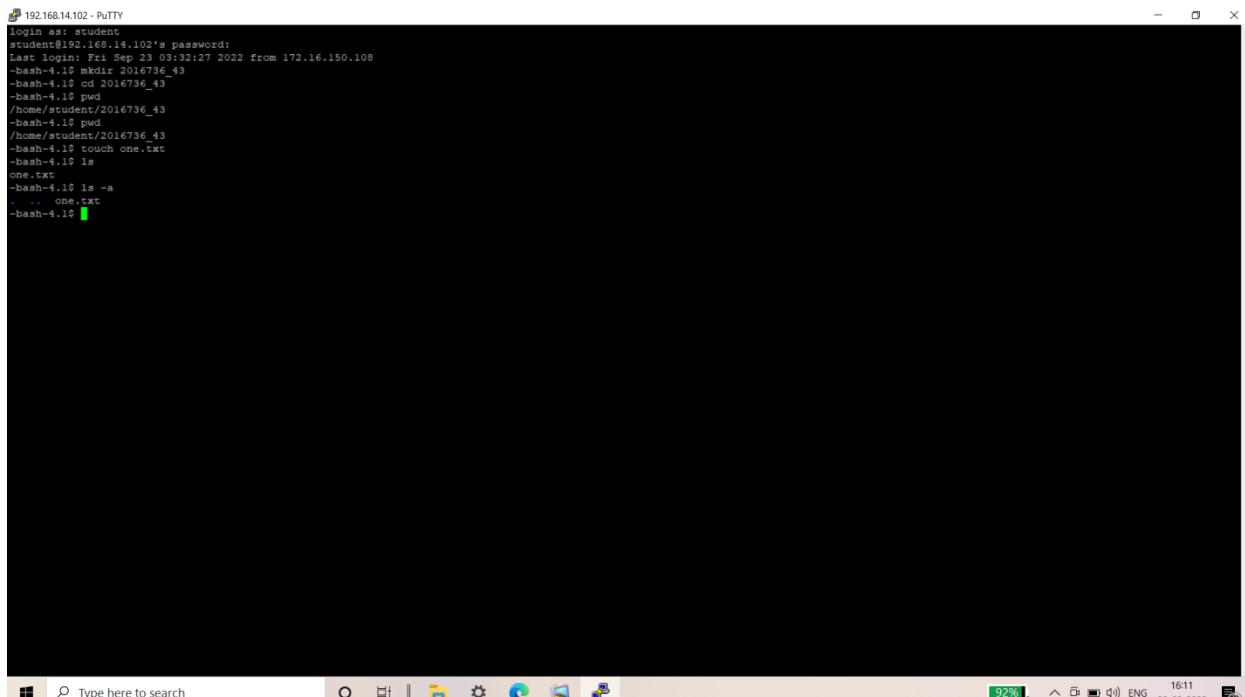
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ pd
-bash-4.1$ touch one.txt
-bash-4.1$
```

Reference 5->

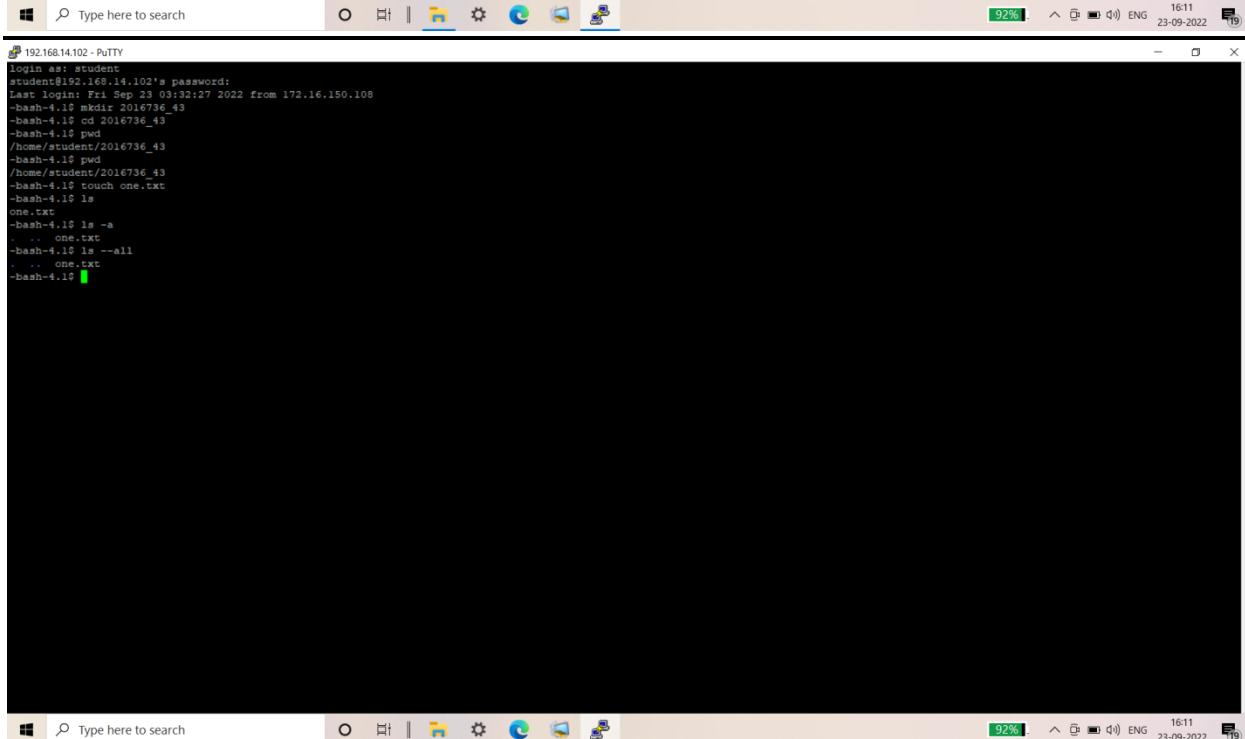


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
one.txt
-bash-4.1$
```

Reference 5a->

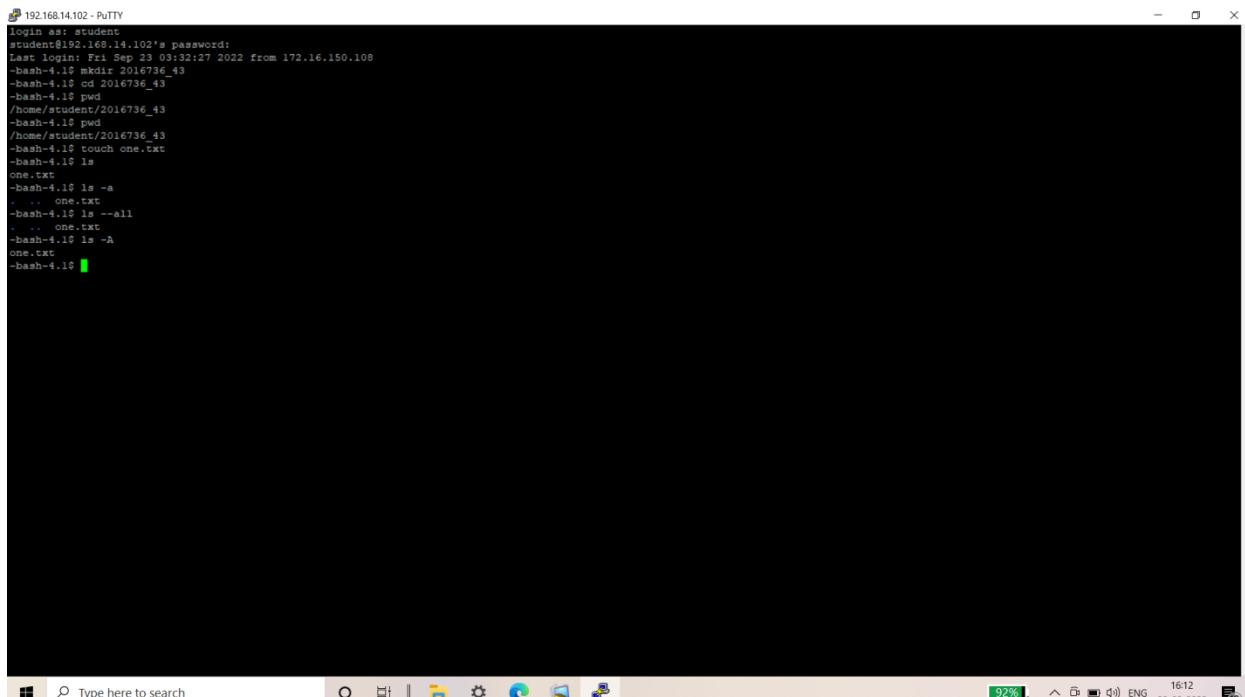


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
one.txt
-bash-4.1$ ls -a
. . . one.txt
-bash-4.1$
```

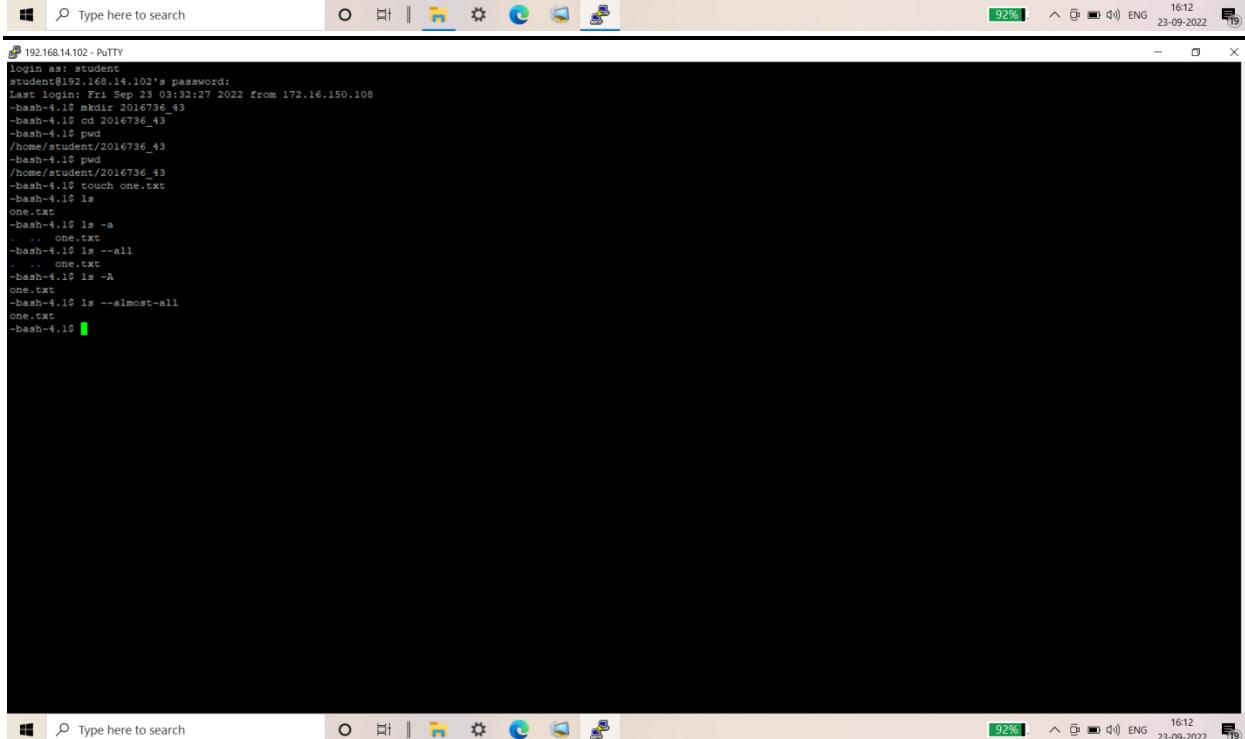


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ touch one.Txt
-bash-4.1$ ls
one.txt
-bash-4.1$ ls -a
. . . one.txt
-bash-4.1$ ls --all
. . . one.txt
-bash-4.1$
```

Reference 5b->

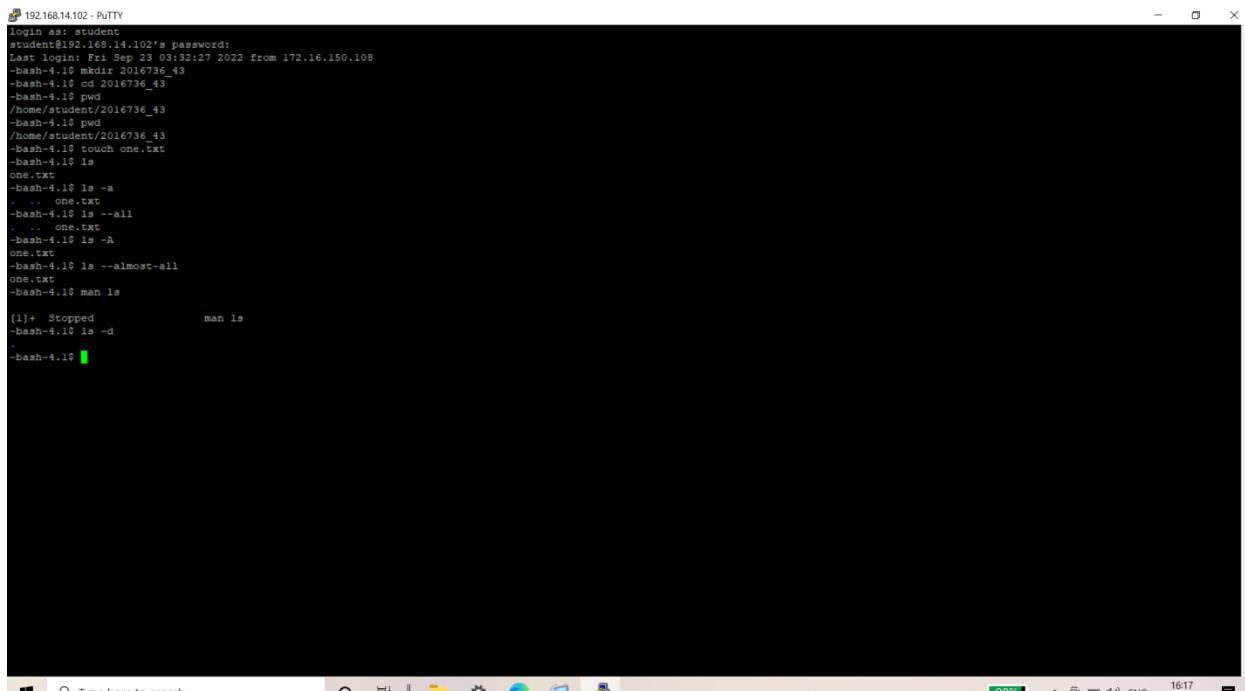


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
one.txt
-bash-4.1$ ls -a
. .
one.txt
-bash-4.1$ ls --all
. .
one.txt
-bash-4.1$ ls -A
one.txt
-bash-4.1$
```

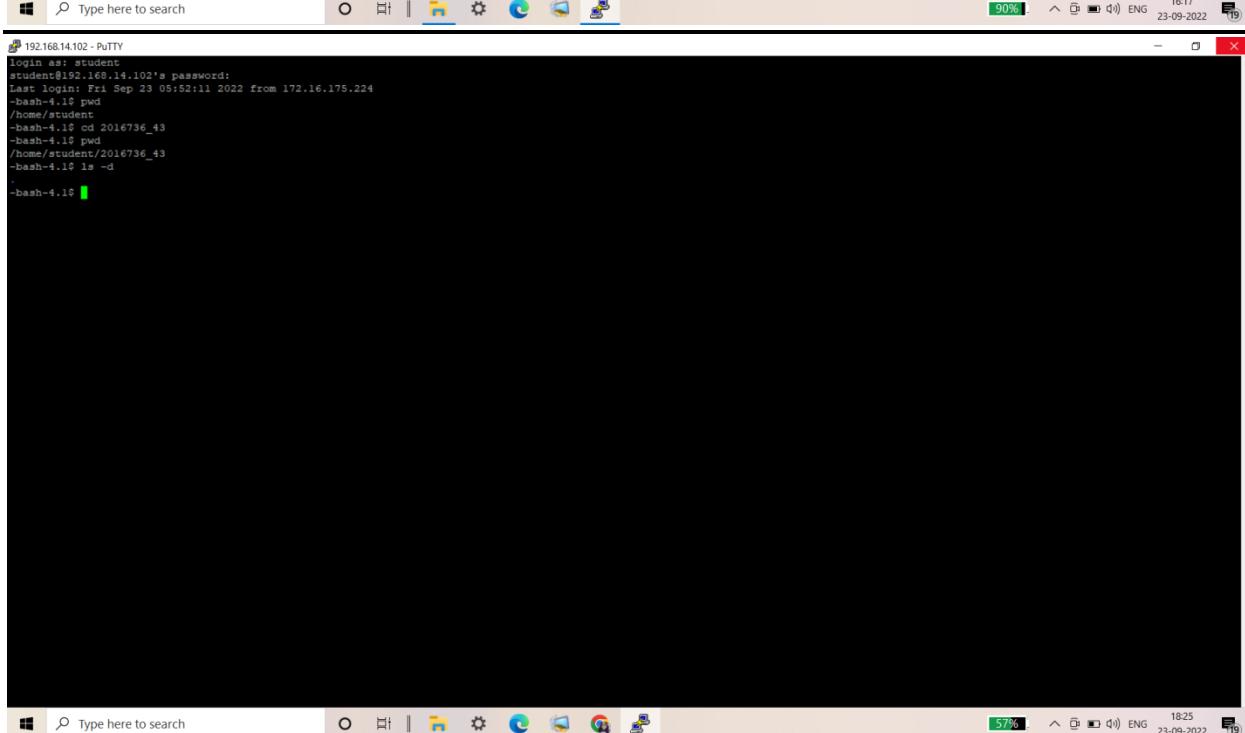


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ touch one.Txt
-bash-4.1$ ls
one.txt
-bash-4.1$ ls -a
. .
one.txt
-bash-4.1$ ls --all
. .
one.txt
-bash-4.1$ ls -A
one.txt
-bash-4.1$ ls --almost-all
one.txt
-bash-4.1$
```

Reference 5c->

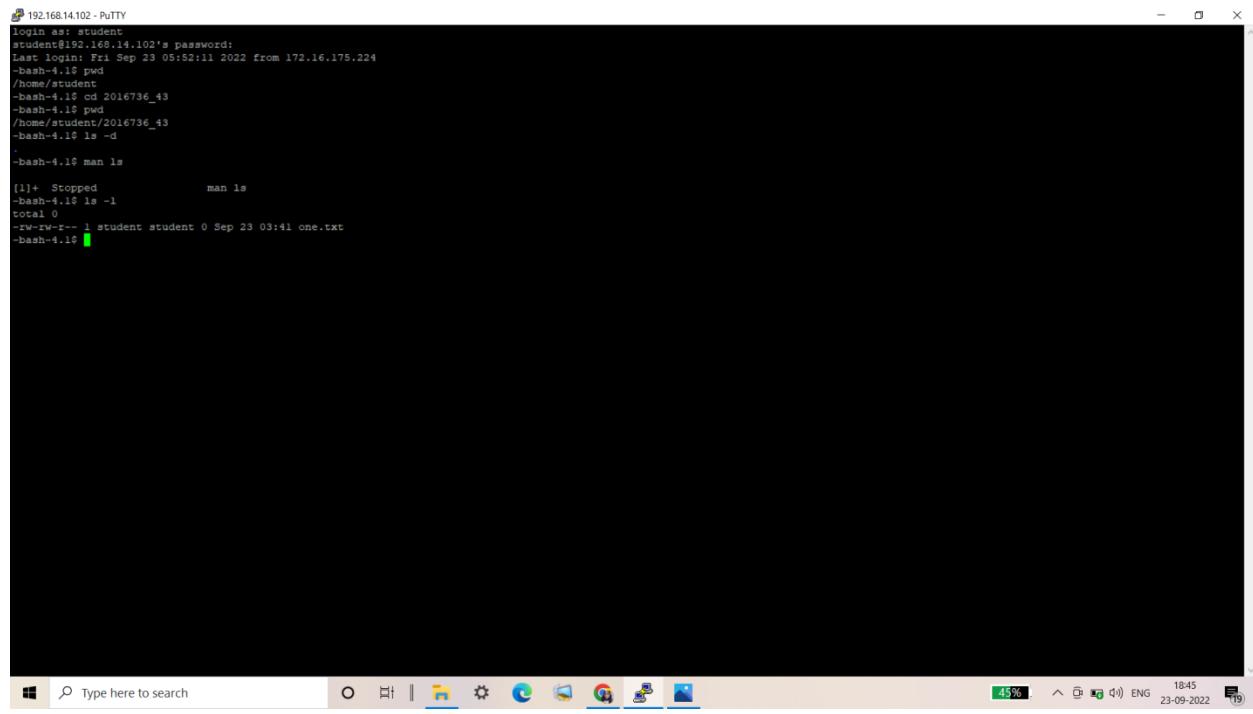


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 03:32:27 2022 from 172.16.150.108
-bash-4.1$ mkdir 2016736_43
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
one.txt
-bash-4.1$ ls -a
. . . one.txt
-bash-4.1$ ls --all
. . . one.txt
-bash-4.1$ ls -A
one.txt
-bash-4.1$ ls --almost-all
one.txt
-bash-4.1$ man ls
[1]+  Stopped                  man ls
-bash-4.1$ ls -d
.
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ cd
-bash-4.1$ pwd
/nome/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pd
/nome/student/2016736_43
-bash-4.1$ ls -d
.
-bash-4.1$
```

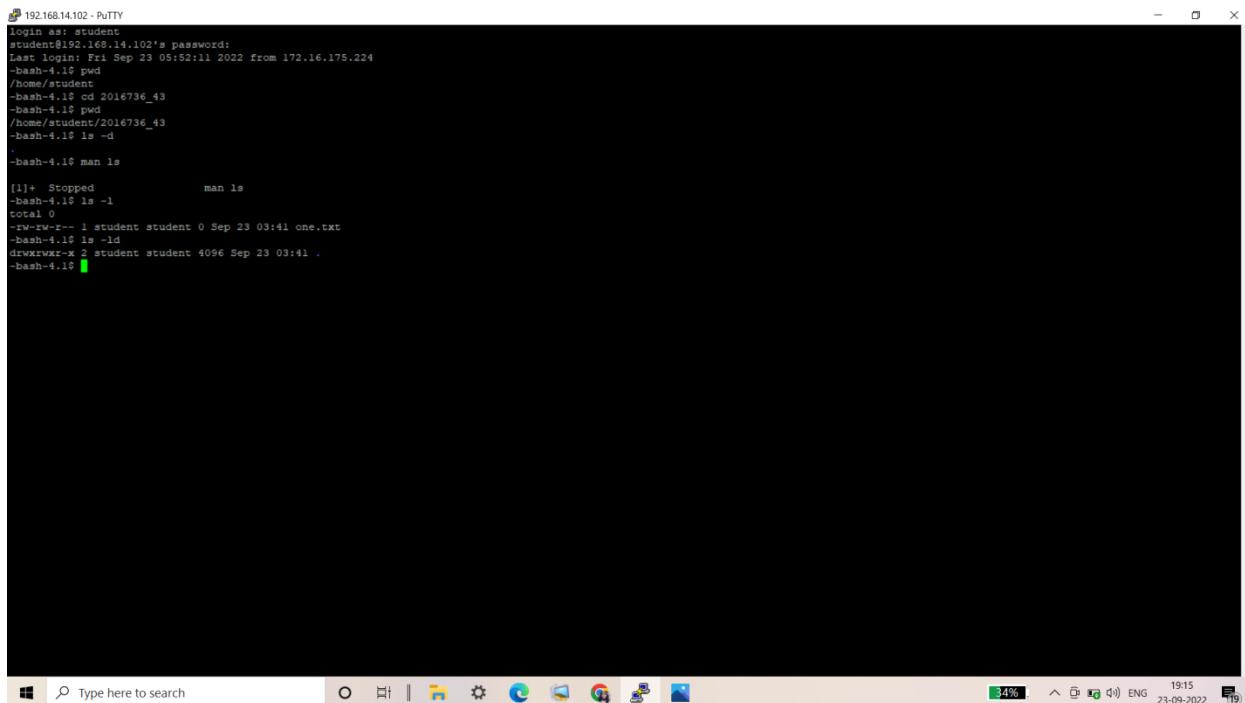
Reference 5d->



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
-bash-4.1$ man ls

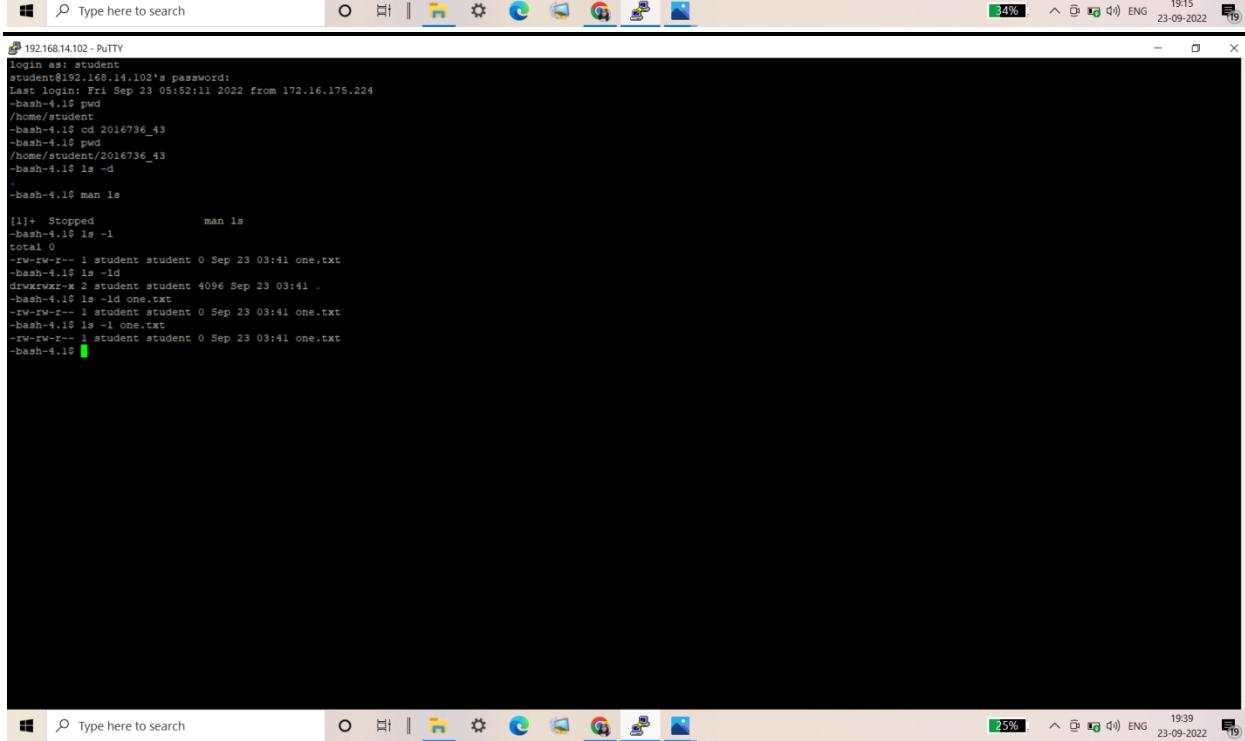
[1]+  Stopped                  man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$
```

Reference 5e->



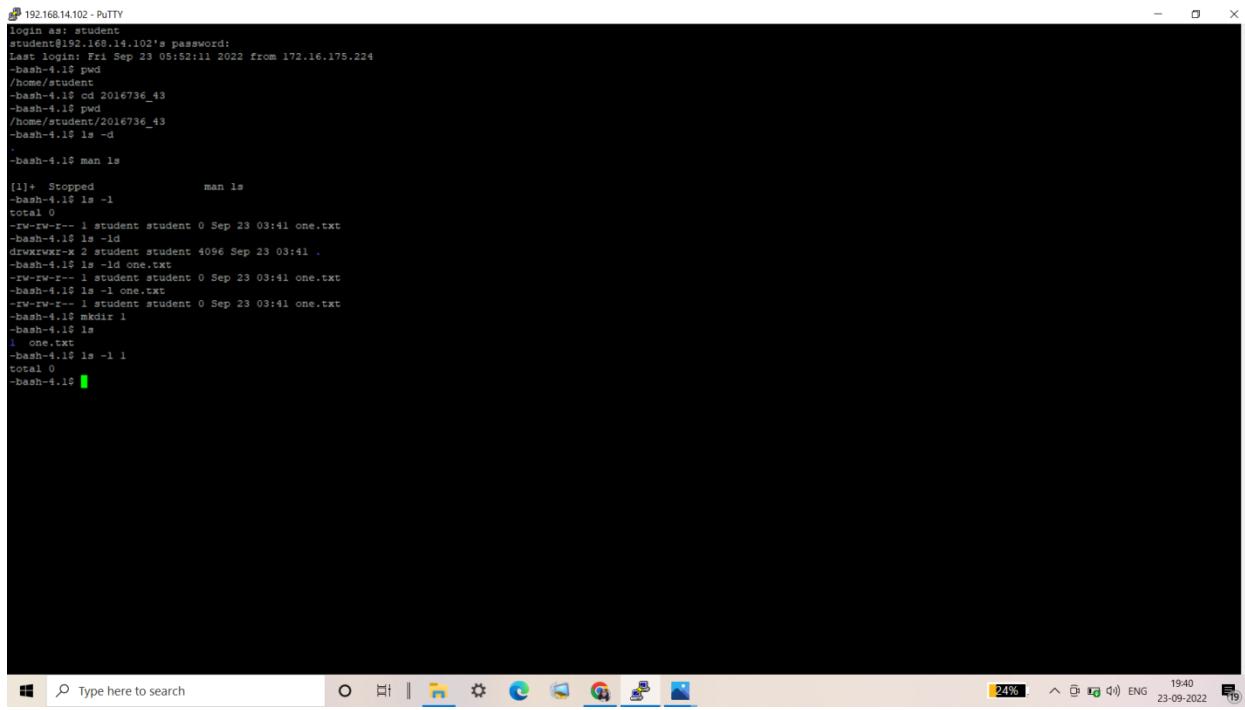
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
-bash-4.1$ man ls

[1]+  Stopped                  man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$
```



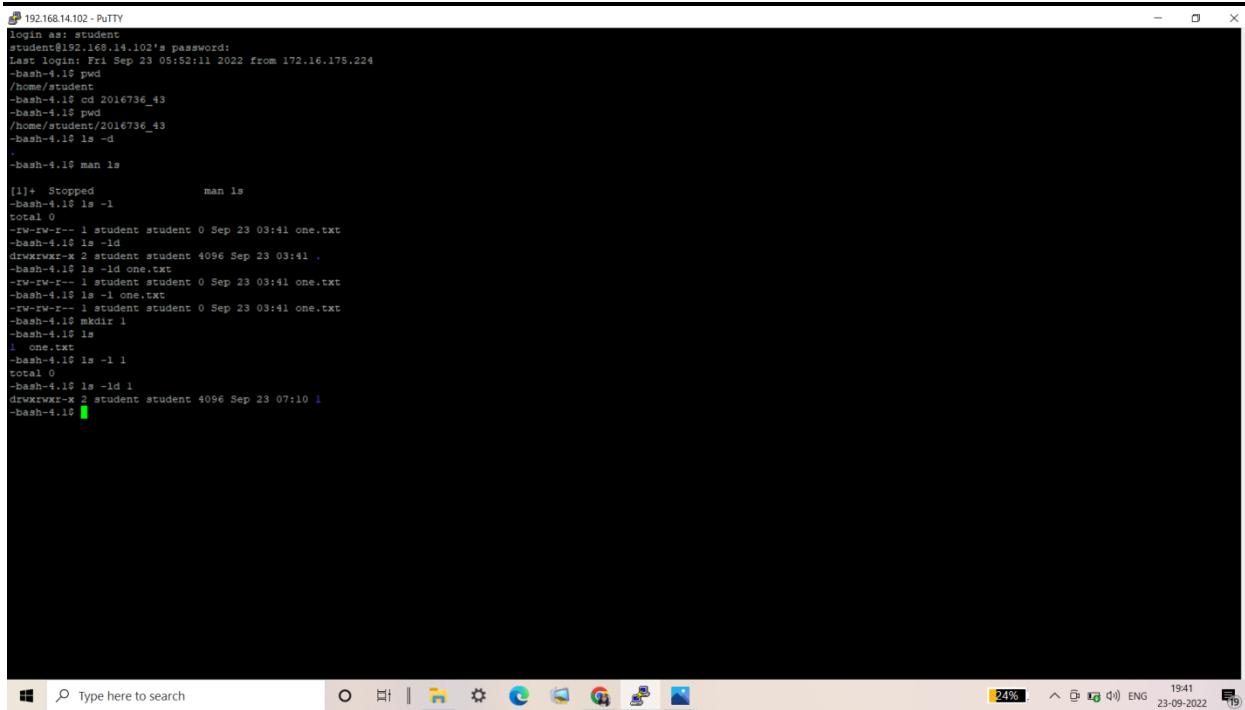
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
-bash-4.1$ man ls

[1]+  Stopped                  man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$ ls -ld one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -l one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
.
-bash-4.1$ man ls

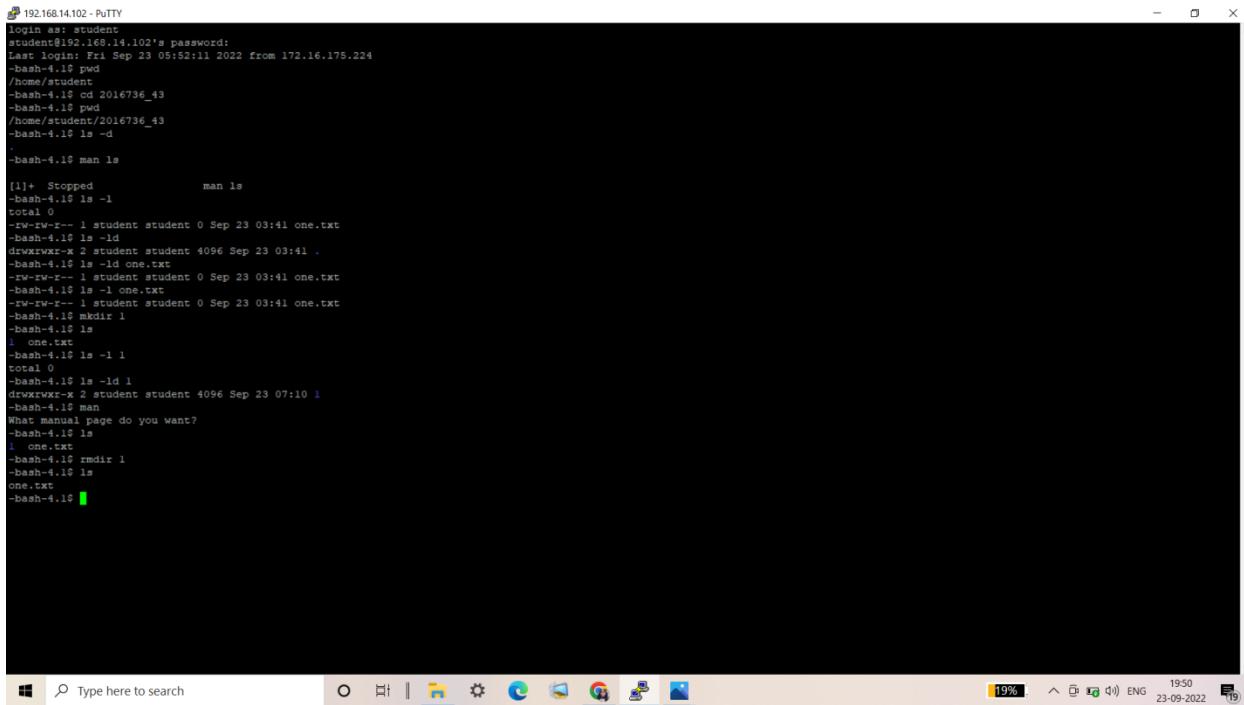
[1]+  Stopped                  man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ mkdir i
-bash-4.1$ ls
i one.txt
-bash-4.1$ ls -l i
total 0
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
.
-bash-4.1$ man ls

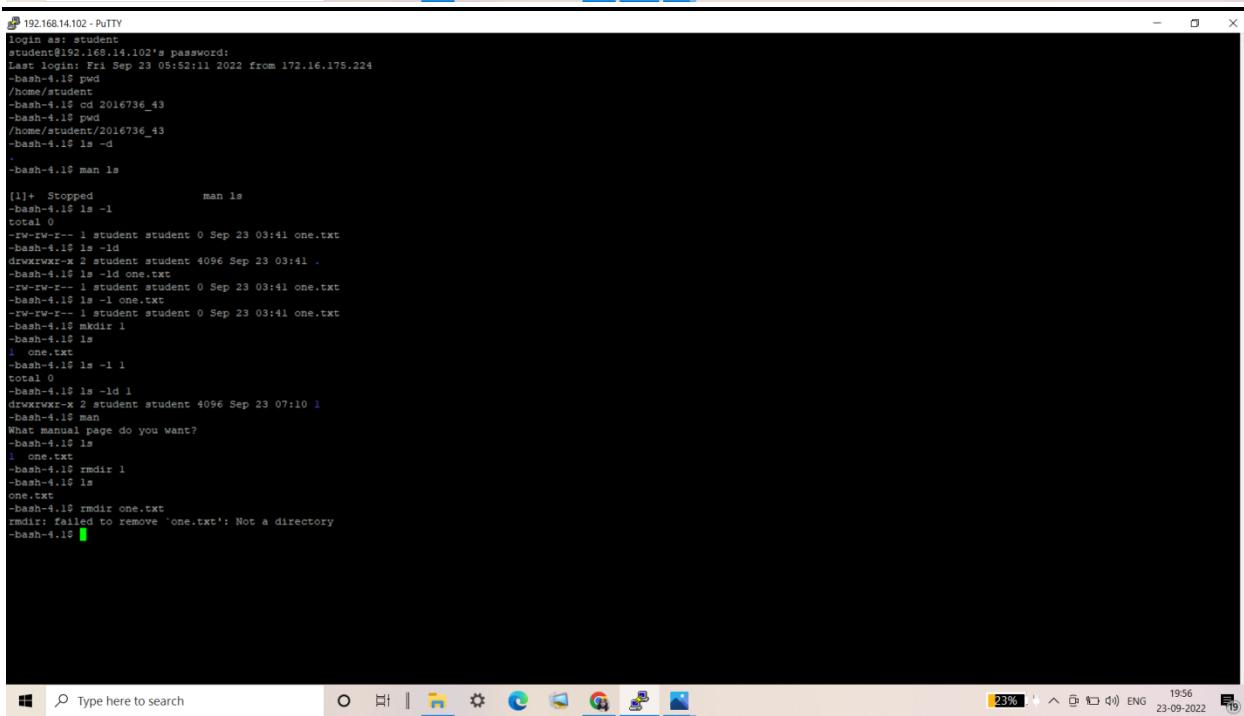
[1]+  Stopped                  man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ mkdir i
-bash-4.1$ ls
i one.txt
-bash-4.1$ ls -l i
total 0
-bash-4.1$ ls -ld i
drwxrwxr-x 2 student student 4096 Sep 23 07:10 i
-bash-4.1$
```

Reference 6->



```
192.168.14.102 - PuTTY
Login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
-bash-4.1$ man ls

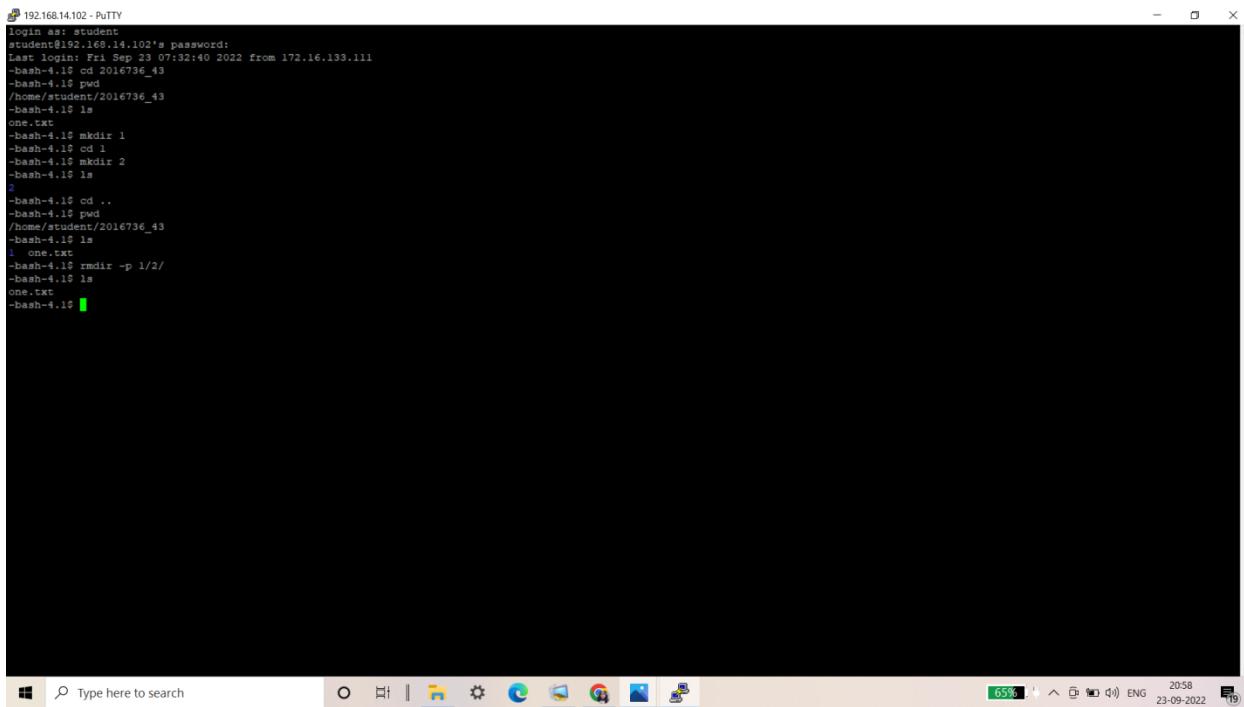
[1]+ Stopped man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$ ls -ld one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ rm one.txt
-bash-4.1$ ls -l one.txt
-bash-4.1$ mkdir i
-bash-4.1$ ls
i one.txt
-bash-4.1$ ls -ld i
total 0
-bash-4.1$ ls -ld 1
drwxrwxr-x 2 student student 4096 Sep 23 07:10 i
-bash-4.1$ man
What manual page do you want?
-bash-4.1$ ls
i one.txt
-bash-4.1$ rmdir i
-bash-4.1$ ls
one.txt
-bash-4.1$
```



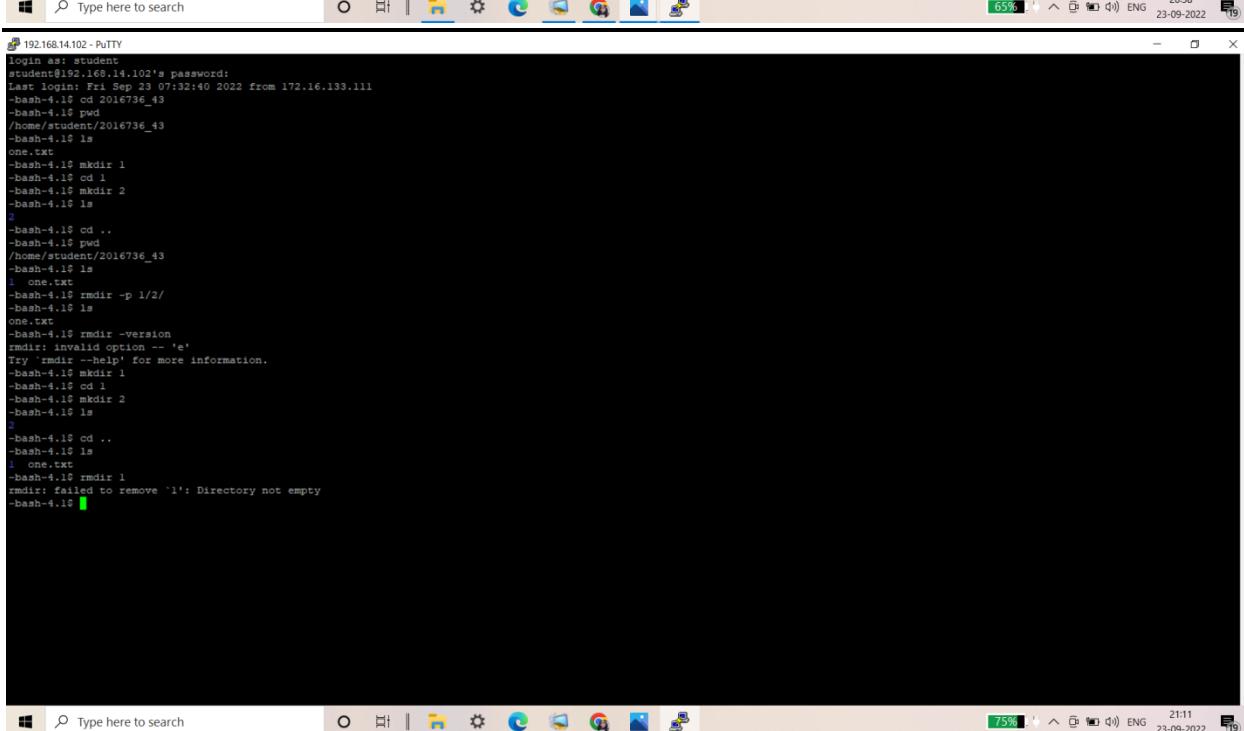
```
192.168.14.102 - PuTTY
Login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 05:52:11 2022 from 172.16.175.224
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls -d
-bash-4.1$ man ls

[1]+ Stopped man ls
-bash-4.1$ ls -l
total 0
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -ld
drwxrwxr-x 2 student student 4096 Sep 23 03:41 .
-bash-4.1$ ls -ld one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 23 03:41 one.txt
-bash-4.1$ mkdir i
-bash-4.1$ ls
i one.txt
-bash-4.1$ ls -ld i
total 0
-bash-4.1$ ls -ld 1
drwxrwxr-x 2 student student 4096 Sep 23 07:10 i
-bash-4.1$ man
What manual page do you want?
-bash-4.1$ ls
i one.txt
-bash-4.1$ rmdir i
-bash-4.1$ ls
one.txt
-bash-4.1$ rm one.txt
rm: failed to remove 'one.txt': Not a directory
-bash-4.1$
```

Reference 6A->

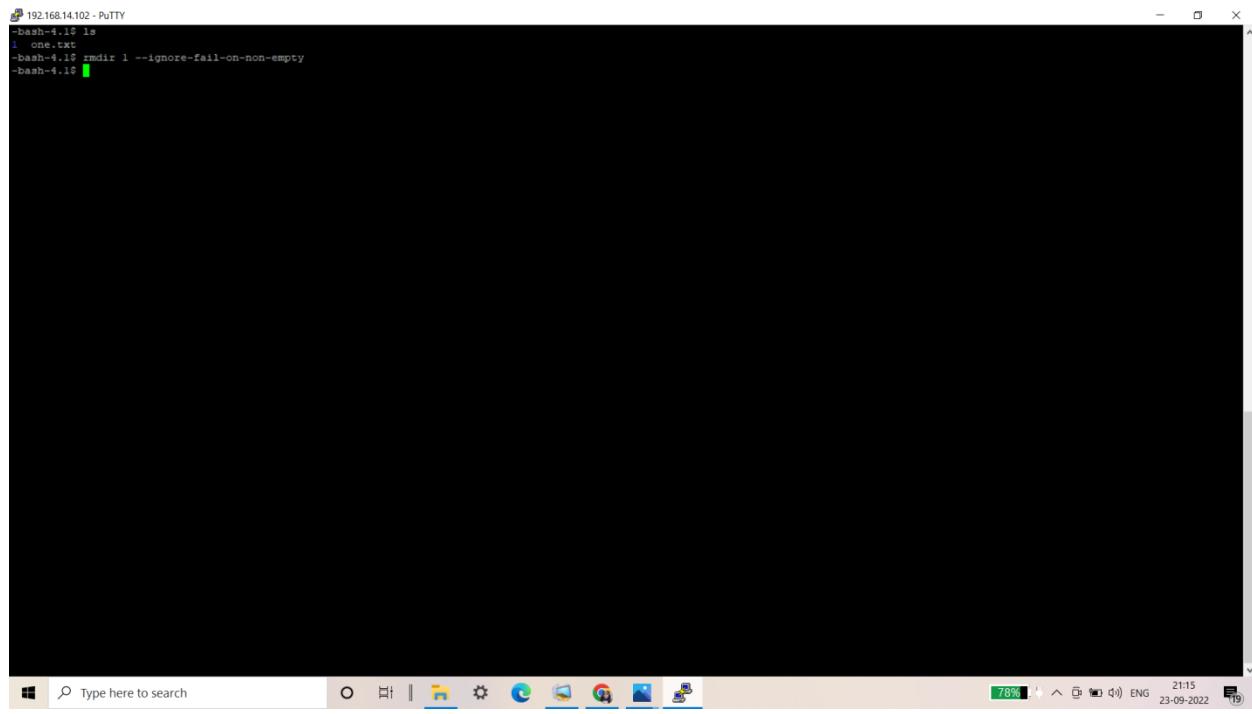


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 07:32:40 2022 from 172.16.133.111
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
one.txt
-bash-4.1$ rmkdir -p l/2/
-bash-4.1$ ls
one.txt
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 23 07:32:40 2022 from 172.16.133.111
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
one.txt
-bash-4.1$ mkdir l
-bash-4.1$ cd l
-bash-4.1$ mkdir 2
-bash-4.1$ ls
2
-bash-4.1$ cd ..
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
l
one.txt
-bash-4.1$ rmkdir -p l/2/
-bash-4.1$ ls
one.txt
-bash-4.1$ rmkdir -version
rmkdir: invalid option -- 'e'
Try 'rmkdir --help' for more information.
-bash-4.1$ mkdir l
-bash-4.1$ cd l
-bash-4.1$ mkdir 2
-bash-4.1$ ls
2
-bash-4.1$ cd ..
-bash-4.1$ ls
l
one.txt
-bash-4.1$ rmkdir l
rmkdir: failed to remove 'l': Directory not empty
-bash-4.1$
```

Reference 6B->

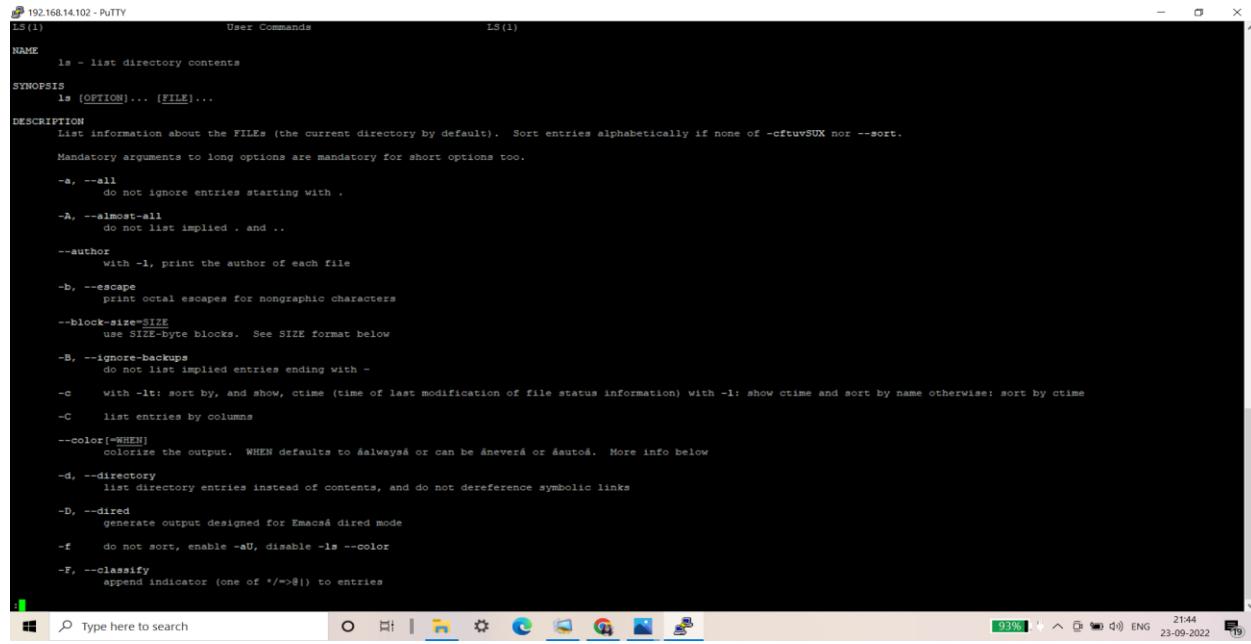


A screenshot of a Windows desktop environment. In the center is a terminal window titled "192.168.14.102 - PuTTY". The terminal displays the following command-line session:

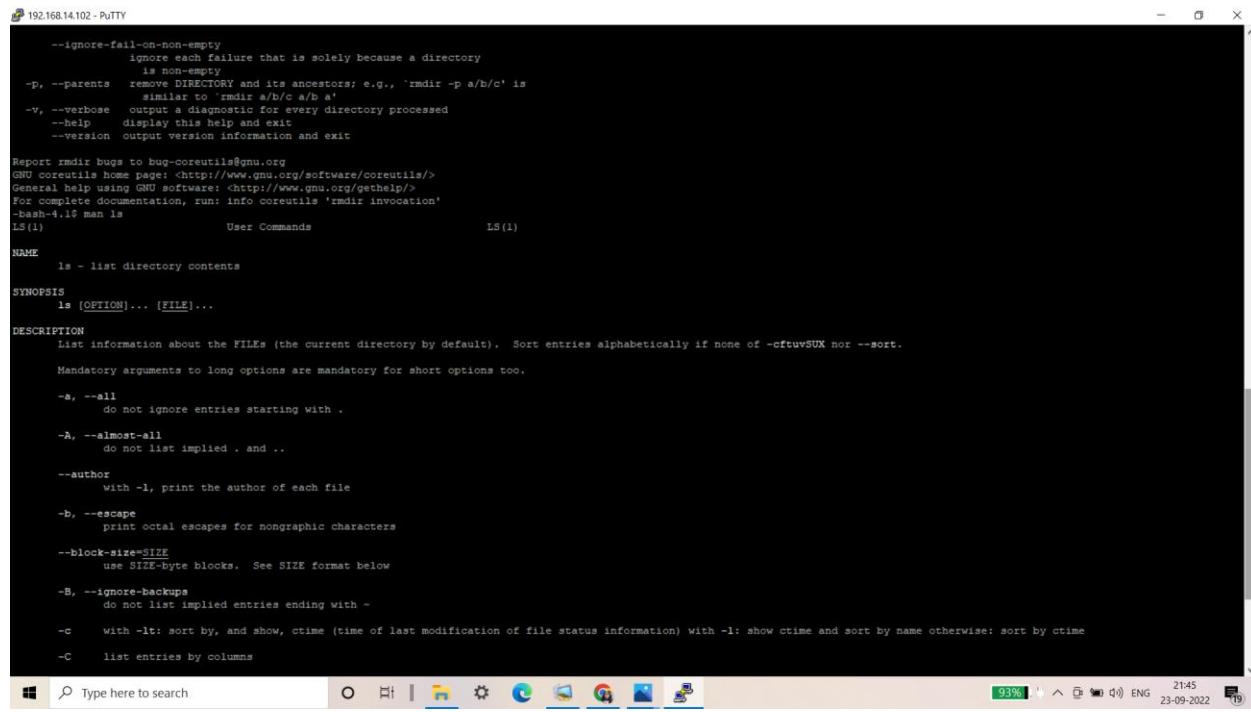
```
bash-4.1$ ls
1 one.txt
-bash-4.1$ rmdir 1 --ignore-fail-on-non-empty
-bash-4.1$
```

The desktop taskbar at the bottom shows several pinned icons, including File Explorer, Edge, and Control Panel. The system tray on the right side of the taskbar displays battery status (78%), network connection, volume, and system date/time (23-09-2022, 21:15).

Reference 7->



```
192.168.14.102 - PuTTY
LS(1)                               User Commands                         LS(1)
NAME
  ls - list directory contents
SYNOPSIS
  ls [OPTION]... [FILE]...
DESCRIPTION
  List information about the FILEs (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort.
  Mandatory arguments to long options are mandatory for short options too.
-A, --all
  do not ignore entries starting with .
-A, --almost-all
  do not list implied . and ..
--author
  with -l, print the author of each file
-b, --escape
  print octal escapes for nongraphic characters
--block-size=SIZE
  use SIZE-byte blocks. See SIZE format below
-B, --ignore-backups
  do not list implied entries ending with -
-c     with -lt: sort by, and show, ctime (time of last modification of file status information) with -l: show ctime and sort by name otherwise; sort by ctime
-C     list entries by columns
--color[=WHEN]
  colorize the output. WHEN defaults to always or can be never or auto. More info below
-d, --directory
  list directory entries instead of contents, and do not dereference symbolic links
-D, --dired
  generate output designed for Emacs dired mode
-f     do not sort, enable -aU, disable -ls --color
-F, --classify
  append indicator (one of */=>@) to entries
```



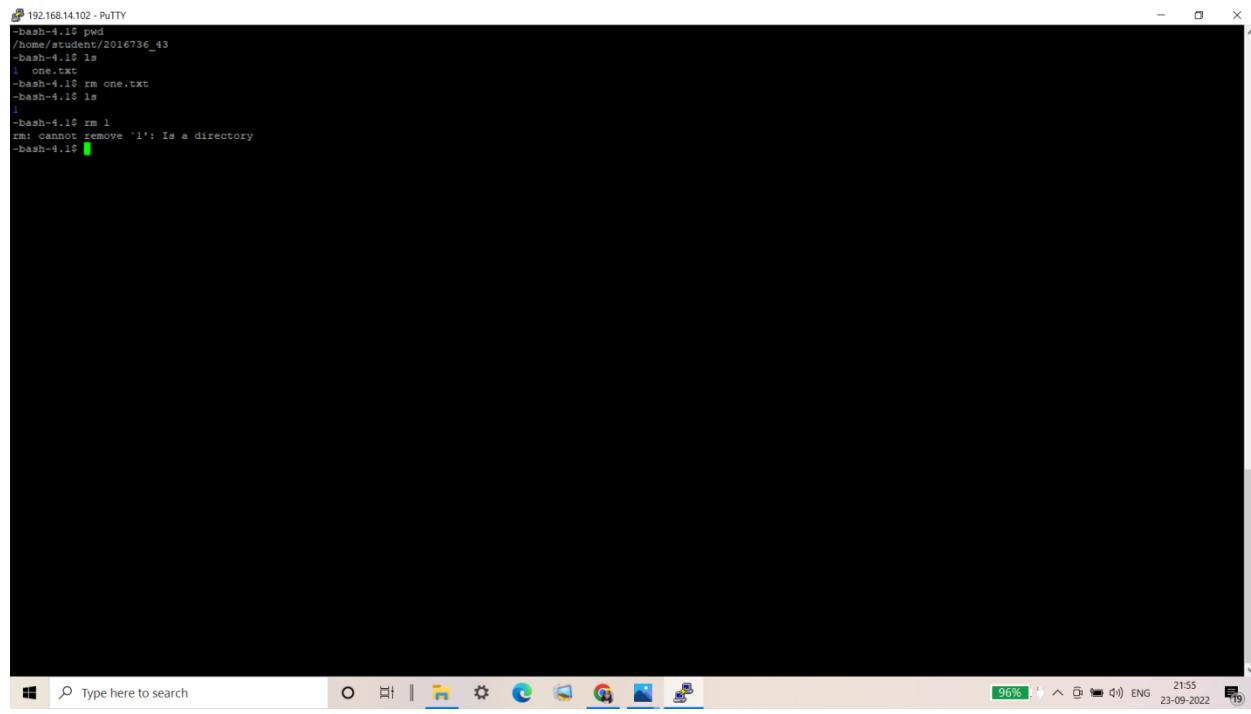
```
--ignore-fail-on-non-empty
  ignore each failure that is solely because a directory
  is non-empty
-p, --parents
  remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is
  similar to 'rmdir a/b/c a/b a'
-v, --verbose
  output a diagnostic for every directory processed
--help
  display this help and exit
--version
  output version information and exit

Report rmdir bugs to bug-coreutils@gnu.org
GNU coreutils home page: <http://www.gnu.org/software/coreutils/>
General help using GNU software: <http://www.gnu.org/gethelp/>
For complete documentation, run: info coreutils 'rmdir' invocation
-Linux-4.15 man is
LS(1)                               User Commands                         LS(1)
NAME
  ls - list directory contents
SYNOPSIS
  ls [OPTION]... [FILE]...
DESCRIPTION
  List information about the FILEs (the current directory by default). Sort entries alphabetically if none of -cftuvSUX nor --sort.
  Mandatory arguments to long options are mandatory for short options too.
-A, --all
  do not ignore entries starting with .
-A, --almost-all
  do not list implied . and ..
--author
  with -l, print the author of each file
-b, --escape
  print octal escapes for nongraphic characters
--block-size=SIZE
  use SIZE-byte blocks. See SIZE format below
-B, --ignore-backups
  do not list implied entries ending with -
-c     with -lt: sort by, and show, ctime (time of last modification of file status information) with -l: show ctime and sort by name otherwise; sort by ctime
-C     list entries by columns
```

A screenshot of a Windows desktop environment. At the top is a taskbar with a search bar containing 'Type here to search'. To the right of the search bar are several icons: File Explorer, Task View, Settings, Edge browser, File Explorer again, and Task Manager. On the far right of the taskbar are system status icons for battery level (96%), signal strength, volume, language (ENG), date (23-09-2022), and a notification icon with the number 19. The main area of the screen is occupied by a PuTTY terminal window titled '192.168.14.102 - PuTTY'. The terminal shows the following command-line session:

```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
1 one.txt  
-bash-4.1$ rm one.txt  
-bash-4.1$ ls  
1  
-bash-4.1$
```

Reference 8->

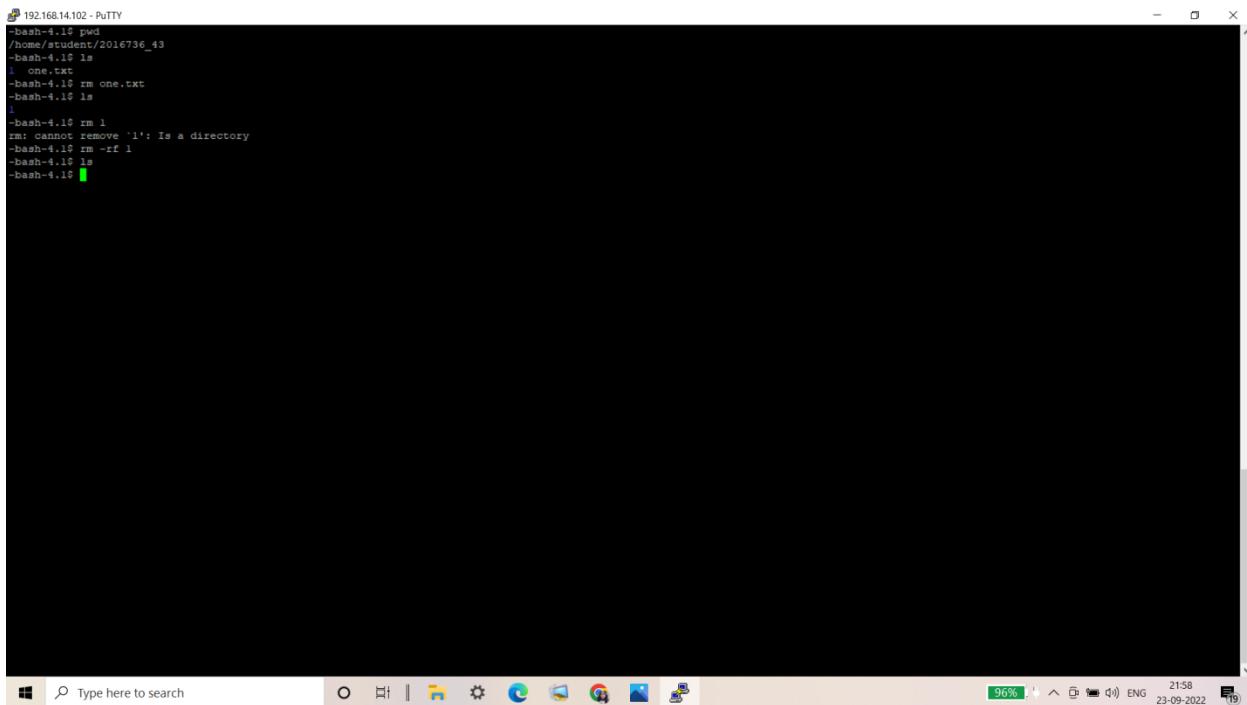


A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays the following command-line session:

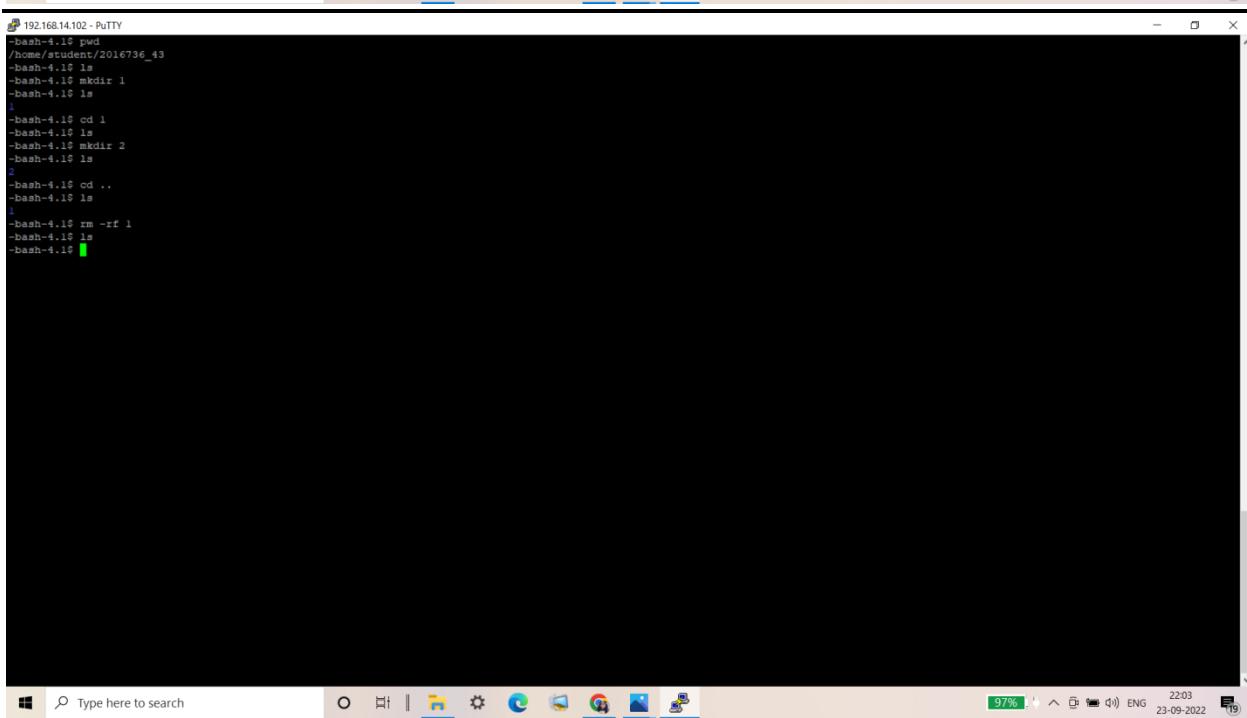
```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
l one.txt  
-bash-4.1$ rm one.txt  
-bash-4.1$ ls  
l  
-bash-4.1$ rm l  
rm: cannot remove 'l': Is a directory  
-bash-4.1$
```

The terminal window has a black background and white text. The desktop taskbar at the bottom shows various icons for applications like File Explorer, Edge, and Control Panel. The system tray on the right shows battery level (96%), network status, volume, language (ENG), date (23-09-2022), and a notification icon.

Reference 8A->

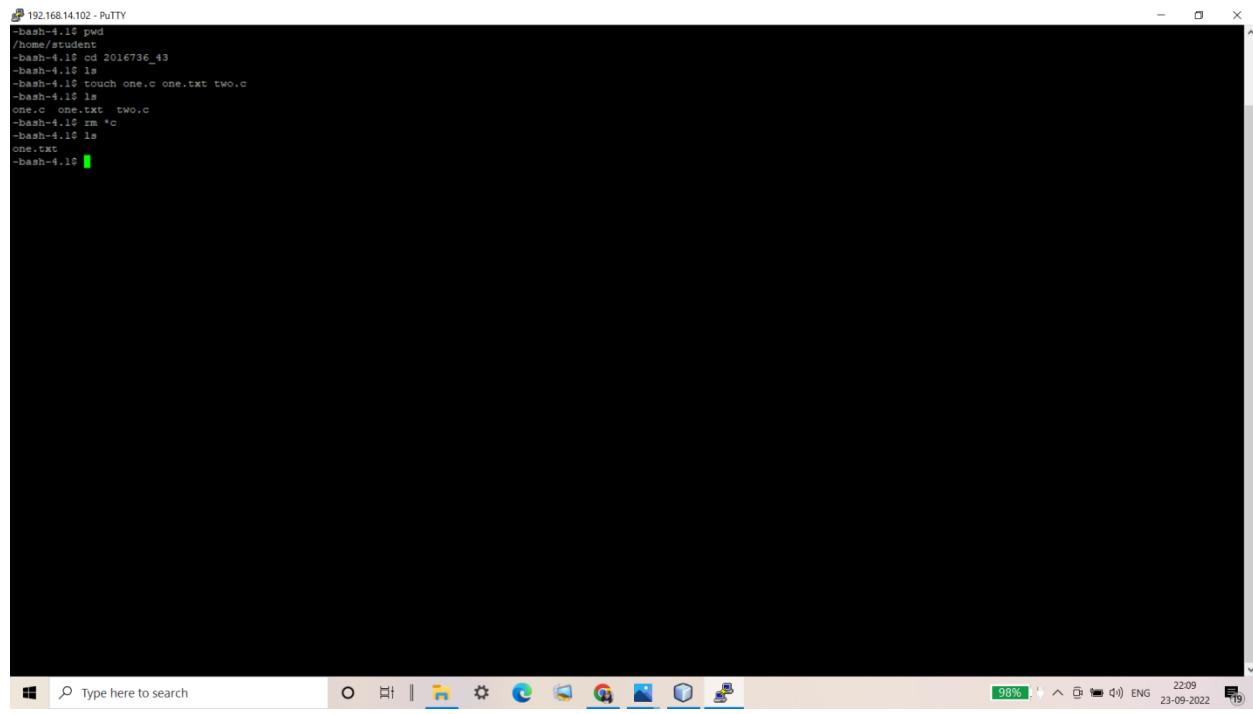


```
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
l one.txt
-bash-4.1$ rm one.txt
-bash-4.1$ ls
l
-bash-4.1$ rm l
rm: cannot remove `l': Is a directory
-bash-4.1$ rm -rf l
-bash-4.1$ ls
-bash-4.1$ 
```



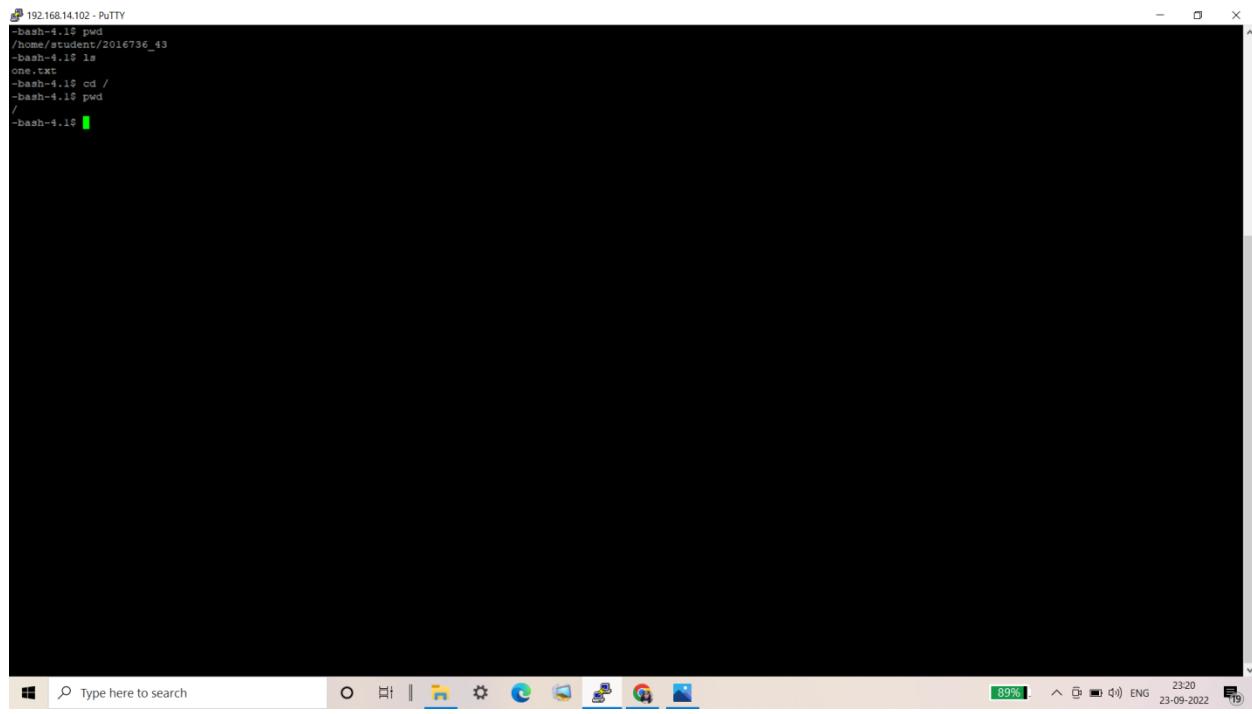
```
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
-bash-4.1$ mkdir l
-bash-4.1$ ls
l
-bash-4.1$ cd l
-bash-4.1$ ls
-bash-4.1$ mkdir 2
-bash-4.1$ ls
2
-bash-4.1$ cd ..
-bash-4.1$ ls
l
-bash-4.1$ rm -rf l
-bash-4.1$ ls
-bash-4.1$ 
```

Reference 8B->



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
-bash-4.1$ touch one.c one.txt two.c
-bash-4.1$ ls
one.c one.txt two.c
-bash-4.1$ rm *c
-bash-4.1$ ls
one.txt
-bash-4.1$
```

Reference 9A->

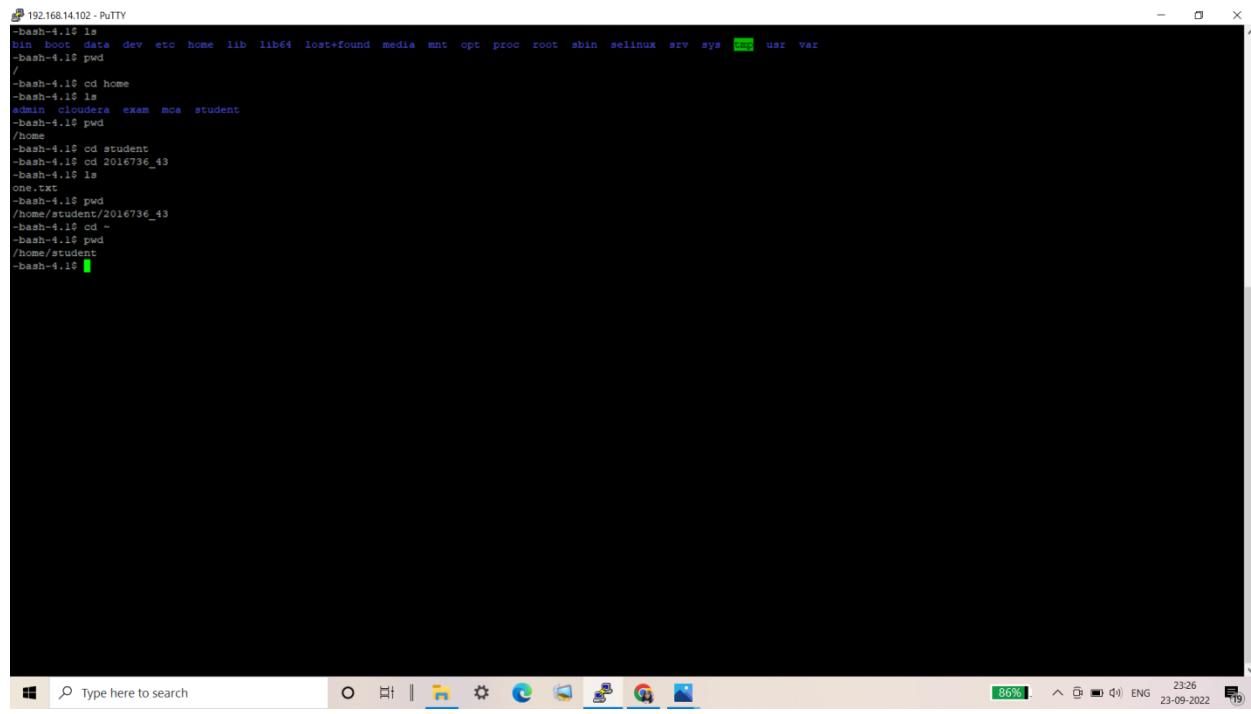


A screenshot of a Windows desktop environment. In the center is a terminal window titled "192.168.14.102 - PuTTY". The terminal displays a bash shell session:

```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
one.txt  
-bash-4.1$ cd /  
-bash-4.1$ pwd  
/  
-bash-4.1$
```

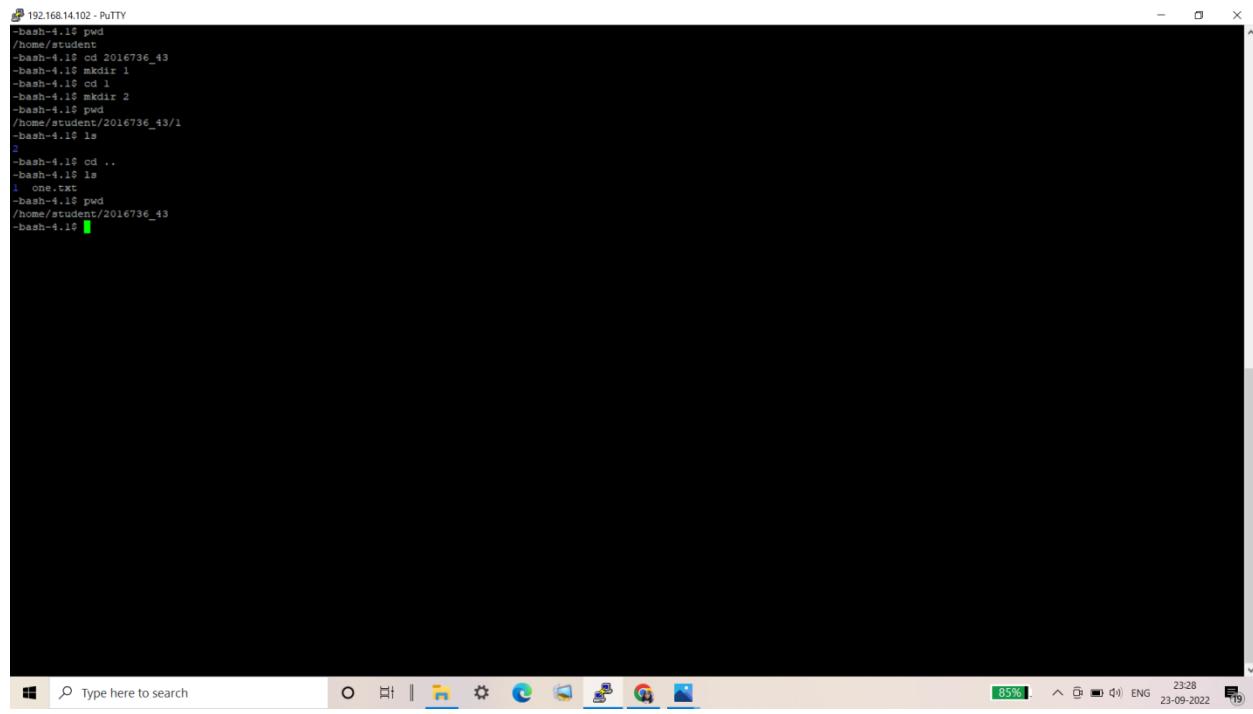
The desktop taskbar at the bottom shows several pinned icons, including File Explorer, Edge, and File History. The system tray indicates battery level at 89%, network connection, language as English (ENG), and the date and time as 23-09-2022 23:20.

Reference 9B->



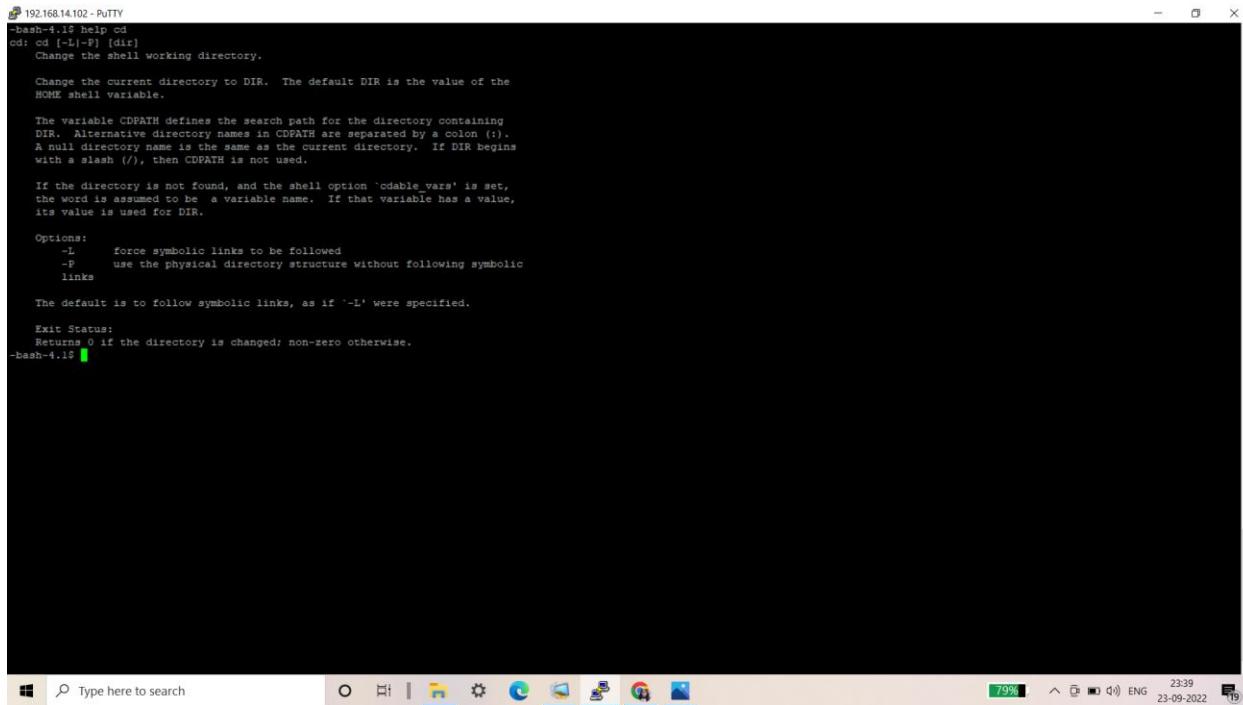
```
192.168.14.102 - PuTTY
-bash-4.1$ ls
bin boot data dev etc home lib lib64 lost+found media mnt opt proc root sbin selinux srv sys tmp usr var
/
-bash-4.1$ cd home
-bash-4.1$ ls
admin cloudera exam mca student
-bash-4.1$ pwd
/home
-bash-4.1$ cd student
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
one.txt
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ cd ~
-bash-4.1$ pwd
/home/student
-bash-4.1$
```

Reference 9C->



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student
-bash-4.1$ cd 2016736_43
-bash-4.1$ mkdir 1
-bash-4.1$ cd 1
-bash-4.1$ mkdir 2
-bash-4.1$ pwd
/home/student/2016736_43/1
-bash-4.1$ ls
2
-bash-4.1$ cd ..
-bash-4.1$ ls
1 one.txt
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$
```

Reference 10->



```
-bash-4.1.16 help
cd: cd [-L|-P] [dir]
      Change the shell working directory.

Change the current directory to DIR.  The default DIR is the value of the
HOME shell variable.

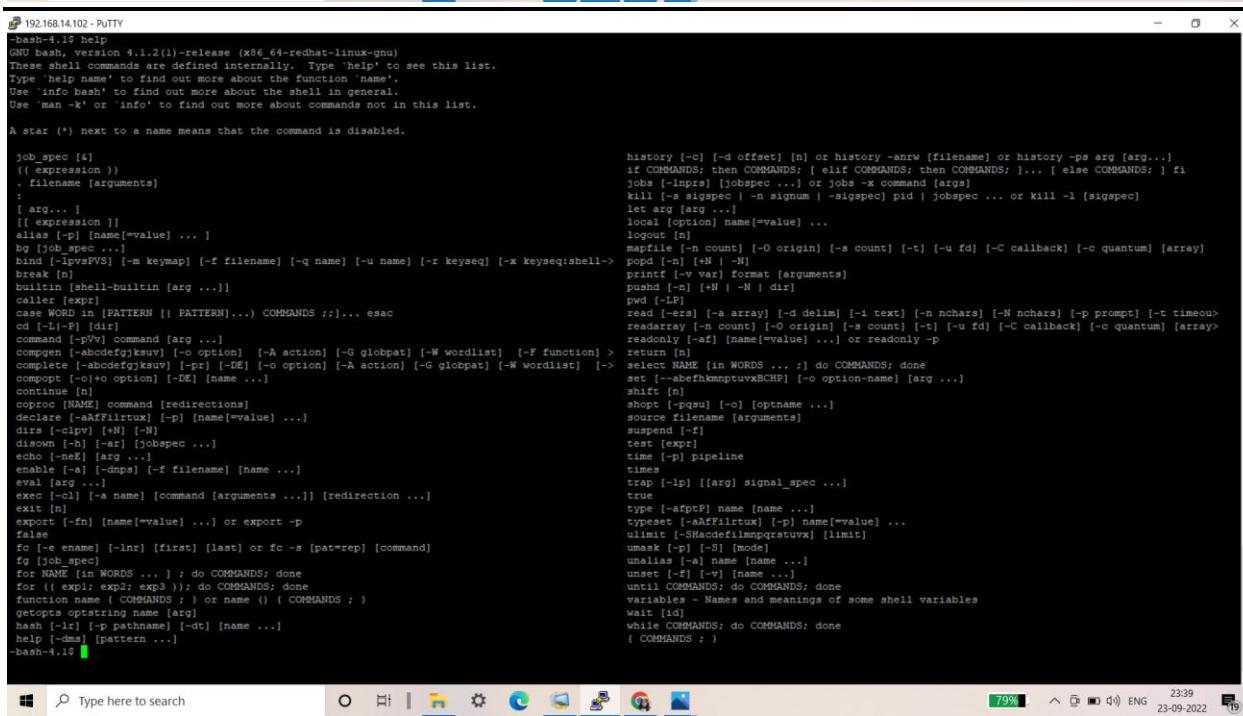
The variable CDPATH defines the search path for the directory containing
DIR.  Alternative directory names in CDPATH are separated by a colon (:).
A null directory name is the same as the current directory.  If DIR begins
with a slash (/), then CDPATH is not used.

If the directory is not found, and the shell option `cdable_vars' is set,
the word is assumed to be a variable name.  If that variable has a value,
its value is used for DIR.

Options:
  -L      force symbolic links to be followed
  -P      use the physical directory structure without following symbolic
         links

The default is to follow symbolic links, as if '-L' were specified.

Exit Status:
  Returns 0 if the directory is changed; non-zero otherwise.
-bash-4.1.16
```



```
-bash-4.1.16 help
GNU bash, version 4.1.2(1)-release (x86_64-redhat-linux-gnu)
These shell commands are defined internally. Type 'help' to see this list.
Type 'help name' to find out more about the function 'name'.
Use 'info bash' to find out more about the shell in general.
Use 'man -k' or 'info' to find out more about commands not in this list.

A star (*) next to a name means that the command is disabled.

job_spec [*]
(( expression ))
. filename [arguments]
:
[ arg... ]
[[ expression ]]
alias [-p] [name[=value] ...]
bg [job_spec ...]
break [n]
builtin [shell-built-in [arg ...]]
caller [exp]
case WORD in [PATTERN [| PATTERN]...) COMMANDS ;;; esac
cd [-L|-P] [dir]
command [-pV] command [arg ...]
compgen [-abdefgjkswv] [-o option] [-G globpat] [-W wordlist] [-F function] >
complete [-abdefgjkswv] [-pr] [-DE] [-o option] [-A action] [-G globpat] [-W wordlist] [-]
compopt [-o]+ option [-DE] [name ...]
continue [n]
coproc [NAME] command [redirections]
declare [-aAf] [name[=value] ...]
dirs [-l] [-h] [-N]
disown [-a] [-e] [jobspec ...]
echo [-neE] [arg ...]
enable [-a] [-dnpse] [-f filename] [name ...]
eval [arg ...]
exec [-cl] [-a name] [command [arguments ...]] [redirection ...]
exit [n]
export [-fn] [name[=value] ...] or export -p
false
fc [-e ename] [-ln1] [first] [last] or fc -s [pat=rep] [command]
fg [job_spec]
for NAME [in WORDS ...] ; do COMMANDS; done
for (( expr; exp2; exp3 )); do COMMANDS; done
function name () COMMANDS; done
name () { COMMANDS; }
getopt [-o optstring name [arg]
hash [-l] [-p pathname] [-dt] [name ...]
help [-dmal] [pattern ...]
-bash-4.1.16
```

```
192.168.14.102 - PuTTY
-bash-4.1$ help -d cd
cd - Change the shell working directory.
-bash-4.1$
```

```
192.168.14.102 - PuTTY
-bash-4.1$ help -d cd
cd - Change the shell working directory.
-bash-4.1$ help -m cd
NAME
    cd - Change the shell working directory.

SYNOPSIS
    cd [-L|-P] [dir]

DESCRIPTION
    Change the shell working directory.

    Change the current directory to DIR.  The default DIR is the value of the
    HOME shell variable.

    The variable CDPATH defines the search path for the directory containing
    DIR.  Alternative directory names in CDPATH are separated by a colon (:).
    A null directory name is the same as the current directory.  If DIR begins
    with a slash (/), then CDPATH is not used.

    If the directory is not found, and the shell option `cdable_vars' is set,
    the word is assumed to be a variable name.  If that variable has a value,
    its value is used for DIR.

    Options:
        -L      force symbolic links to be followed
        -P      use the physical directory structure without following symbolic
               links

    The default is to follow symbolic links, as if '-L' were specified.

    Exit Status:
    Returns 0 if the directory is changed; non-zero otherwise.

SEE ALSO
    bash(1)

IMPLEMENTATION
    GNU bash, version 4.1.2(1)-release (x86_64-redhat-linux-gnu)
    Copyright (C) 2009 Free Software Foundation, Inc.
    License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

-bash-4.1$
```

```
-bash-4.1$ help -d cd
cd - Change the shell working directory.
-bash-4.1$ help -m cd
NAME
    cd - Change the shell working directory.

SYNOPSIS
    cd [-L|-P] [dir]

DESCRIPTION
    Change the shell working directory.

    Change the current directory to DIR.  The default DIR is the value of the
    HOME shell variable.

    The variable CDPATH defines the search path for the directory containing
    DIR.  Alternative directory names in CDPATH are separated by a colon (:).
    A null directory name is the same as the current directory.  If DIR begins
    with a slash (/), then CDPATH is not used.

    If the directory is not found, and the shell option 'cdable_vars' is set,
    the word is assumed to be a variable name.  If that variable has a value,
    its value is used for DIR.

    Options:
        -L      force symbolic links to be followed
        -P      use the physical directory structure without following symbolic
               links

    The default is to follow symbolic links, as if '-L' were specified.

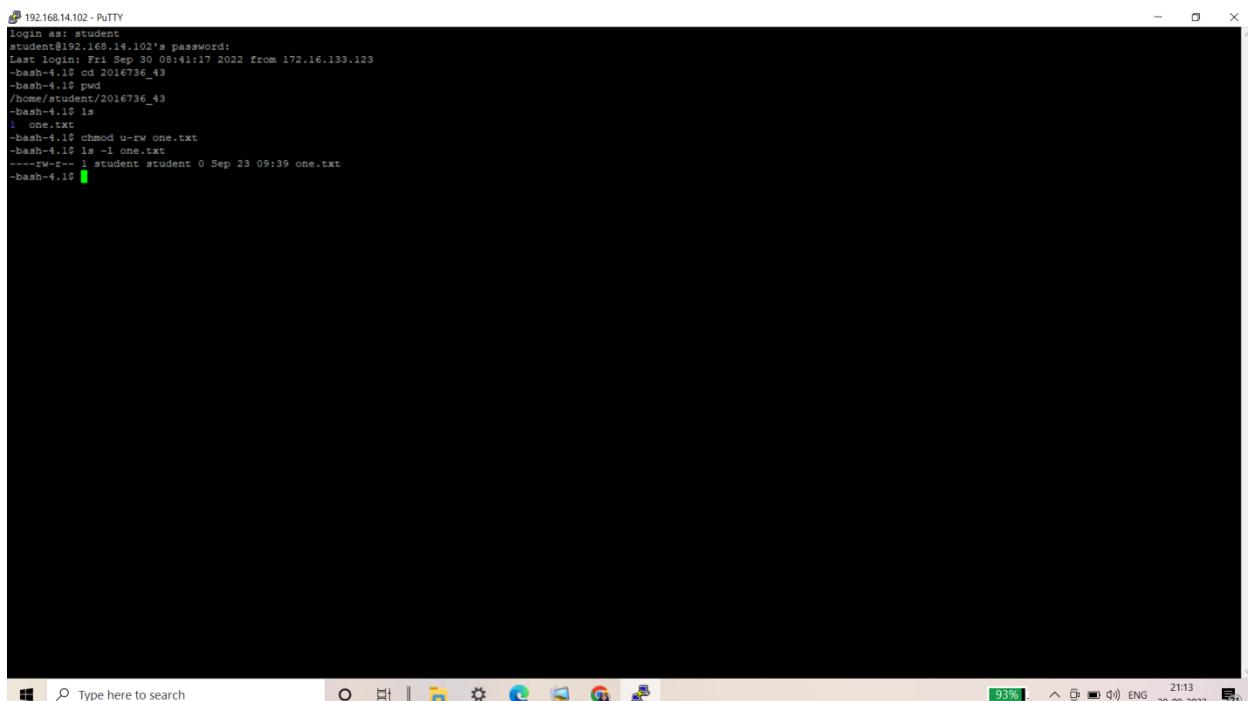
    Exit Status:
    Returns 0 if the directory is changed; non-zero otherwise.

SEE ALSO
    bash(1)

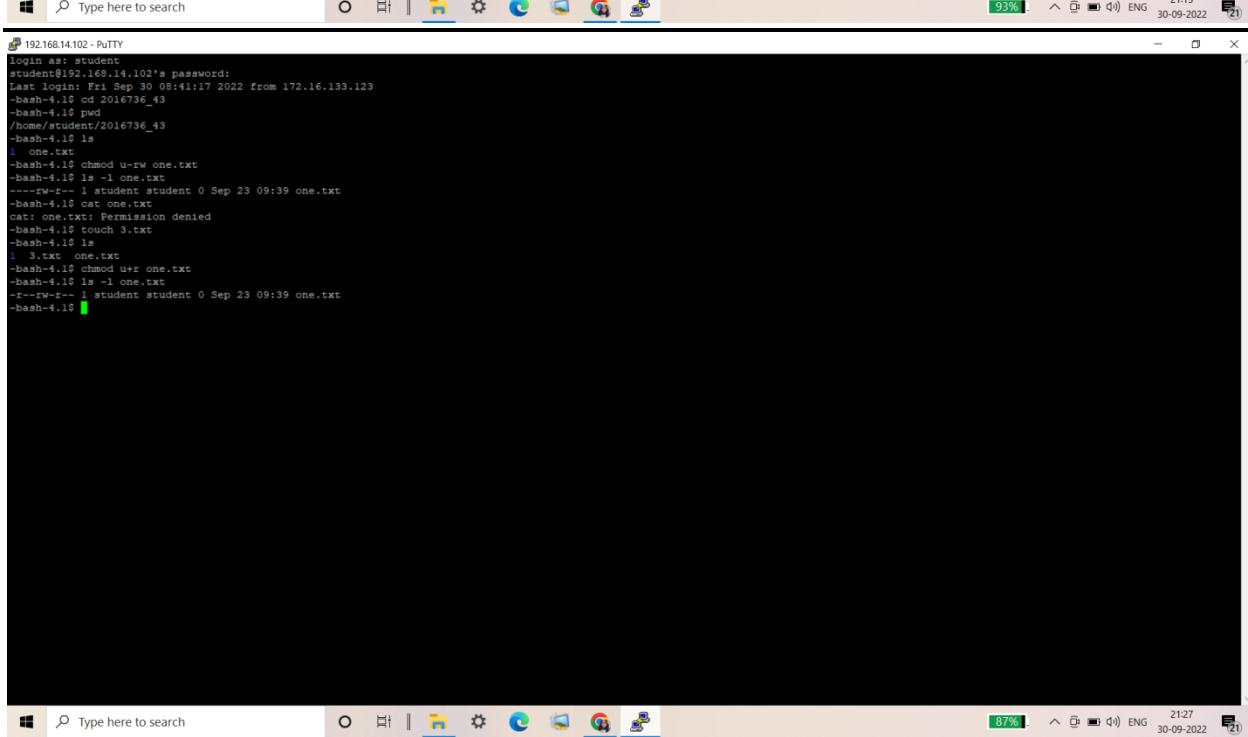
IMPLEMENTATION
    GNU bash, version 4.1.2(1)-release (x86_64-redhat-linux-gnu)
    Copyright (C) 2009 Free Software Foundation, Inc.
    License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>

-bash-4.1$ help -s cd
cd: cd [-L|-P] [dir]
-bash-4.1$
```

Reference 11a->



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u=rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u=rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ touch 3.txt
-bash-4.1$ ls
1 3.txt one.txt
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$
```

```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
cat: one.txt: Permission denied
-bash-4.1$ touch 3.txt
-bash-4.1$ ls
1 3.txt one.txt
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-----rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-r--r--r-- 1 student student 0 Sep 23 09:39 3.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
-bash-4.1$
```

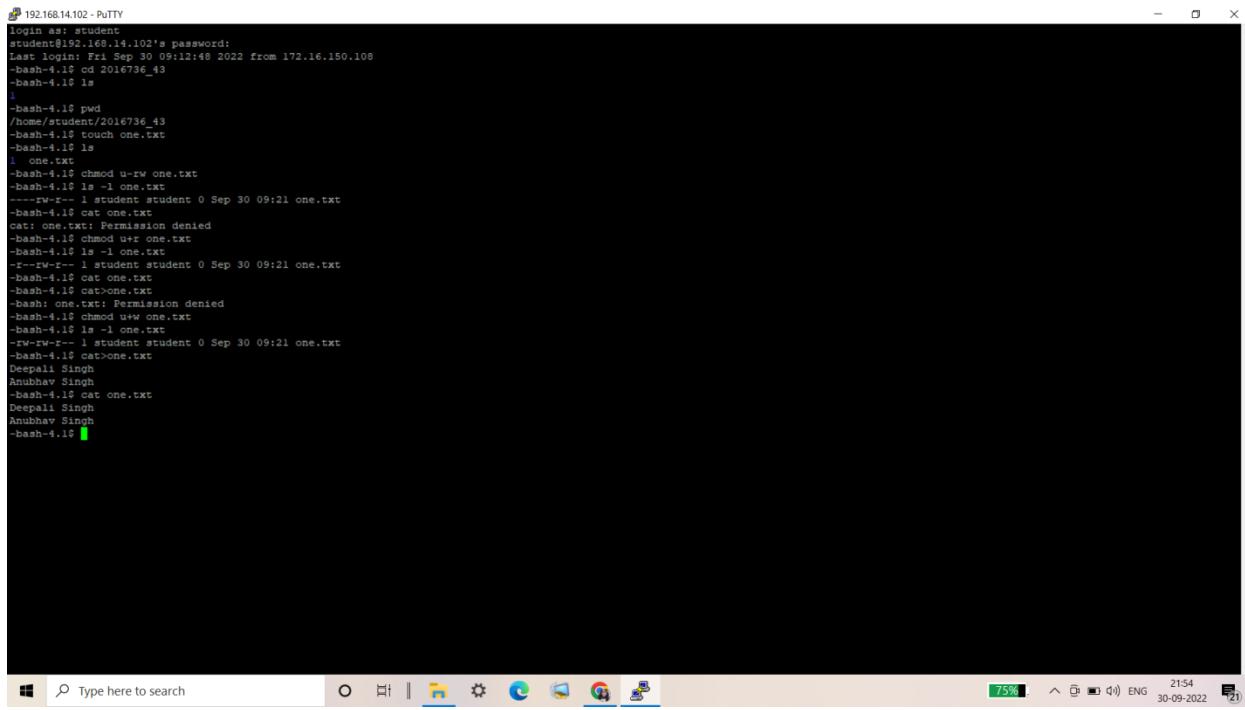
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
cat: one.txt: Permission denied
-bash-4.1$ touch 3.txt
-bash-4.1$ ls
1 3.txt one.txt
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-----rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-r--r--r-- 1 student student 0 Sep 23 09:39 3.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
-bash-4.1$
```

```
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ touch 3.txt
-bash-4.1$ ls
1 3.txt one.txt
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-----rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
-bash-4.1$ chmod uww one.txt
-bash-4.1$ ls -l one.txt
-----rw-rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat > one.txt
Deepali Singh
Anubhav Singh
Sudhiksha Singh
-bash-4.1$ ls -l
total 8
drwxrwxr-x 3 student student 4096 Sep 23 10:57 .
-rw-rw-r-- 1 student student 0 Sep 30 08:55 3.txt
-rw-rw-r-- 1 student student 44 Sep 30 09:09 one.txt
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$
```

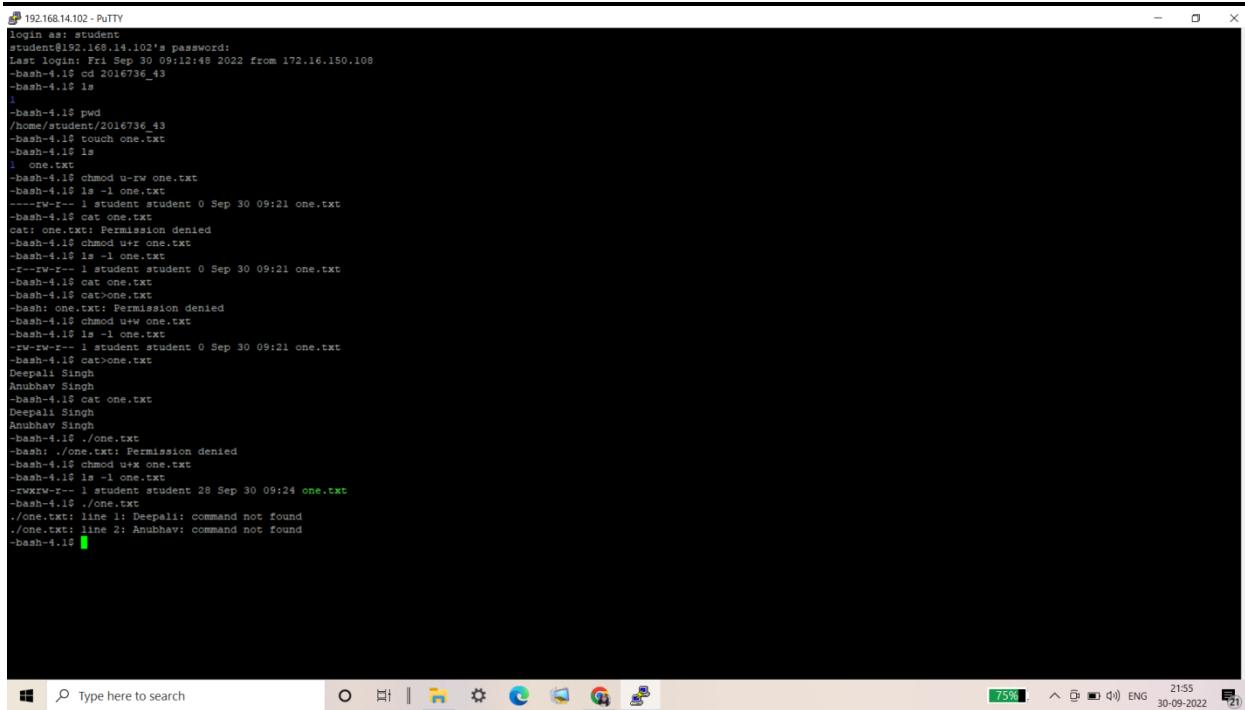
```
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 08:41:17 2022 from 172.16.133.123
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-----r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ touch 3.txt
-bash-4.1$ ls
1 3.txt one.txt
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-----rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
-bash-4.1$ chmod uww one.txt
-bash-4.1$ ls -l one.txt
-----rw-rw-r-- 1 student student 0 Sep 23 09:39 one.txt
-bash-4.1$ cat > one.txt
Deepali Singh
Anubhav Singh
Sudhiksha Singh
-bash-4.1$ ls -l
total 8
drwxrwxr-x 3 student student 4096 Sep 23 10:57 .
-rw-rw-r-- 1 student student 0 Sep 30 08:55 3.txt
-rw-rw-r-- 1 student student 44 Sep 30 09:09 one.txt
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$ chmod u+w one.txt
-bash-4.1$ ./one.txt
./one.txt: line 1: Deepali: command not found
./one.txt: line 2: Anubhav: command not found
./one.txt: line 3: Sudhiksha: command not found
-bash-4.1$ cat > one.txt
Arun Sharma
-bash-4.1$ ./one.txt
./one.txt: line 1: Arun: command not found
-bash-4.1$
```

```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 09:12:48 2022 from 172.16.150.108
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
1
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
student student 0 Sep 30 09:21 one.txt
-bash-4.1$
```

```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 09:12:48 2022 from 172.16.150.108
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
1
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+w one.txt
-bash-4.1$
```



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 09:12:48 2022 from 172.16.150.108
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
1
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$
```



```
192.168.14.102 - PUTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 09:12:48 2022 from 172.16.150.108
-bash-4.1$ cd 2016736_43
-bash-4.1$ ls
1
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u-rw one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$ chmod u+x one.txt
-bash-4.1$ ls -l one.txt
-rwxr-x 1 student student 28 Sep 30 09:24 one.txt
-bash-4.1$ ./one.txt
./one.txt: line 1: Deepali: command not found
./one.txt: line 2: Anubhav: command not found
-bash-4.1$
```

```

192.168.14.102 - PuTTY
-bash-4.1$ ls
1
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ touch one.txt
-bash-4.1$ ls
1 one.txt
-bash-4.1$ chmod u=rw one.txt
-bash-4.1$ ls -l one.txt
-rw-r--r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u=r one.txt
-bash-4.1$ ls -l one.txt
-r--r--r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
-bash-4.1$ cat>one.txt
-bash: one.txt: Permission denied
-bash-4.1$ chmod u=rw one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat>one.txt
-bash-4.1$ Deepali Singh
Anubhav Singh
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$ chmod u+x one.txt
-bash-4.1$ ls -l one.txt
-rwxr-xr-- 1 student student 28 Sep 30 09:24 one.txt
-bash-4.1$ ./one.txt
./one.txt: line 1: Deepali: command not found
./one.txt: line 2: Anubhav: command not found
-bash-4.1$ cat > one.txt
-bash-4.1$ ls
pwd
ls -l
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ ./one.txt
1 one.txt
/home/student/2016736_43
total 8
drwxrwxr-x 3 student student 4096 Sep 23 10:57 1
-rwxr--r-- 1 student student 15 Sep 30 09:41 one.txt
-bash-4.1$ 
192.168.14.102 - PuTTY
-rw-r--r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
cat: one.txt: Permission denied
-bash-4.1$ chmod u=r one.txt
-bash-4.1$ ls -l one.txt
-r--r--r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
-bash-4.1$ cat>one.txt
-bash: one.txt: Permission denied
-bash-4.1$ chmod u=rw one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat>one.txt
-bash-4.1$ ./one.txt
./one.txt: line 1: Deepali: command not found
./one.txt: line 2: Anubhav: command not found
-bash-4.1$ cat > one.txt
-bash-4.1$ ls
pwd
ls -l
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ ./one.txt
1 one.txt
/home/student/2016736_43
total 8
drwxrwxr-x 3 student student 4096 Sep 23 10:57 1
-rwxr--r-- 1 student student 15 Sep 30 09:41 one.txt
-bash-4.1$ 

```

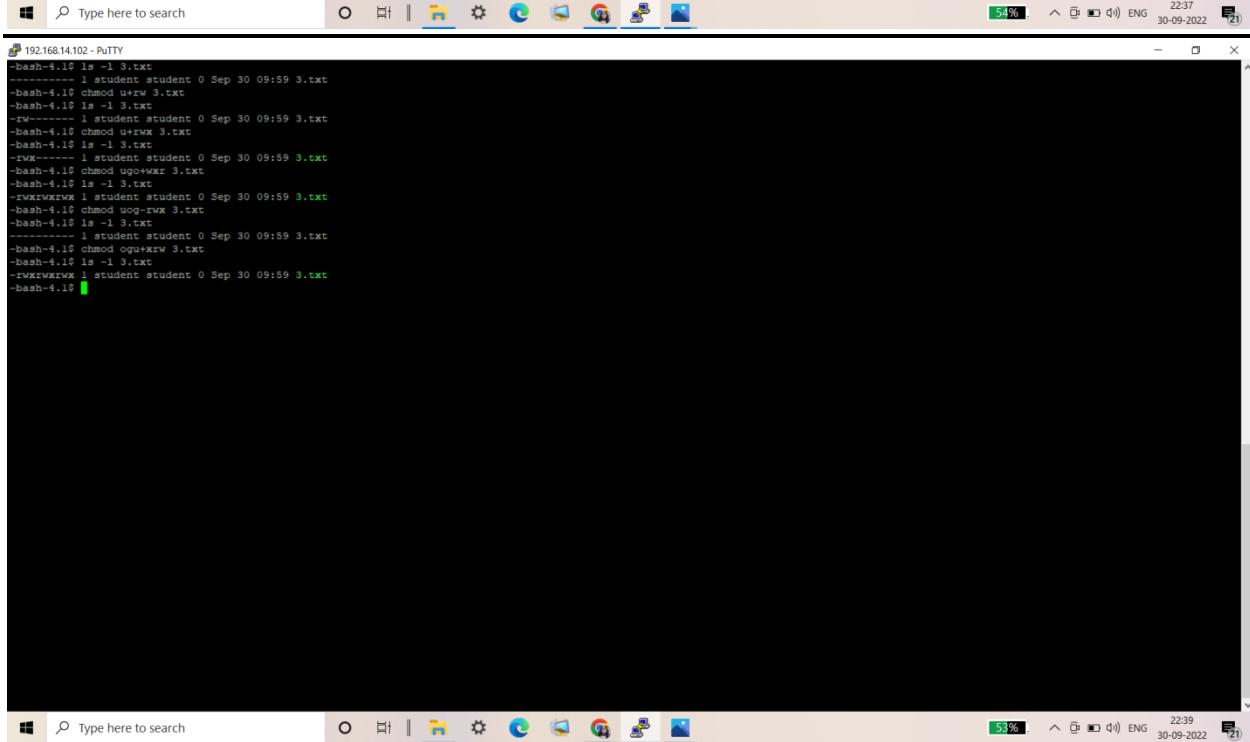
The image shows two separate PuTTY windows side-by-side, both connected to the same host (192.168.14.102). Each window displays a command-line session with the user navigating through files and changing permissions.

Top Window Session:

```
-bash-4.1$ chmod u+r one.txt
-bash-4.1$ ls -l one.txt
-r--r--r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ cat>one.txt
-bash-4.1$ one.txt: Permission denied
-bash-4.1$ chmod u+w one.txt
-bash-4.1$ ls -l one.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:21 one.txt
-bash-4.1$ cat>one.txt
Deepali Singh
Anubhav Singh
-bash-4.1$ ./one.txt
-bash: ./one.txt: Permission denied
-bash-4.1$ chmod u+x one.txt
-bash-4.1$ ./one.txt
./one.txt: line 1: Deepali: command not found
./one.txt: line 2: Anubhav: command not found
-bash-4.1$ cat > one.txt
ls
pwd
ls -l
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ ./one.txt
1 one.txt
/home/student/2016736_43
total 8
drwxrwxr-x 3 student student 4096 Sep 23 10:57 1
-rwxr--r-- 1 student student 15 Sep 30 09:41 one.txt
-bash-4.1$ touch 3.txt
-bash-4.1$ chmod u+rw 3.txt
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 students student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u+rw 3.txt
-bash-4.1$ ls -l one.txt
-rwxr--r-- 1 student student 15 Sep 30 09:41 one.txt
-bash-4.1$ touch 3.txt
-rwxr--r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod ugo=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$
```

Bottom Window Session:

```
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
-rw----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u+rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod ugo+rwx 3.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod uog=rwx 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$
```

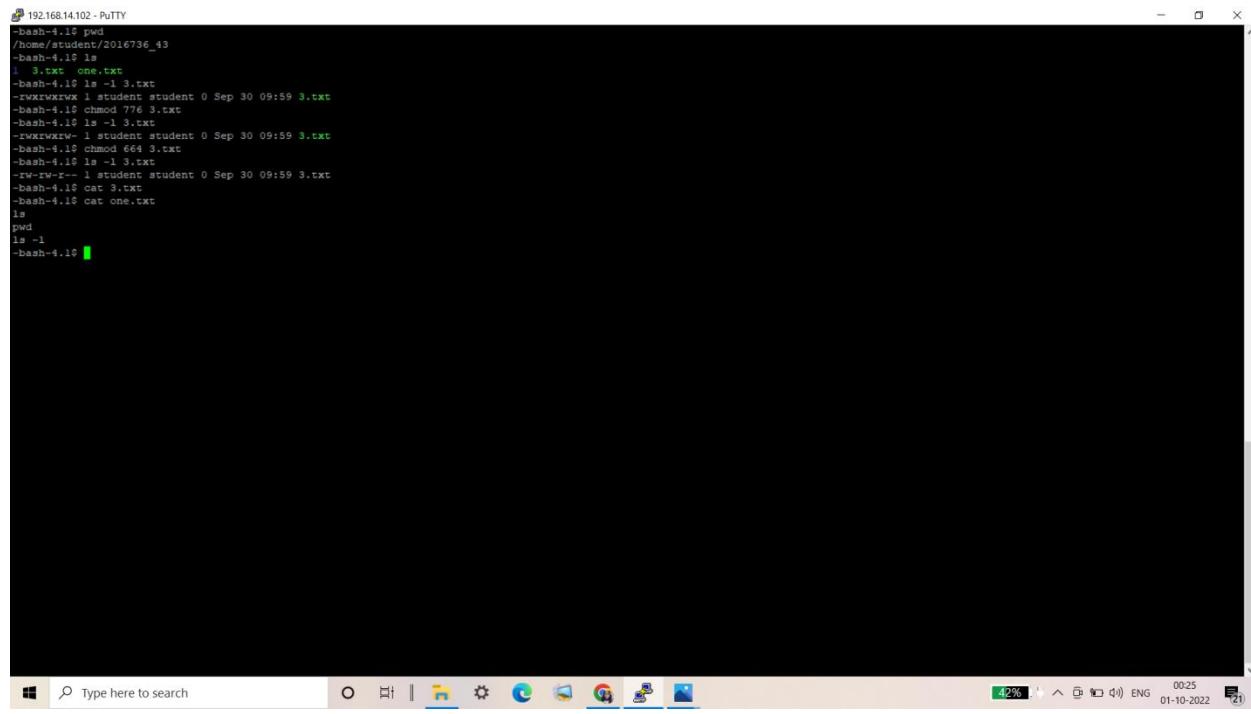


The image shows a Windows desktop environment with two PuTTY windows open. Both windows display the same terminal session output, which is a series of Linux command-line operations. The tasks performed include listing files, changing file permissions, and renaming files. The terminal session starts with an 'ls -l' command, followed by 'chmod u+rw 3.txt', 'ls -l', 'rm 3.txt', 'chmod u=rw 3.txt', 'ls -l', 'rm 3.txt', 'chmod ugo+rwx 3.txt', 'ls -l', and ends with 'rm 3.txt'. The terminal prompt is '-bash-4.1\$'. The Windows taskbar at the bottom of the screen shows the taskbar icons and the system tray with battery level (53%), network connection, and date/time (22:39, 30-09-2022).

```
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u+rw 3.txt
-bash-4.1$ ls -l 3.txt
-rw----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ rm 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod ugo+rwx 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ rm 3.txt
-bash-4.1$
```

```
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
-rw----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod u=rw 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod ugo+rwx 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod ugo+rwx 3.txt
-bash-4.1$ ls -l 3.txt
----- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ rm 3.txt
-bash-4.1$
```

Reference 11b->



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
3.txt one.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 664 3.txt
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 664 3.txt
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$
```

Reference 11->

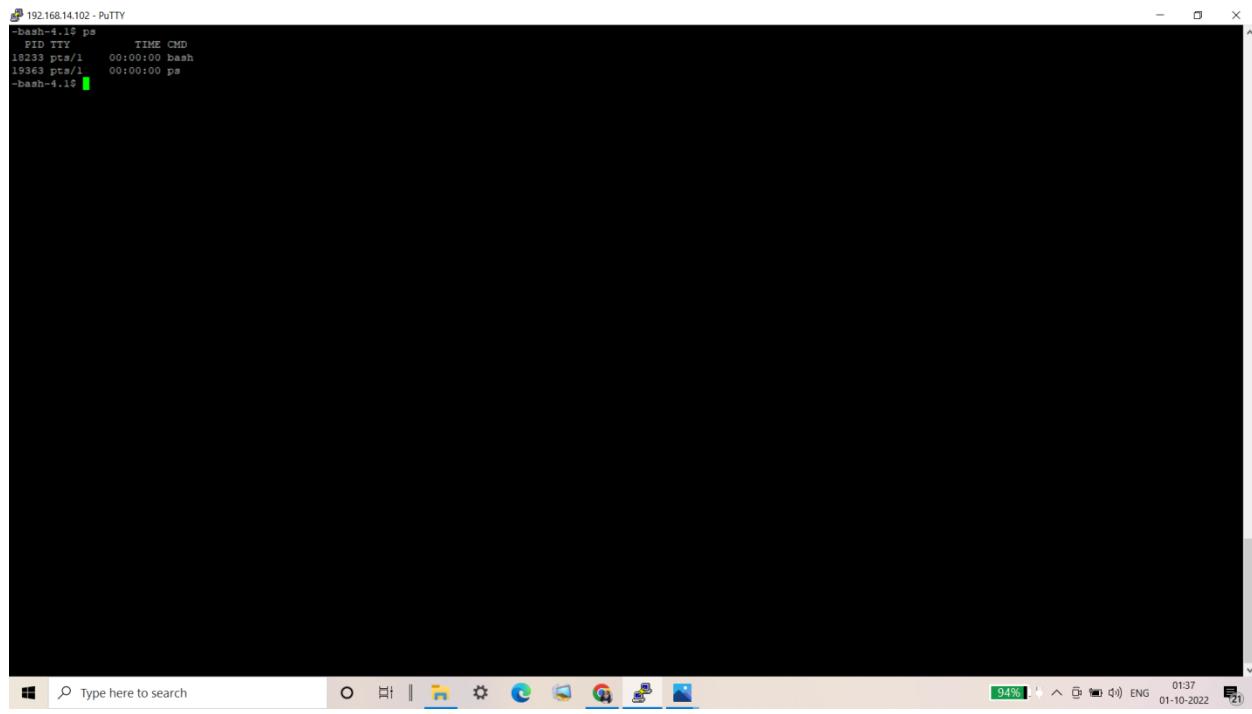
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
3.txt one.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 776 3.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 664 3.txt
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt
Hello!
-bash-4.1$
```

```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
3.txt one.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 776 3.txt
-bash-4.1$ ls -l 3.txt
-rwxrwxrwx 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ chmod 664 3.txt
-bash-4.1$ ls -l 3.txt
-rw-rw-r-- 1 student student 0 Sep 30 09:59 3.txt
-bash-4.1$ cat 3.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt
Hello!
-bash-4.1$
```

```
-bash-4.1$ cat 6.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt>>one.txt
-bash-4.1$ cat 6.txt
hello!
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt>>3.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 6.txt
hello!
-bash-4.1$ cat on.txt>3.txt
cat: on.txt: No such file or directory
-bash-4.1$ cat one.txt>3.txt
-bash-4.1$ cat one.txt>6.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 3.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 6.txt
ls
pwd
ls -l
hello!
-bash-4.1$
```

```
-bash-4.1$ cat 6.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt>>one.txt
-bash-4.1$ cat 6.txt
hello!
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat>6.txt
hello!
-bash-4.1$ cat 6.txt>>3.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 6.txt
hello!
-bash-4.1$ cat on.txt>3.txt
-bash-4.1$ cat one.txt>6.txt
-bash-4.1$ cat one.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 3.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 6.txt
ls
pwd
ls -l
hello!
-bash-4.1$
```

Reference 13->



A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a command-line interface with the following output:

```
-bash-4.1$ ps
 PID TTY      TIME CMD
18233 pts/1    00:00:00 bash
19363 pts/1    00:00:00 ps
-bash-4.1$
```

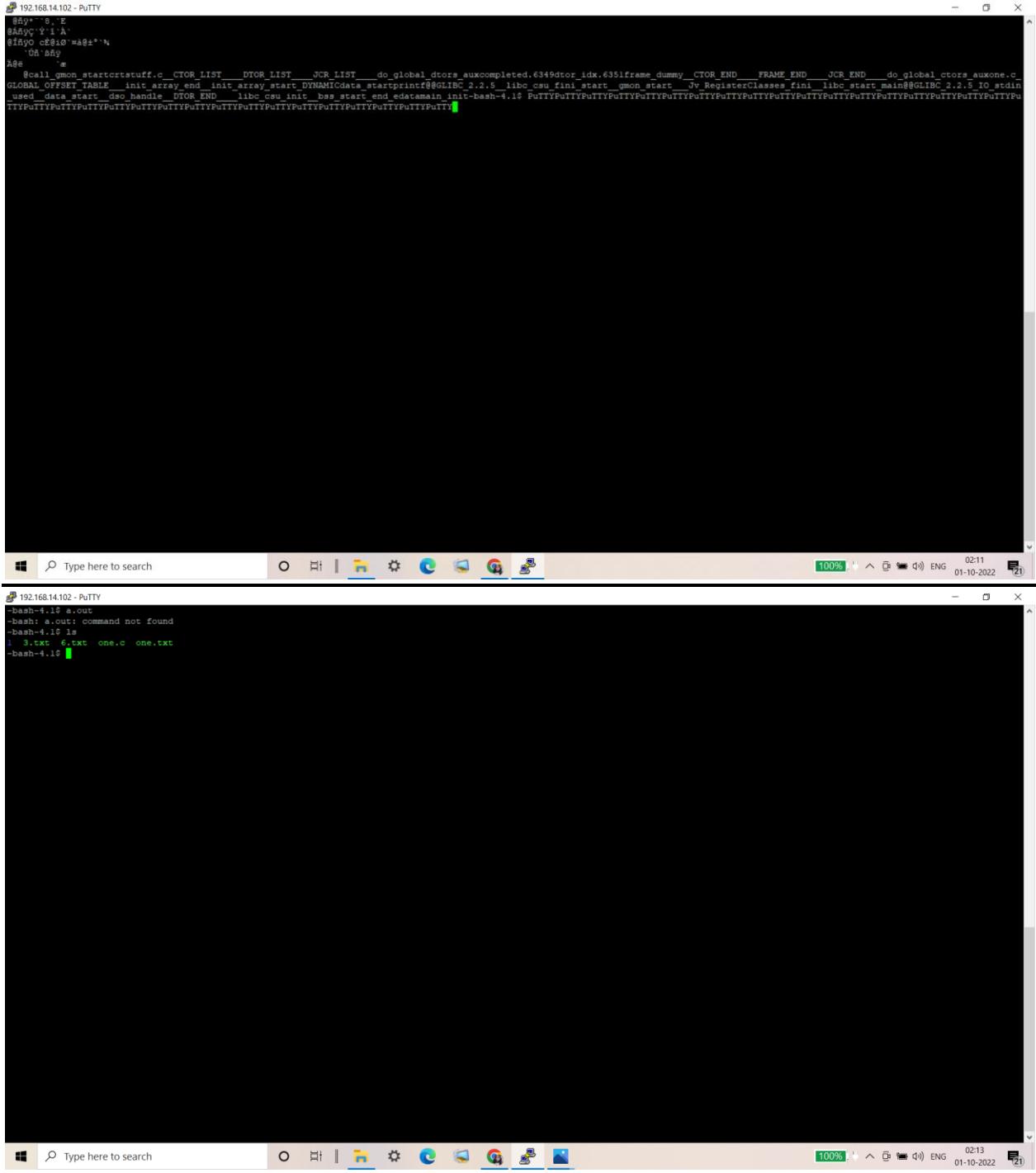
The terminal window has a black background and white text. The bottom right corner of the terminal shows a scroll bar. Below the terminal window is the Windows taskbar. On the taskbar, from left to right, there is a search bar with the placeholder "Type here to search", several pinned application icons (including File Explorer, Edge, and File History), and a battery icon indicating 94% charge. To the right of the battery icon are the date (01-10-2022) and time (01:37). There is also a small icon for a document or file.

Reference 14->

```
192.168.14.102 - PuTTY
-bash-4.1$ 
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 11:54:52 2022 from 172.16.150.156
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cat one.c
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ rm a.out
-bash-4.1$ ls
1_3.txt 6.txt one.c
-bash-4.1$ cat > one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ gcc one.c
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cat one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ 
```

```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 11:54:52 2022 from 172.16.150.156
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ rm a.out
-bash-4.1$ ls
1_3.txt 6.txt one.c
-bash-4.1$ cat > one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ gcc one.c
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cat one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ 
```

```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Fri Sep 30 11:54:52 2022 from 172.16.150.156
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ rm a.out
-bash-4.1$ ls
1_3.txt 6.txt one.c
-bash-4.1$ cat > one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ gcc one.c
-bash-4.1$ ls
1_3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cat one.c
#include<stdio.h>
int main()
{
    printf("\n Deepali");
    return 0;
}
-bash-4.1$ 
```

A screenshot of a Windows desktop environment. There are three windows open: 1) A Putty terminal window titled "192.168.14.102 - PUTTY" showing assembly code from memory dump. 2) A second Putty terminal window titled "192.168.14.102 - PUTTY" showing a command-line interface with a file listing error. 3) A third Putty terminal window titled "192.168.14.102 - PUTTY" showing another command-line interface. The taskbar at the bottom shows various pinned icons including File Explorer, Edge browser, and other system icons. The desktop background features a green plant in a pot.

The image shows three separate windows of a Windows desktop environment, each displaying a terminal session via Putty. The desktop background is black, and the taskbar at the bottom includes icons for File Explorer, Task View, Settings, Edge, Google Chrome, File Explorer, and a pinned icon.

Top Window:

```
-bash-4.1$ ls  
1 3.txt 6.txt one.c one.txt  
-bash-4.1$ gcc one.c  
-bash-4.1$ ls  
1 3.txt 6.txt a.out one.c one.txt  
-bash-4.1$
```

Middle Window:

```
-bash-4.1$ ./a.out  
Deepali:bash-4.1$ sh a.out  
a.out: a.out: cannot execute binary file  
-bash-4.1$
```

Bottom Window:

```
-bash-4.1$
```

```

192.168.14.102 - PUTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cd /
-bash-4.1$ pwd
/
-bash-4.1$ ls
bin boot data dev etc home lib lib64 lost+found media mnt opt proc root sbin selinux srv sys tmp usr var
-bash-4.1$ cd bin
-bash-4.1$ ls
alsaunmute csh dnsdomainname find iptables-xml-1.4.7 lzqptaeodyc ncnqenhvrs pvqilimkjnrgin.sh rview sync umount zcat
arch cut domainname findmnt jscfbboxp-qf mail netstat pwvjnqusyv sed tail_logs uname
awk dash dumpkeys fusermount kbd mode mailx nice pwd setfont tar unicode_start
basename date eavcgsketu gawk kill mkdir nigrnjkmliqv raw setserial taskset unicode_stop
bsck cleanup-sockets echo gettext ldrvhohqms mkehnvuoj nisdomainname readlink sh tcsh unlink
cat dbus-daemon ed grep link mknod ngklvxhpan red skzafrebu touch usleep
cascfiagn dbus-monitor egrep gtar ln mktemp nujlhdmmewvwb redhat_lsb_init sleep tracepath vi
chgrp dbus-send env gunzip loadkeys more ping rm sort tracepath6 view
chmod dbus-uuidgen ex gzip logger mount ping6 rmdir start_logs traceroute vpqnmcfcbx
chown dd false hostname login mountpoint plymouth rnano stop_logs traceroute6 wolmtshudr
cp df fdfejqckfw ipcalc ls mv ps rpm stty true xxxwknutor
cpio dmesg fgrep iptables-xml lsblk nano pvqilimkjnrgin rvi su unlockmgr_server ypdomainname
-bash-4.1$ cat>true
-bash: true: Permission denied
-bash-4.1$ 

```



```

Type here to search
192.168.14.102 - PUTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ cd /
-bash-4.1$ pwd
/
-bash-4.1$ ls
alsaunmute csh dnsdomainname find iptables-xml-1.4.7 lzqptaeodyc ncnqenhvrs pvqilimkjnrgin.sh rview sync umount zcat
arch cut domainname findmnt jscfbboxp-qf mail netstat pwvjnqusyv sed tail_logs uname
awk dash dumpkeys fusermount kbd mode mailx nice pwd setfont tar unicode_start
basename date eavcgsketu gawk kill mkdir nigrnjkmliqv raw setserial taskset unicode_stop
bsck cleanup-sockets echo gettext ldrvhohqms mkehnvuoj nisdomainname readlink sh tcsh unlink
cat dbus-daemon ed grep link mknod ngklvxhpan red skzafrebu touch usleep
cascfiagn dbus-monitor egrep gtar ln mktemp nujlhdmmewvwb redhat_lsb_init sleep tracepath vi
chgrp dbus-send env gunzip loadkeys more ping rm sort tracepath6 view
chmod dbus-uuidgen ex gzip logger mount ping6 rmdir start_logs traceroute vpqnmcfcbx
chown dd false hostname login mountpoint plymouth rnano stop_logs traceroute6 wolmtshudr
cp df fdfejqckfw ipcalc ls mv ps rpm stty true xxxwknutor
cpio dmesg fgrep iptables-xml lsblk nano pvqilimkjnrgin rvi su unlockmgr_server ypdomainname
-bash-4.1$ cat>true
-bash: true: Permission denied
-bash-4.1$ pwd
/bin
-bash-4.1$ cd ..
-bash-4.1$ cd home/student/2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ echo "My name is Deepali"
My name is Deepali
-bash-4.1$ 

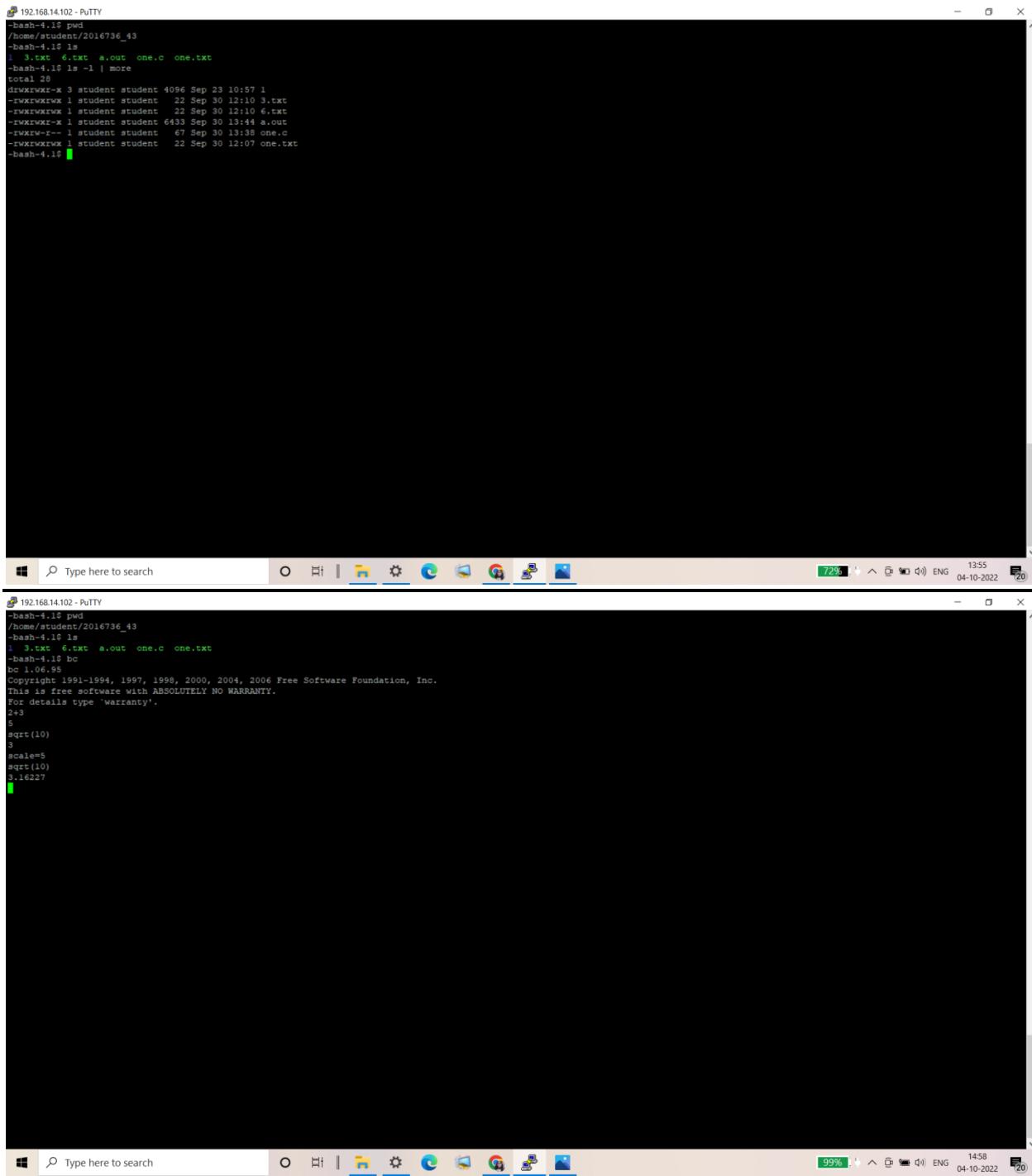
```



```

Type here to search
192.168.14.102 - PUTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ 

```

A screenshot of a Windows desktop environment showing two terminal windows running on Putty. Both windows are titled '192.168.14.102 - Putty'.

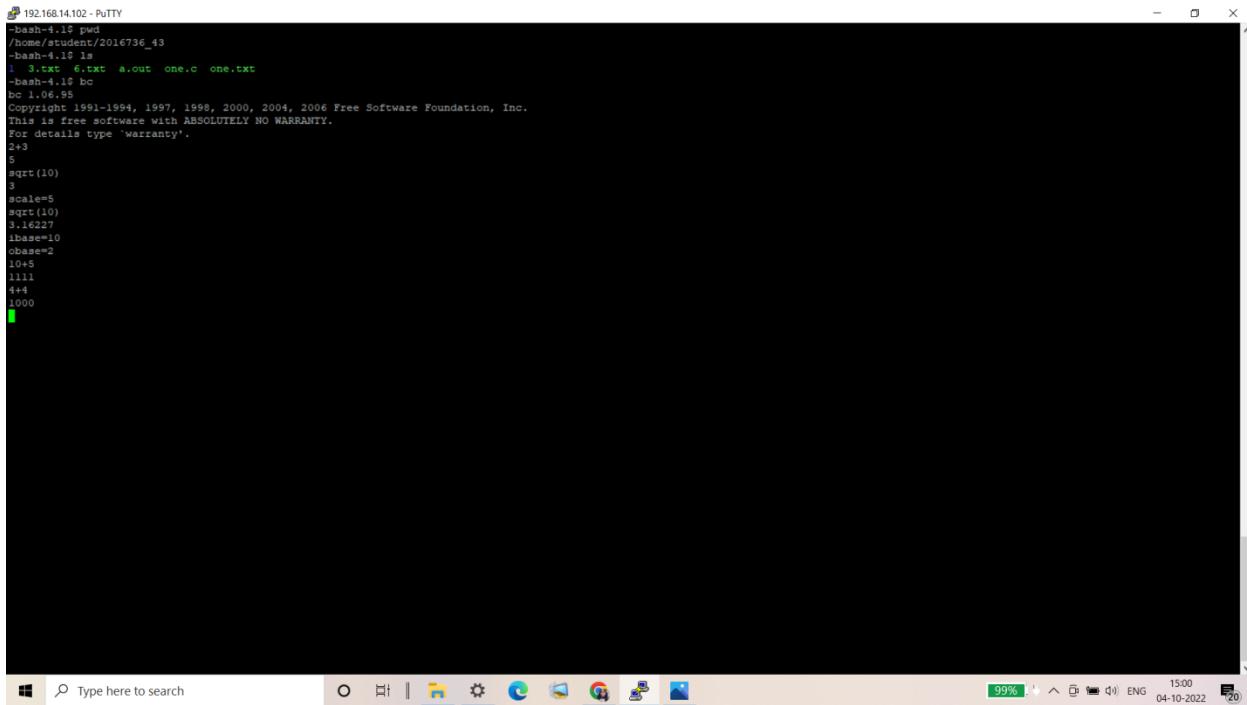
The top window displays a file listing from the directory '/home/student/2016736_43'. The output is:

```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
1 3.txt 6.txt a.out one.c one.txt  
-bash-4.1$ ls -l | more  
total 20  
drwxrwxr-x 3 student student 4096 Sep 23 10:57 1  
-rwxrwxrwx 1 student student 22 Sep 30 12:10 3.txt  
-rwxrwxrwx 1 student student 22 Sep 30 12:10 6.txt  
-rwxrwxr-x 1 student student 6433 Sep 30 13:44 a.out  
-rwxrwxr-- 1 student student 67 Sep 30 13:38 one.c  
-rwxrwxrwx 1 student student 22 Sep 30 12:07 one.txt  
-bash-4.1$
```


The bottom window shows a bc calculator session. The output is:

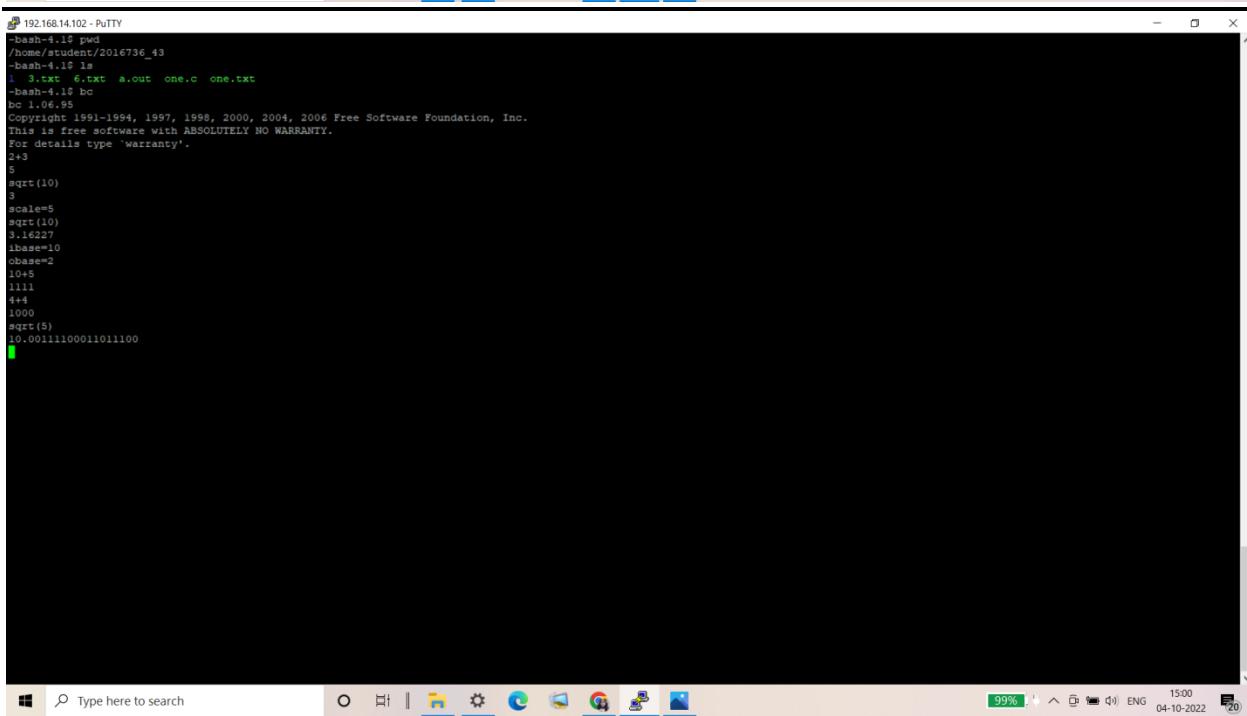
```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
1 3.txt 6.txt a.out one.c one.txt  
-bash-4.1$ bc  
bc 1.06.95  
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006 Free Software Foundation, Inc.  
This is free software with ABSOLUTELY NO WARRANTY.  
For details type 'warranty'.  
2+3  
5  
sqrt(10)  
3  
scale=5  
sqrt(10)  
3.16227  
-
```

Reference 16->



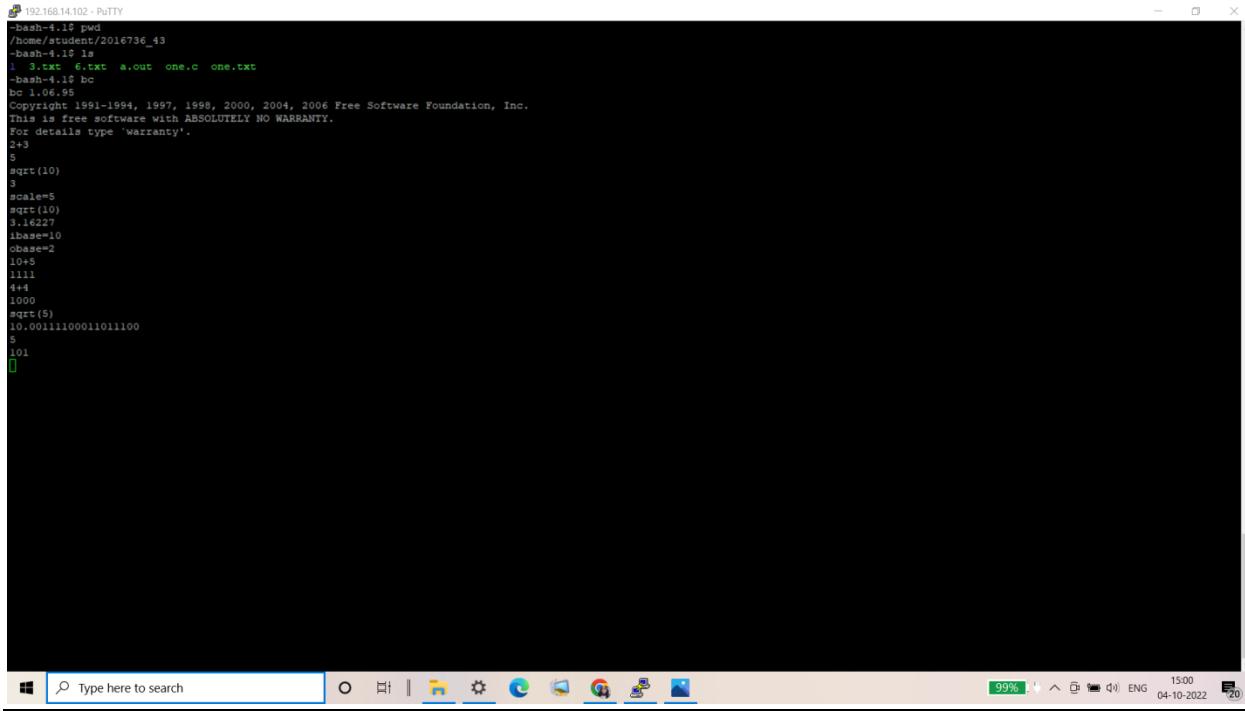
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt  a.out one.c one.txt
-bash-4.1$ bc
bc 1.06.95
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type 'warranty'.
2+3
5
sqrt(10)
3
scale=5
sqrt(10)
3.16227
ibase=10
obase=2
10+5
1111
444
1000

```

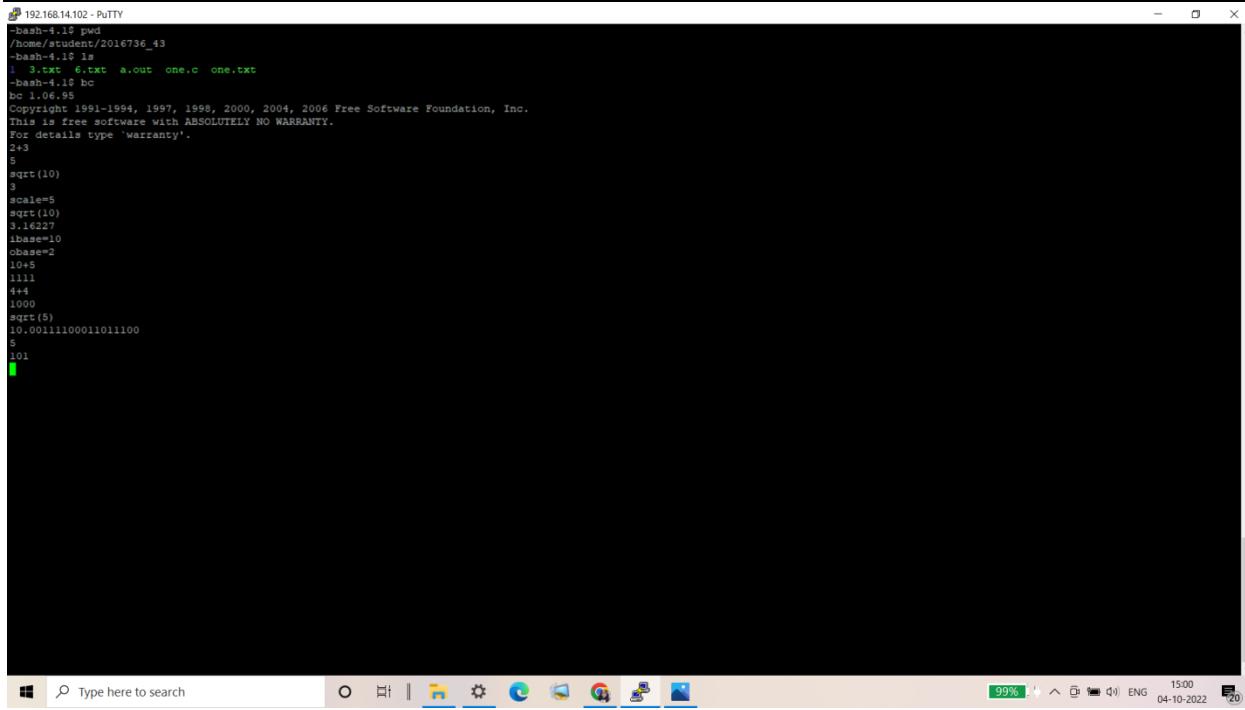


```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt  a.out one.c one.txt
-bash-4.1$ bc
bc 1.06.95
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type 'warranty'.
2+3
5
sqrt(5)
3
scale=5
sqrt(5)
2.23606
ibase=10
obase=2
10+5
1111
444
1000
sqrt(5)
10.00111100011011100

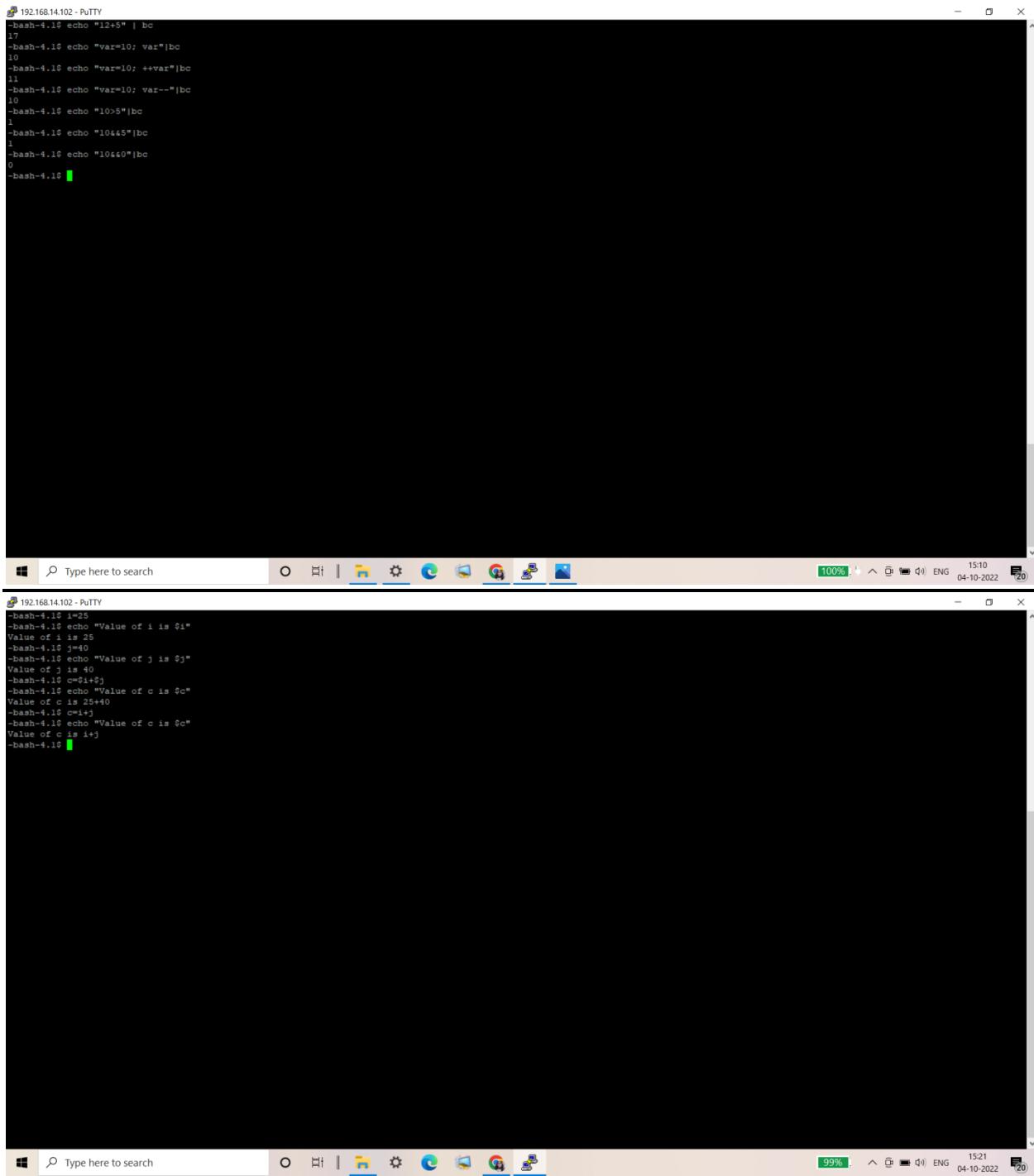
```



```
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt  a.out one.c one.txt
-bash-4.1$ bc
bc 1.06.95
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type 'warranty'.
2+3
5
sqrt(10)
3
scale=5
sqrt(10)
3.16227
ibase=10
obase=2
10>
1111
444
1000
sqrt(5)
10.00111100011011100
5
101
101
```



```
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 3.txt 6.txt  a.out one.c one.txt
-bash-4.1$ bc
bc 1.06.95
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type 'warranty'.
2+3
5
sqrt(10)
3
scale=5
sqrt(10)
3.16227
ibase=10
obase=2
10>
1111
444
1000
sqrt(5)
10.00111100011011100
5
101
101
```



The image shows a Windows desktop environment with two PuTTY windows open. Both windows are titled "192.168.14.102 - PuTTY".

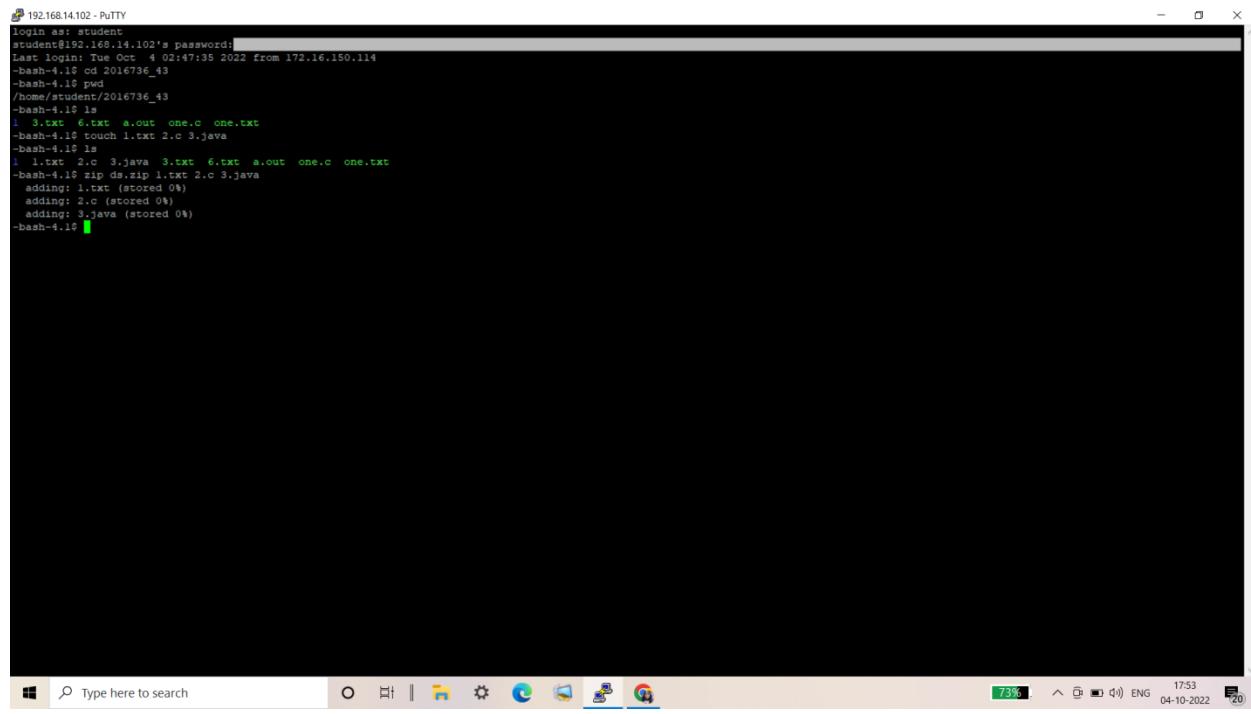
The top window displays the following command-line session:

```
-bash-4.1$ echo "12+5" | bc
17
-bash-4.1$ echo "var=10; var" |bc
10
-bash-4.1$ echo "var=10; ++var" |bc
11
-bash-4.1$ echo "var=10; var--" |bc
10
-bash-4.1$ echo "10*5" |bc
1
-bash-4.1$ echo "10*5" |bc
1
-bash-4.1$ echo "10*5" |bc
0
-bash-4.1$
```

The bottom window displays the following command-line session:

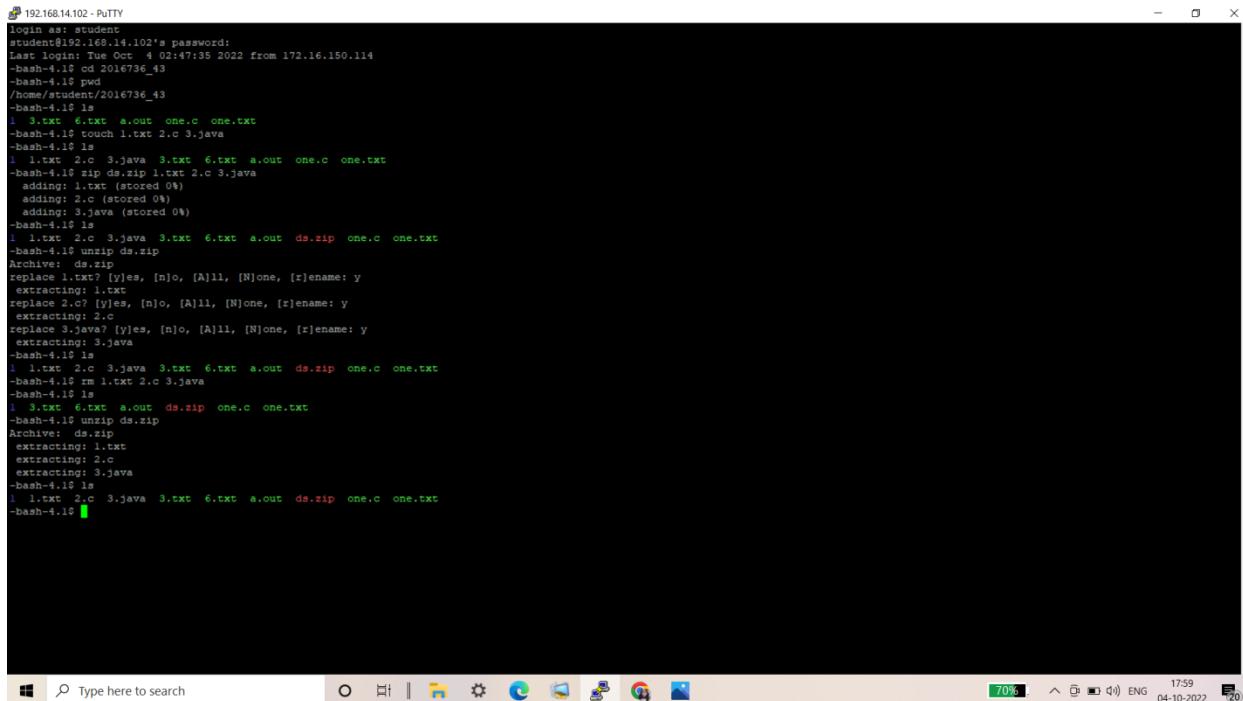
```
-bash-4.1$ i=25
-bash-4.1$ echo "Value of i is $i"
Value of i is 25
-bash-4.1$ j=40
-bash-4.1$ echo "Value of j is $j"
Value of j is 40
-bash-4.1$ c=$i+$j
-bash-4.1$ echo "Value of c is $c"
Value of c is 25+40
-bash-4.1$ c=$i+j
-bash-4.1$ echo "Value of c is $c"
Value of c is i+j
-bash-4.1$
```

Reference 17->

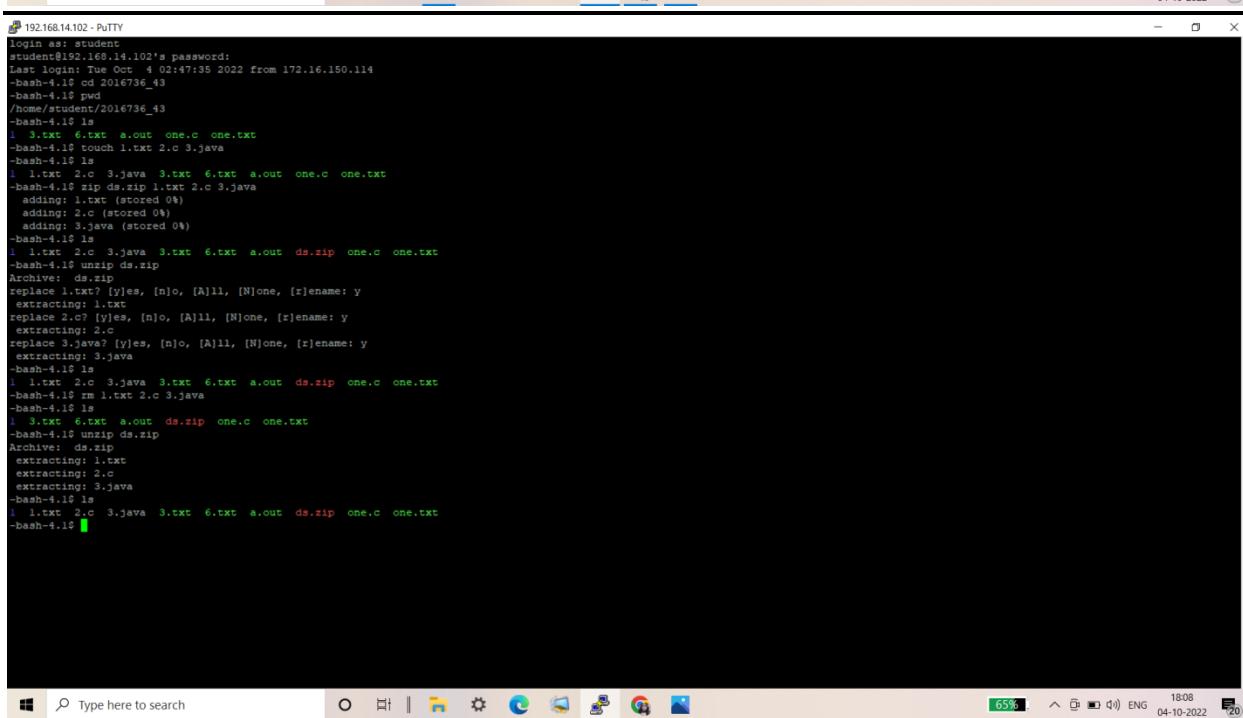


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Tue Oct  4 02:47:35 2022 from 172.16.150.114
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ touch 1.txt 2.c 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ zip ds.zip 1.txt 2.c 3.java
adding: 1.txt (stored 0%)
adding: 2.c (stored 0%)
adding: 3.java (stored 0%)
-bash-4.1$
```

Reference 18->



```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Tue Oct  4 02:47:35 2022 from 172.16.150.114
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ touch 1.txt 2.c 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ zip ds.zip 1.txt 2.c 3.java
adding: 1.txt (stored 0%)
adding: 2.c (stored 0%)
adding: 3.java (stored 0%)
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ unzip ds.zip
Archive: ds.zip
replace 1.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 1.txt
replace 2.c? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 2.c
replace 3.java? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ rm 1.txt 2.c 3.java
-bash-4.1$ ls
1.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ unzip ds.zip
Archive: ds.zip
extracting: 1.txt
extracting: 2.c
extracting: 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$
```

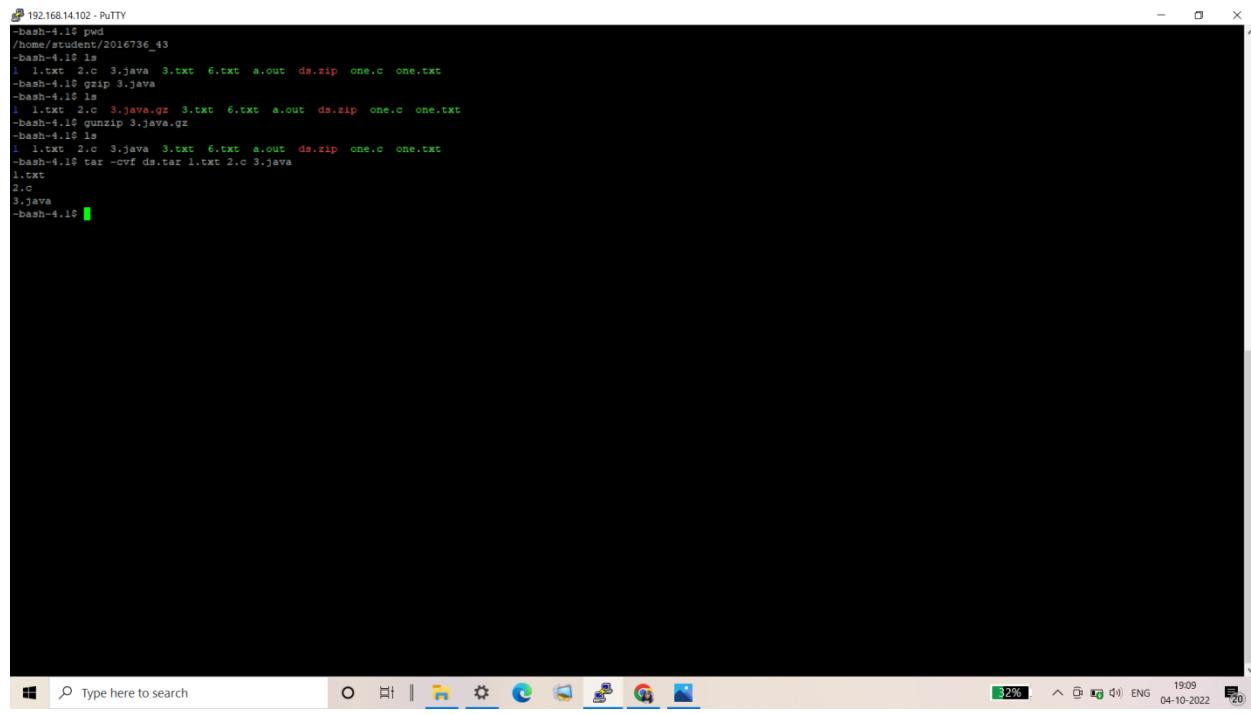


```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Tue Oct  4 02:47:35 2022 from 172.16.150.114
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/nome/student/2016736_43
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ touch 1.txt 2.c 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out one.c one.txt
-bash-4.1$ zip ds.zip 1.txt 2.c 3.java
adding: 1.txt (stored 0%)
adding: 2.c (stored 0%)
adding: 3.java (stored 0%)
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ unzip ds.zip
Archive: ds.zip
replace 1.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 1.txt
replace 2.c? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 2.c
replace 3.java? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
extracting: 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ rm 1.txt 2.c 3.java
-bash-4.1$ ls
1.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ unzip ds.zip
Archive: ds.zip
extracting: 1.txt
extracting: 2.c
extracting: 3.java
-bash-4.1$ ls
1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$
```

Reference 19->

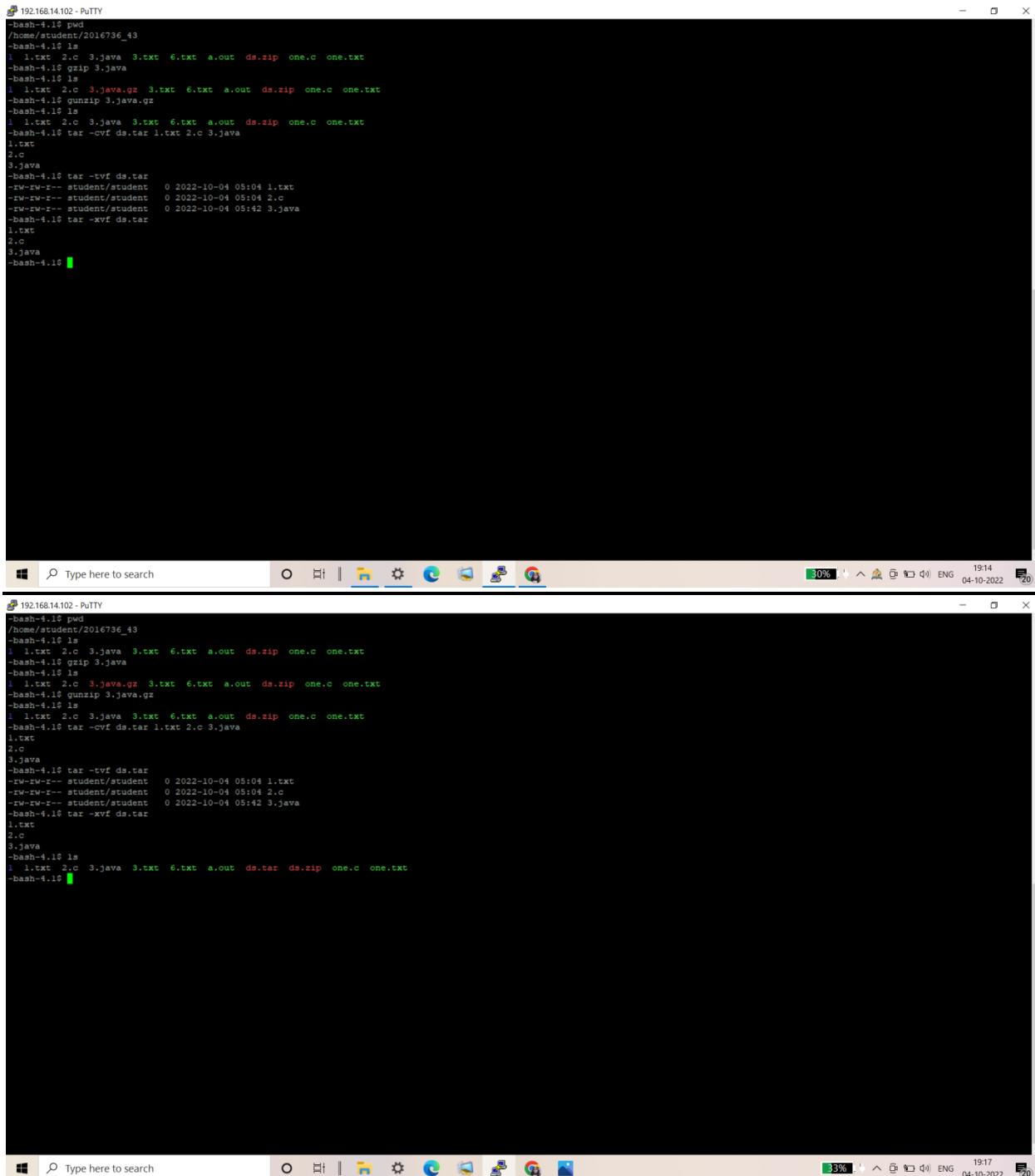
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gzip 3.java
-bash-4.1$ ls
1 1.txt 2.c 3.java.gz 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gunzip 3.java.gz
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$
```

Reference 20->



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gzip 3.java
-bash-4.1$ ls
1 1.txt 2.c 3.java.gz 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ unzip 3.java.gz
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ tar -cvf ds.tar 1.txt 2.c 3.java
1.txt
2.c
3.java
-bash-4.1$
```

Reference 21->



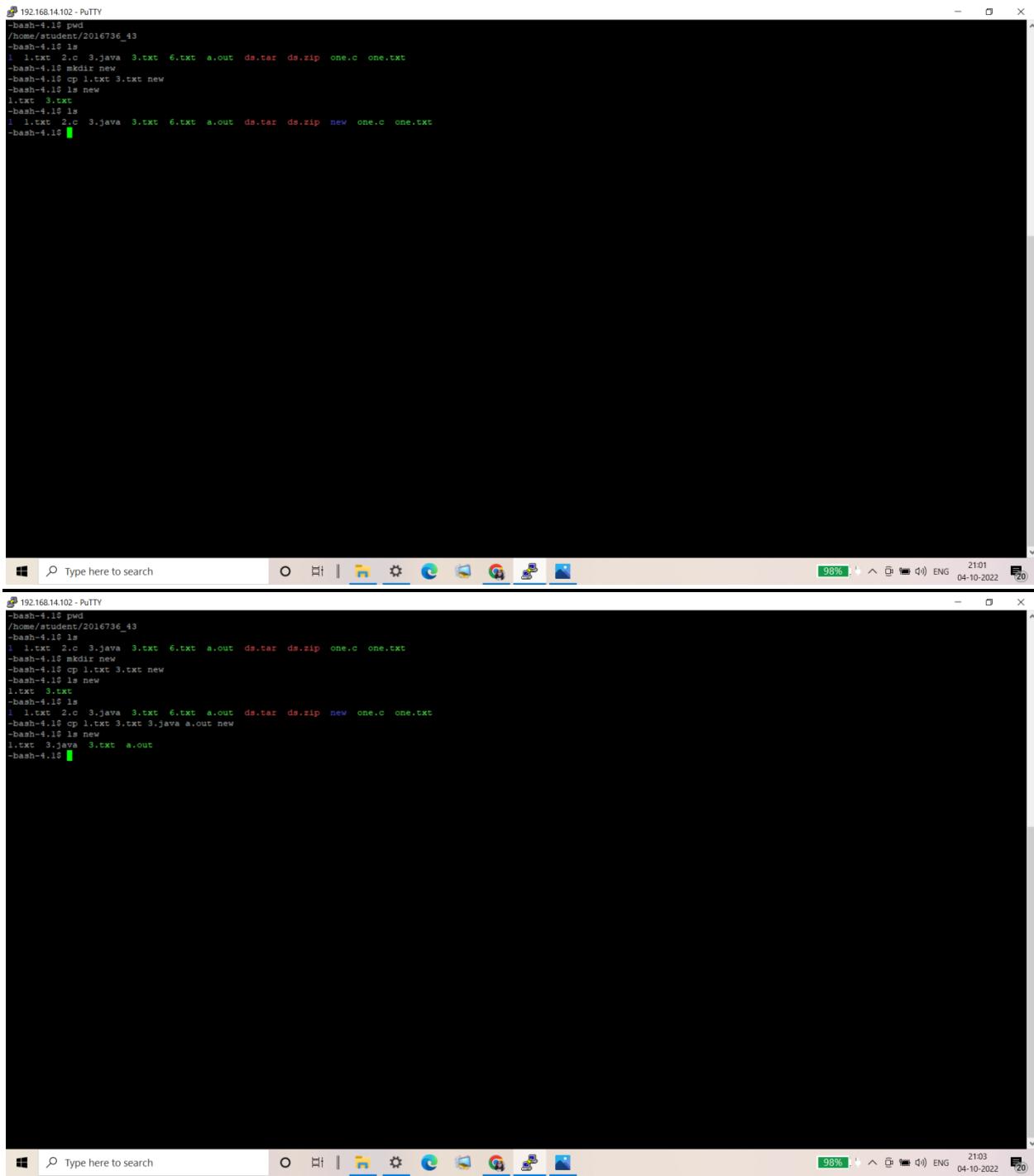
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
l 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gzip 3.java
-bash-4.1$ ls
l 1.txt 2.c 3.java.gz 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gunzip 3.java.gz
-bash-4.1$ ls
l 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ tar -cvf ds.tar l.txt 2.c 3.java
1.txt
2.c
3.java
-bash-4.1$ tar -tvf ds.tar
-rw-rw-r-- student/student 0 2022-10-04 05:04 l.txt
-rw-rw-r-- student/student 0 2022-10-04 05:04 2.c
-rw-rw-r-- student/student 0 2022-10-04 05:42 3.java
-bash-4.1$ tar -xvf ds.tar
l.txt
2.c
3.java
-bash-4.1$
```



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
l 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gzip 3.java
-bash-4.1$ ls
l 1.txt 2.c 3.java.gz 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ gunzip 3.java.gz
-bash-4.1$ ls
l 1.txt 2.c 3.java 3.txt 6.txt a.out ds.zip one.c one.txt
-bash-4.1$ tar -cvf ds.tar l.txt 2.c 3.java
1.txt
2.c
3.java
-bash-4.1$ tar -tvf ds.tar
-rw-rw-r-- student/student 0 2022-10-04 05:04 l.txt
-rw-rw-r-- student/student 0 2022-10-04 05:04 2.c
-rw-rw-r-- student/student 0 2022-10-04 05:42 3.java
-bash-4.1$ tar -xvf ds.tar
l.txt
2.c
3.java
-bash-4.1$ ls
l 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$
```

Reference 22->

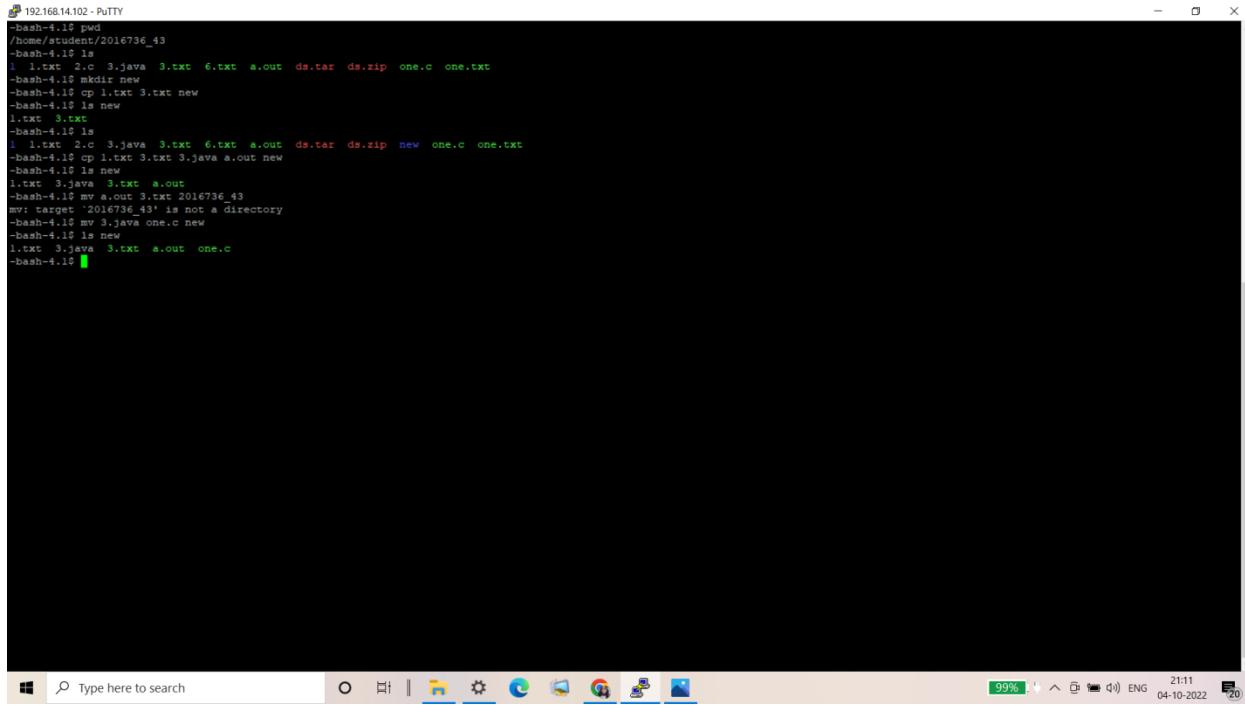
```
192.168.14.102 - PuTTY
login as: student
student@192.168.14.102's password:
Last login: Tue Oct  4 05:02:33 2022 from 172.16.150.114
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$ man cp
[1]+ Stopped                  man cp
-bash-4.1$ cat 3.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 1.txt
-bash-4.1$ cp 2.txt 1.txt
cp: cannot stat '2.txt': No such file or directory
-bash-4.1$ cp 3.txt 1.txt
-bash-4.1$ cat 3.txt
ls
pwd
ls -l
hello!
-bash-4.1$ cat 1.txt
ls
pwd
ls -l
hello!
-bash-4.1$
```



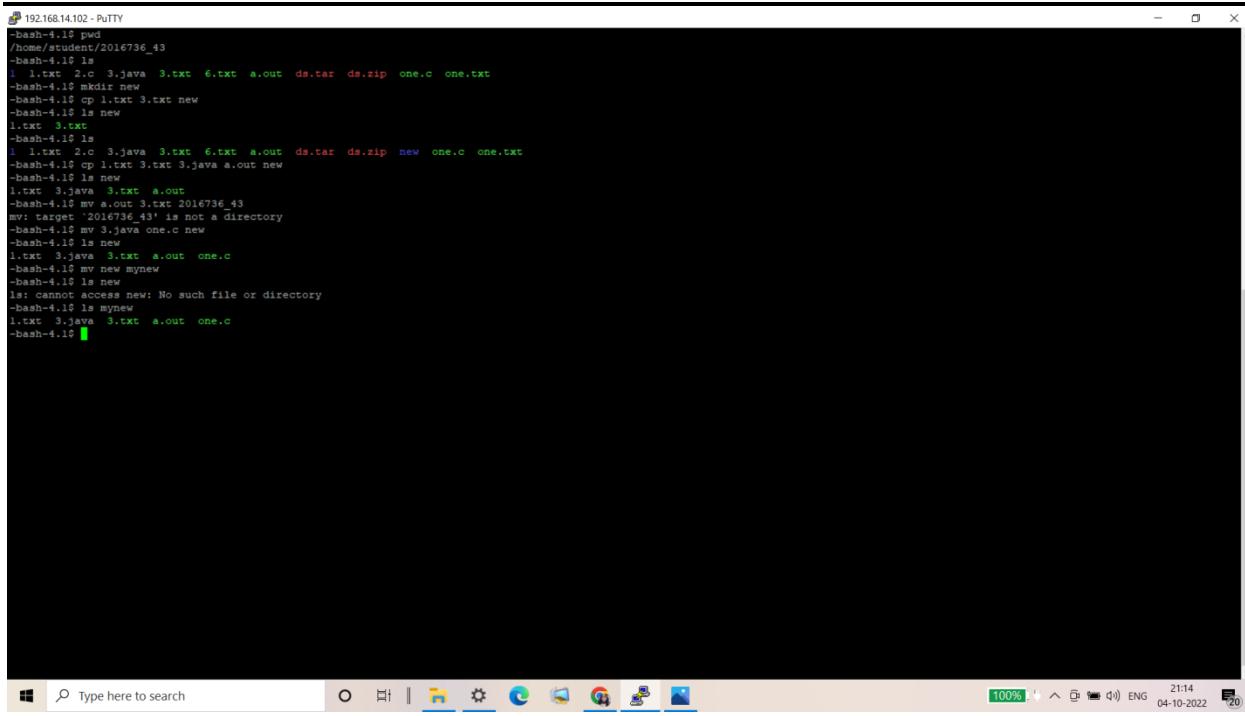
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$ mkdir new
-bash-4.1$ cp 1.txt 3.txt new
-bash-4.1$ ls new
1.txt 3.txt
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip new one.c one.txt
-bash-4.1$
```

```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$ mkdir new
-bash-4.1$ cp 1.txt 3.txt new
-bash-4.1$ ls new
1.txt 3.txt
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip new one.c one.txt
-bash-4.1$ cp 1.txt 3.txt 3.java a.out new
-bash-4.1$ ls new
1.txt 3.java 3.txt a.out
-bash-4.1$
```

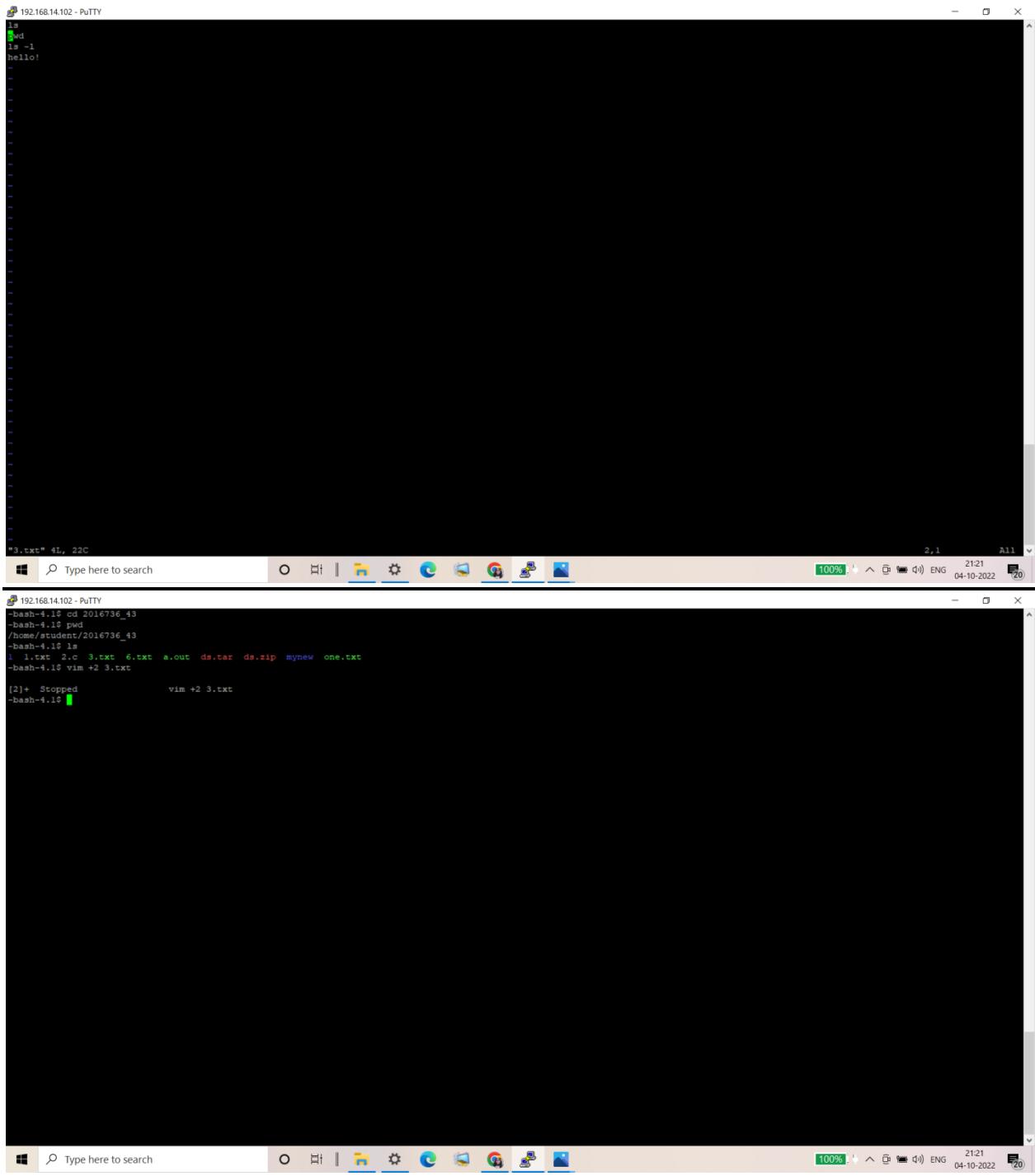
Reference 23->



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$ mkdir new
-bash-4.1$ cp 1.txt 3.txt new
-bash-4.1$ ls new
1.txt 3.txt
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip new one.c one.txt
-bash-4.1$ cp 1.txt 3.txt a.out new
-bash-4.1$ mv a.out 2016736_43
mv: target '2016736_43' is not a directory
-bash-4.1$ mv 3.java one.c new
-bash-4.1$ ls new
1.txt 3.java 3.txt a.out one.c
-bash-4.1$
```



```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip one.c one.txt
-bash-4.1$ mkdir new
-bash-4.1$ cp 1.txt 3.txt new
-bash-4.1$ ls new
1.txt 3.txt
-bash-4.1$ ls
1 1.txt 2.c 3.java 3.txt 6.txt a.out ds.tar ds.zip new one.c one.txt
-bash-4.1$ cp 1.txt 3.txt a.out new
-bash-4.1$ mv a.out 2016736_43
mv: target '2016736_43' is not a directory
-bash-4.1$ mv 3.java one.c new
-bash-4.1$ ls new
1.txt 3.java 3.txt a.out one.c
-bash-4.1$ mv new mynew
-bash-4.1$ ls new
ls: cannot access new: No such file or directory
-bash-4.1$ ls mynew
1.txt 3.java 3.txt a.out one.c
-bash-4.1$
```



The image consists of two vertically stacked screenshots of a Windows desktop environment. Both screenshots show two terminal windows running on the 192.168.14.102 host via Putty.

Top Screenshot:

- Terminal 1 (Putty window 1):

```
ls
lsed
ls -l
hello!
```
- Terminal 2 (Putty window 2):

```
"3.txt" 4L, 22C
```

Bottom Screenshot:

- Terminal 1 (Putty window 1):

```
-bash-4.1$ cd 2016736_43
-bash-4.1$ pwd
-/home/ctfstudent/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vim +2 3.txt
```
- Terminal 2 (Putty window 2):

```
[2]+ Stopped vim +2 3.txt
-bash-4.1$
```

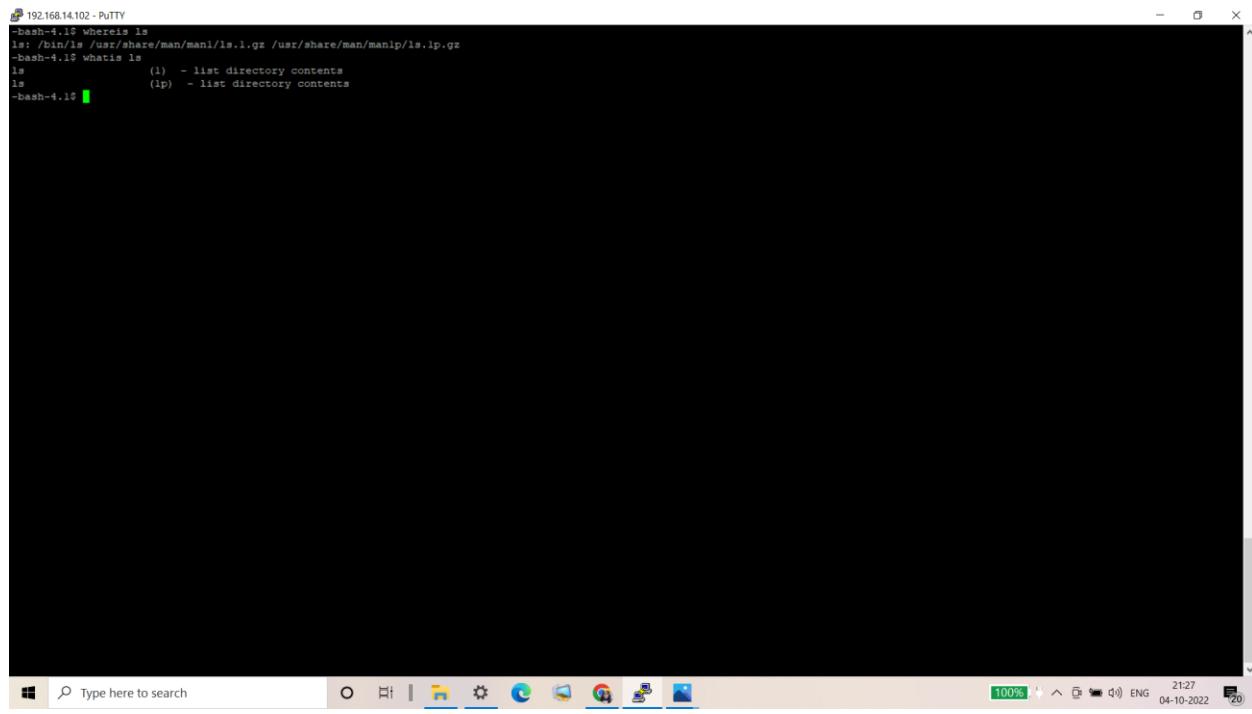
The desktop taskbar at the bottom of both screenshots shows standard icons for File Explorer, Task View, Settings, and other system utilities. The system tray indicates the date as 04-10-2022, the time as 21:21, and battery level at 20%.

Reference 24->

A screenshot of a Windows desktop environment. A PuTTY terminal window is open, showing the command 'whereis ls' being run in a bash shell. The output indicates that the 'ls' command is located in /bin/ls, its man page is in /usr/share/man/man1/ls.1.gz, and its info page is in /usr/share/man/manip/ls.1p.gz. The desktop taskbar at the bottom shows various pinned icons and the system tray with battery status, date, and time.

```
192.168.14.102 - PuTTY
-bash-4.1$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz /usr/share/man/manip/ls.1p.gz
-bash-4.1$
```

Reference 25->

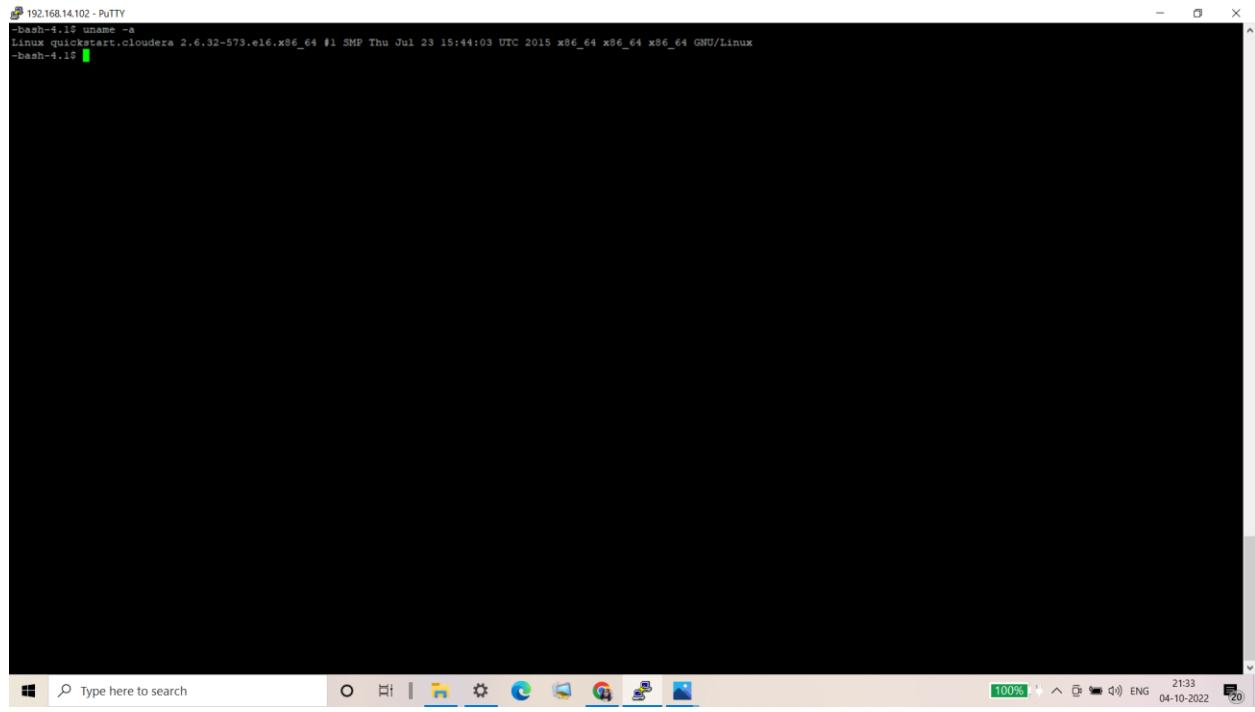


A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a shell session with the following commands and output:

```
bash-4.1$ whereis ls
ls: /bin/ls /usr/share/man/man1/ls.1.gz /usr/share/man/manp/ls.1p.gz
bash-4.1$ whatis ls
ls              (l)  - list directory contents
ls              (lp) - list directory contents
bash-4.1$
```

The desktop taskbar at the bottom shows the Start button, a search bar with "Type here to search", and several pinned icons for File Explorer, Task View, Settings, Edge, and others. The system tray on the right shows battery level (100%), network status, volume, and the date/time (04-10-2022, 21:27).

Reference 26->

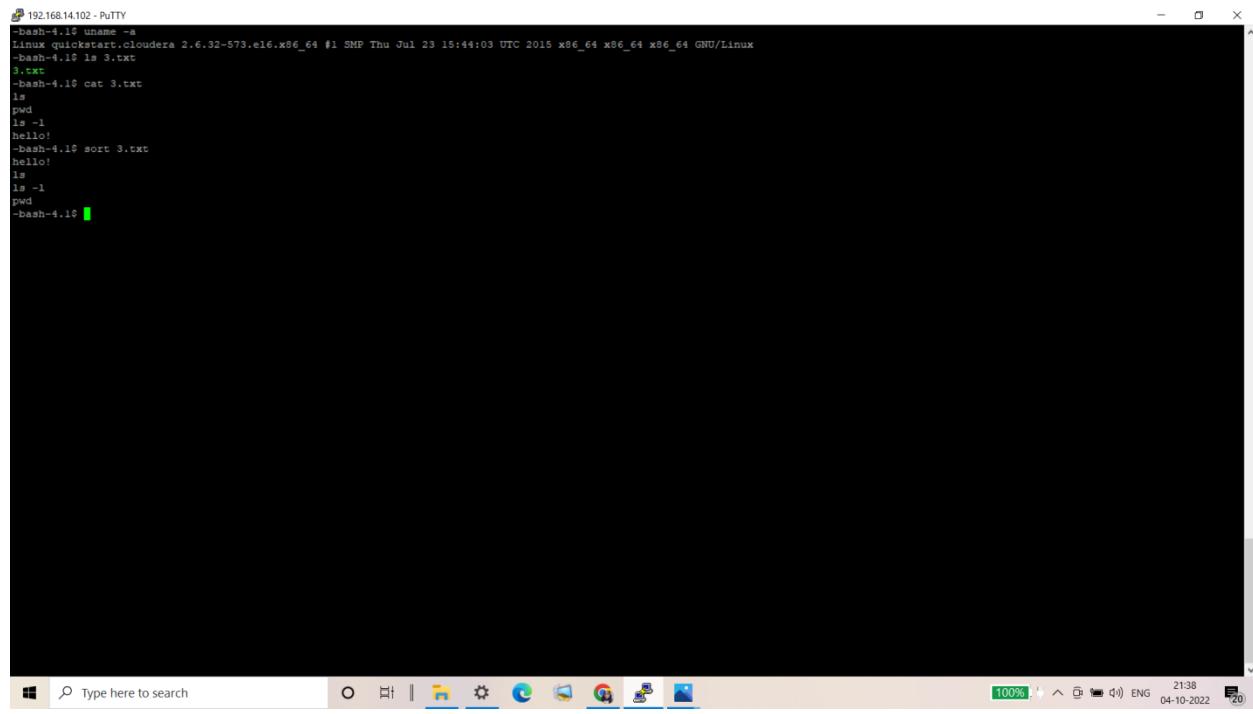


A screenshot of a Windows desktop environment. A PuTTY terminal window is open, showing a Linux command-line interface. The command 'uname -a' is entered and its output is displayed:

```
192.168.14.102 - PuTTY
-bash-4.1$ uname -a
Linux quickstart.cloudera 2.6.32-573.el6.x86_64 #1 SMP Thu Jul 23 15:44:03 UTC 2015 x86_64 x86_64 x86_64 GNU/Linux
-bash-4.1$
```

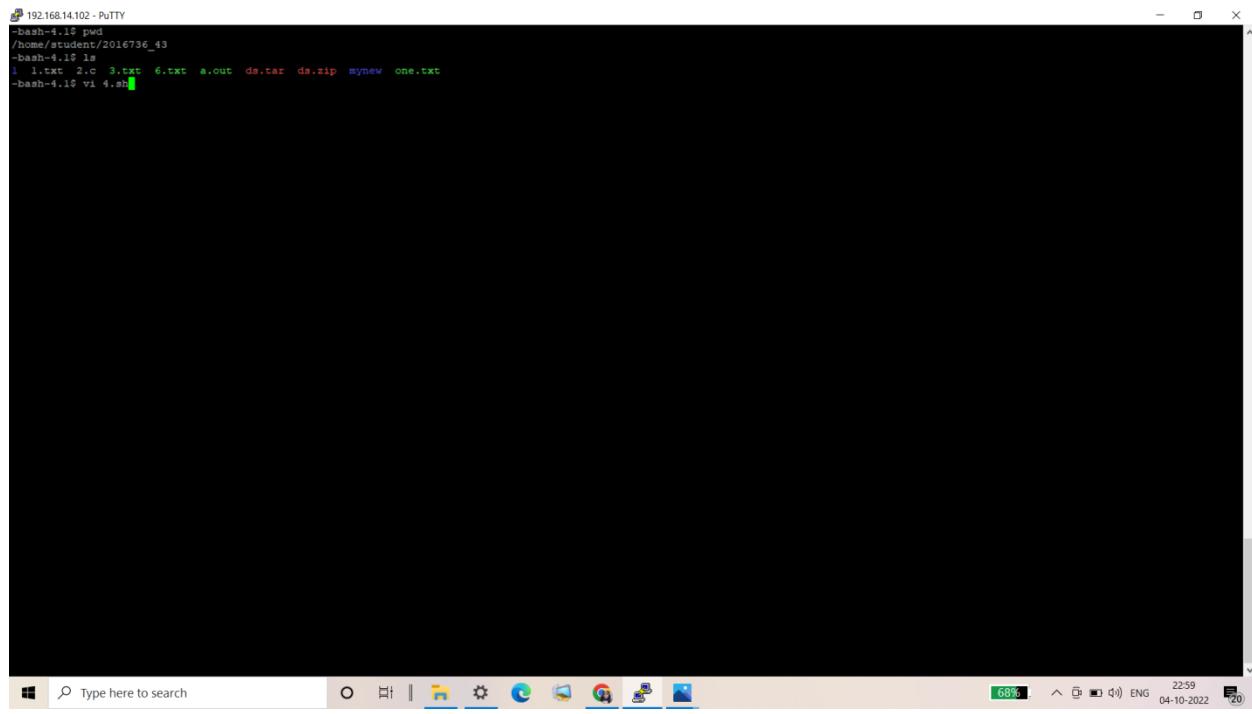
The desktop taskbar at the bottom shows various icons for applications like File Explorer, Control Panel, and the Start button. The system tray indicates the date as 04-10-2022.

Reference 27->



```
192.168.14.102 - PuTTY
-bash-4.1$ uname -a
Linux quickstart.cloudera 2.6.32-573.el6.x86_64 #1 SMP Thu Jul 23 15:44:03 UTC 2015 x86_64 x86_64 x86_64 GNU/Linux
3.txt
-bash-4.1$ cat 3.txt
ls
pwd
ls -l
hello!
-bash-4.1$ sort 3.txt
hello!
ls
pwd
-bash-4.1$
```

Reference 28->

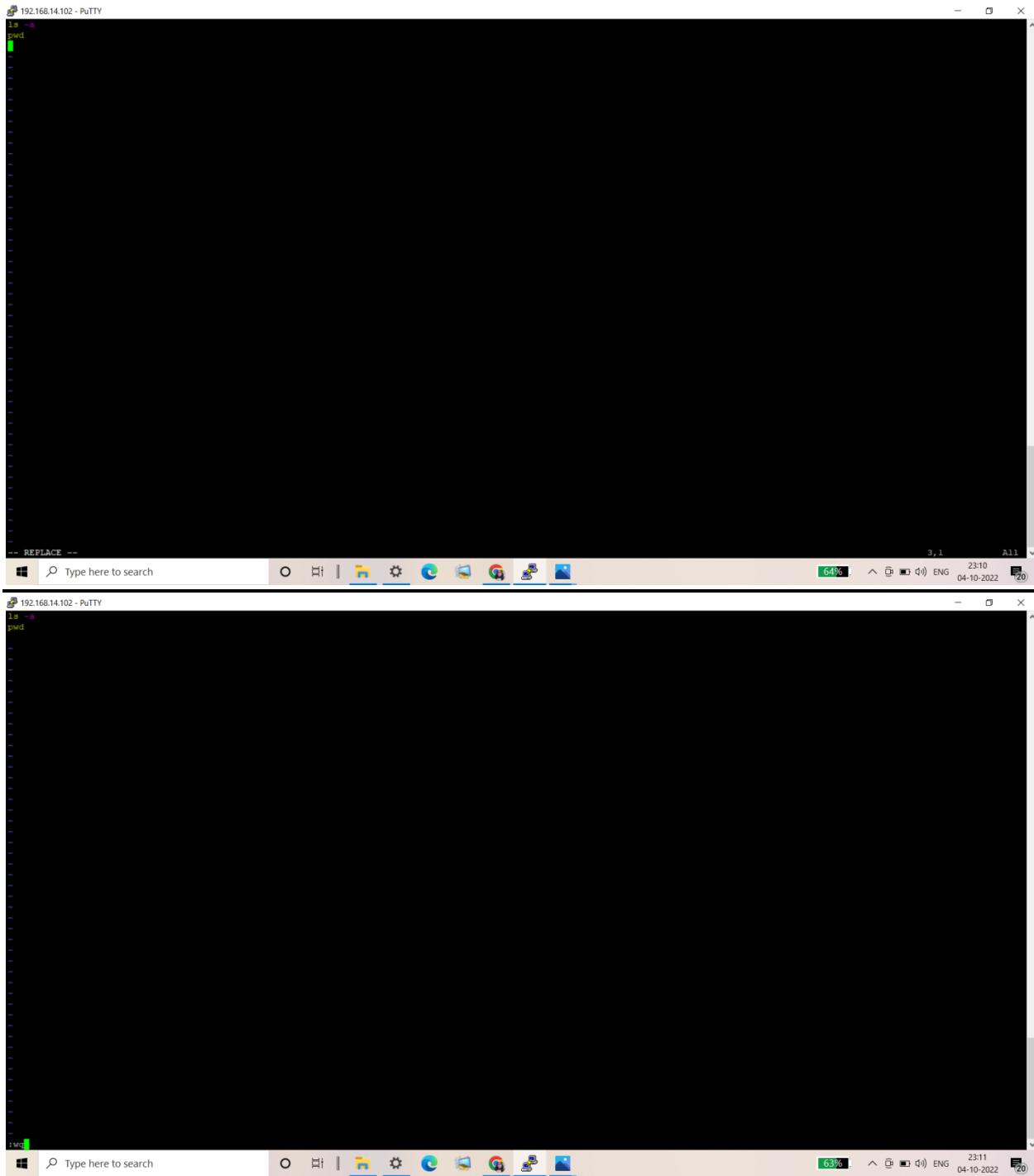


A screenshot of a Windows desktop environment. In the center is a terminal window titled "192.168.14.102 - PuTTY". The terminal displays a bash shell session:

```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
1 1.txt 2.c 3.txt 6.txt a.out ds.tar ds.zip mynew one.txt  
-bash-4.1$ vi 4.s
```

The desktop taskbar at the bottom shows several icons, including the Start button, a search bar, and pinned application icons for File Explorer, Edge, and others. The system tray on the right shows battery level (68%), network status, volume, and the date/time (04-10-2022).

Reference p1->

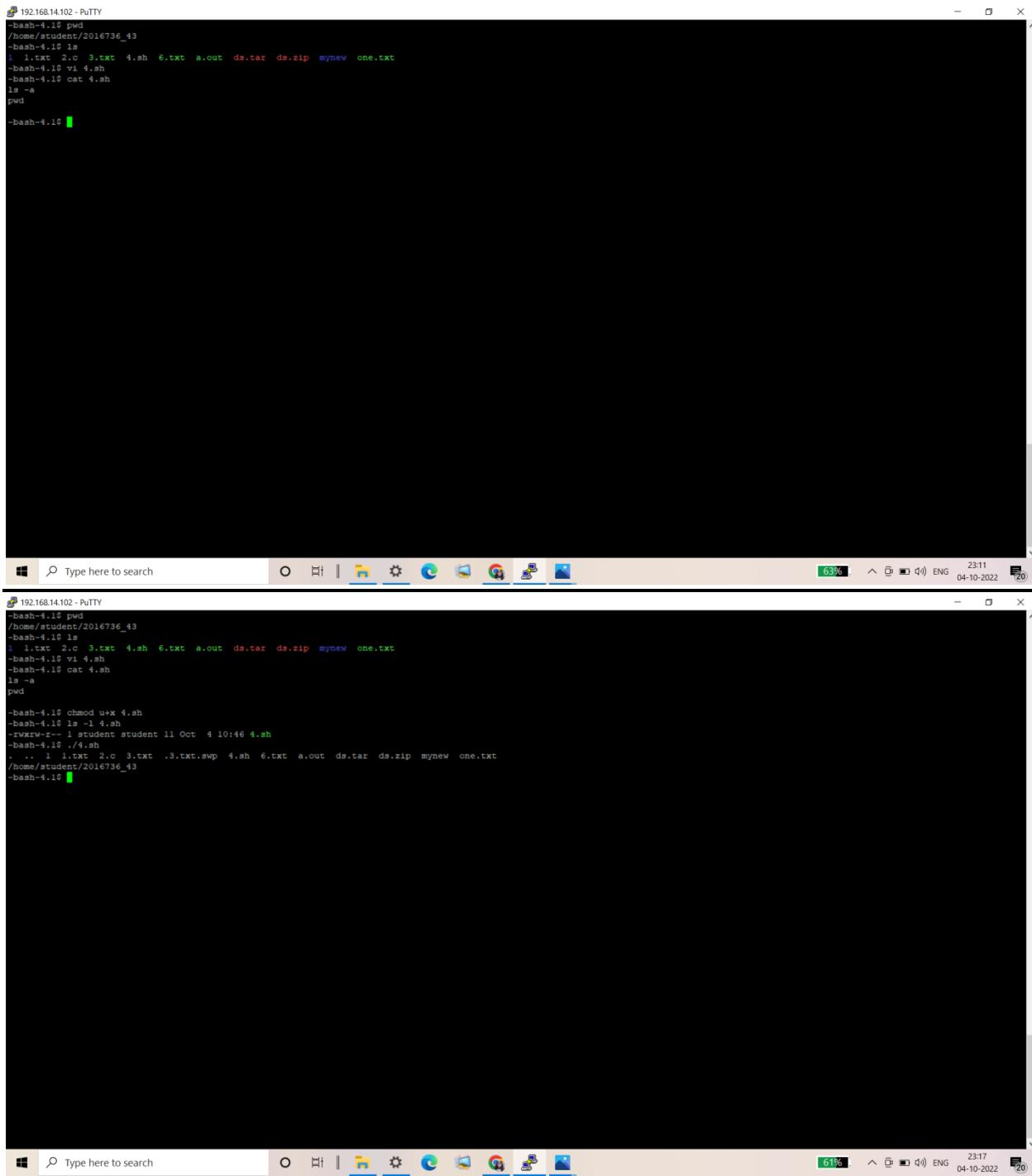


The image consists of three vertically stacked screenshots of a Windows desktop environment. Each screenshot shows a terminal window titled "192.168.14.102 - PuTTY". The terminal displays the command-line output of the "ls -a" and "pwd" commands. The desktop background is black, and the taskbar at the bottom of each screenshot shows various pinned icons, including File Explorer, Control Panel, Task View, Start, Settings, Edge, Google Chrome, File Explorer, and File Explorer. The system tray in the bottom right corner shows battery level (64% or 63%), signal strength, language (ENG), date (04-10-2022), and a small calendar icon.

```
ls -a  
pwd
```

```
ls -a  
pwd
```

```
ls -a  
pwd
```



The image shows a Windows desktop environment with two terminal windows open in Putty. Both windows display a Linux shell session on a remote host (IP 192.168.14.102). The user has run several commands to list files, edit them, and change permissions.

```
-bash-4.1$ pwd  
/home/student/2016736_43  
-bash-4.1$ ls  
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt  
-bash-4.1$ vi 4.sh  
-bash-4.1$ cat 4.sh  
ls -a  
pwd  
  
-bash-4.1$ chmod u+x 4.sh  
-bash-4.1$ ls -l 4.sh  
-rwxr--r-- 1 student student 11 Oct 4 10:46 4.sh  
-bash-4.1$ ./4.sh  
... 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt  
/home/student/2016736_43  
-bash-4.1$
```

The desktop taskbar at the bottom shows standard icons for File Explorer, Task View, Settings, and other applications. The system tray indicates battery level at 63%, network connection, and date/time (04-10-2022).

```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 4.sh
-bash-4.1$ cat 4.sh
ls
pwd

-bash-4.1$ chmod u+x 4.sh
-bash-4.1$ ls -l 4.sh
-rwxr--r-- 1 student student 11 Oct  4 10:46 4.sh
-bash-4.1$ ./4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$
```

Reference p2->

The image displays two PuTTY windows running on a Windows operating system. Both windows show a black terminal interface with white text.

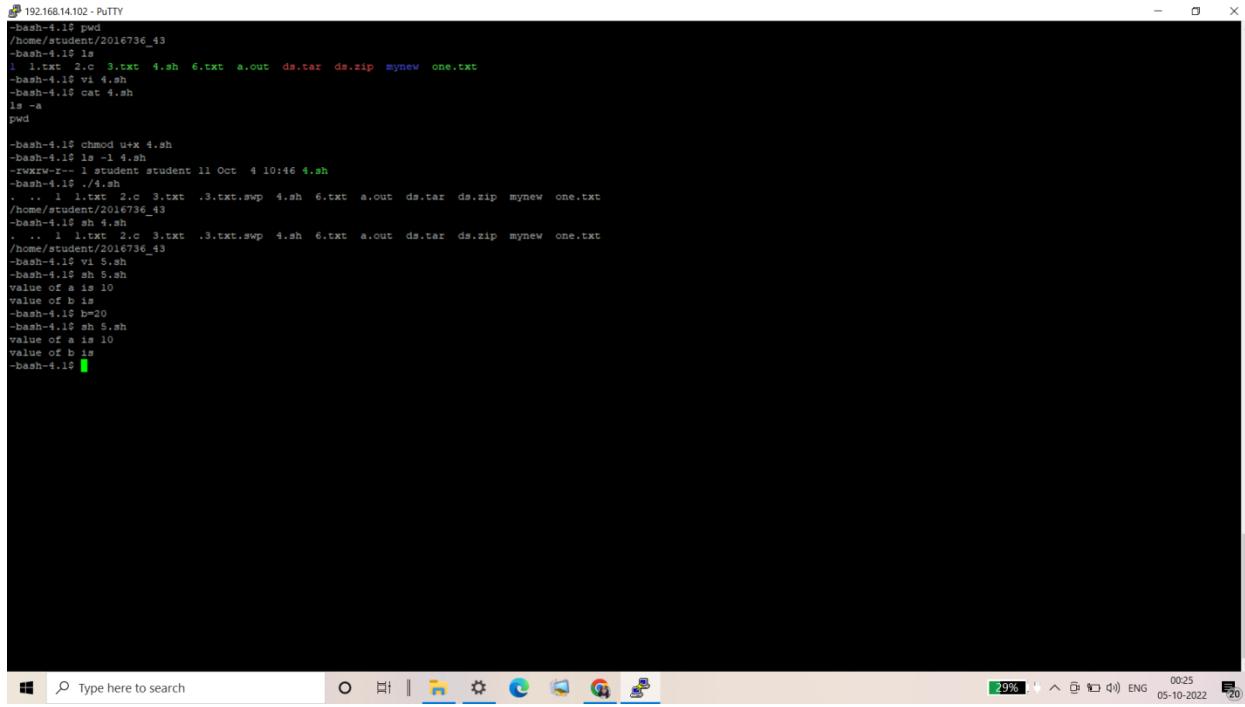
Top Window (Session 1):

```
192.168.14.102 - PuTTY
[1] $ echo "value of a is $a"
[2] $ echo "value of b is $b"
[3] $
```

Bottom Window (Session 2):

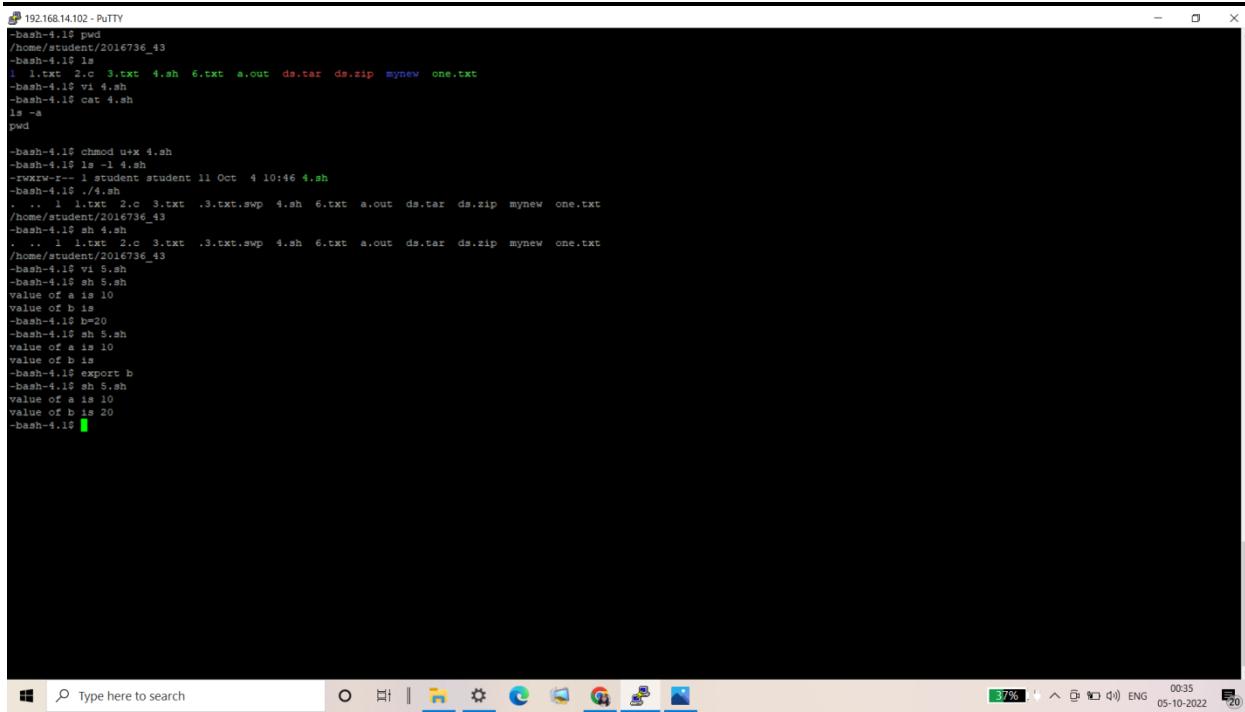
```
192.168.14.102 - PuTTY
[1] $ pwd
/home/student/2016736_43
[2] $ ls
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
[3] $ vi 4.sh
[4] $ cat 4.sh
ls -a
pwd

[5] $ chmod u+x 4.sh
[6] $ ls -l 4.sh
-rwxr-xr-- 1 student student 11 Oct 4 10:46 4.sh
[7] $ ./4.sh
... 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
[8] $ sh 4.sh
... 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
[9] $ /home/student/2016736_43
[10] $ vi 5.sh
[11] $ sh 5.sh
value of a is 10
value of b is
[12] $
```



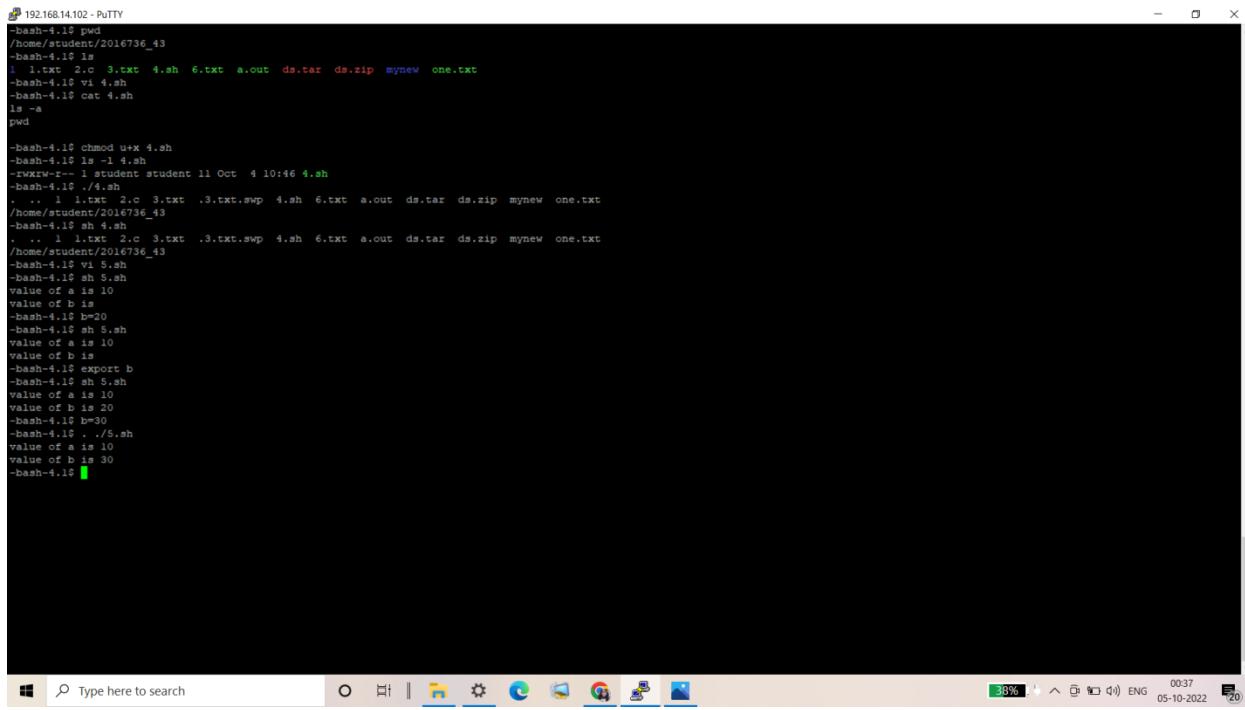
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 4.sh
-bash-4.1$ cat 4.sh
ls -a
pwd

-bash-4.1$ chmod u+x 4.sh
-bash-4.1$ ls -l 4.sh
-rwxr--r-- 1 student student 11 Oct 4 10:46 4.sh
-bash-4.1$ ./4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 5.sh
-bash-4.1$ sh 5.sh
value of a is 10
value of b is
-bash-4.1$ b=20
-bash-4.1$ sh 5.sh
value of a is 10
value of b is
-bash-4.1$
```



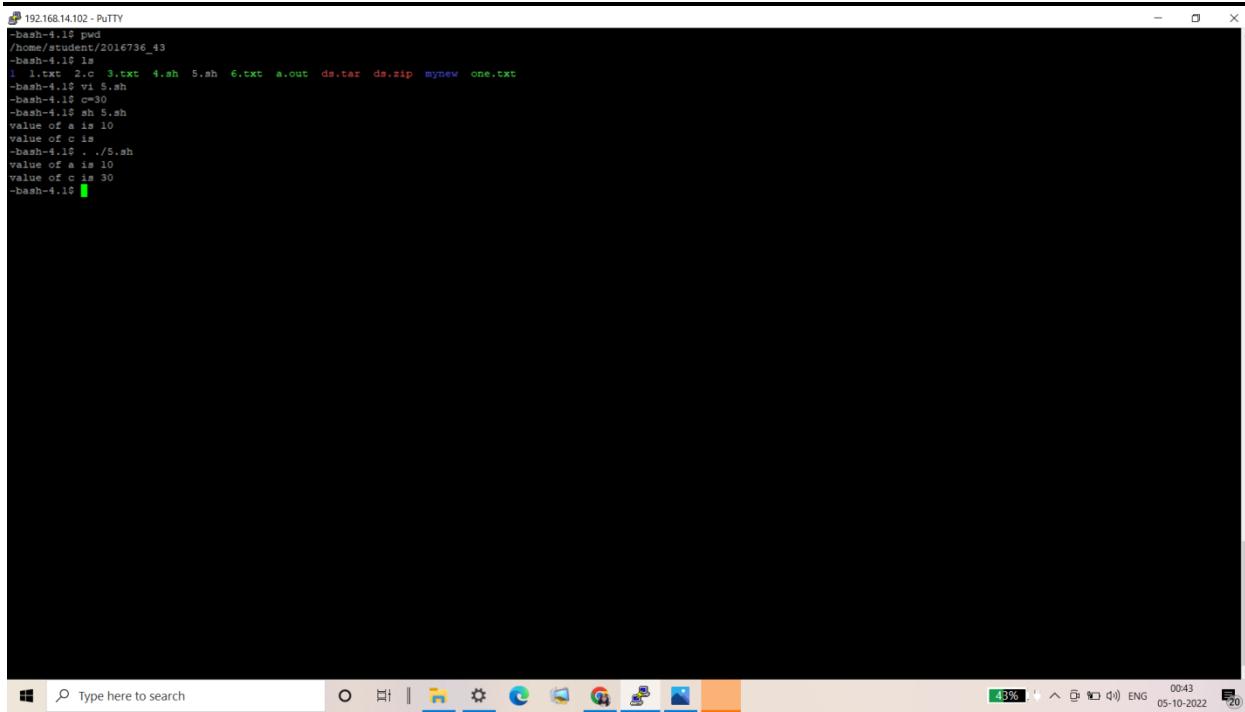
```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 4.sh
-bash-4.1$ cat 4.sh
ls -a
pwd

-bash-4.1$ chmod u+x 4.sh
-bash-4.1$ ls -l 4.sh
-rwxr--r-- 1 student student 11 Oct 4 10:46 4.sh
-bash-4.1$ ./4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 5.sh
-bash-4.1$ sh 5.sh
value of a is 10
value of b is
-bash-4.1$ b=20
-bash-4.1$ sh 5.sh
value of a is 10
value of b is
-bash-4.1$ export b
-bash-4.1$ sh 5.sh
value of a is 10
value of b is 20
-bash-4.1$
```



```
192.168.14.102 - Putty
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 4.sh
-bash-4.1$ cat 4.sh
ls
pwd

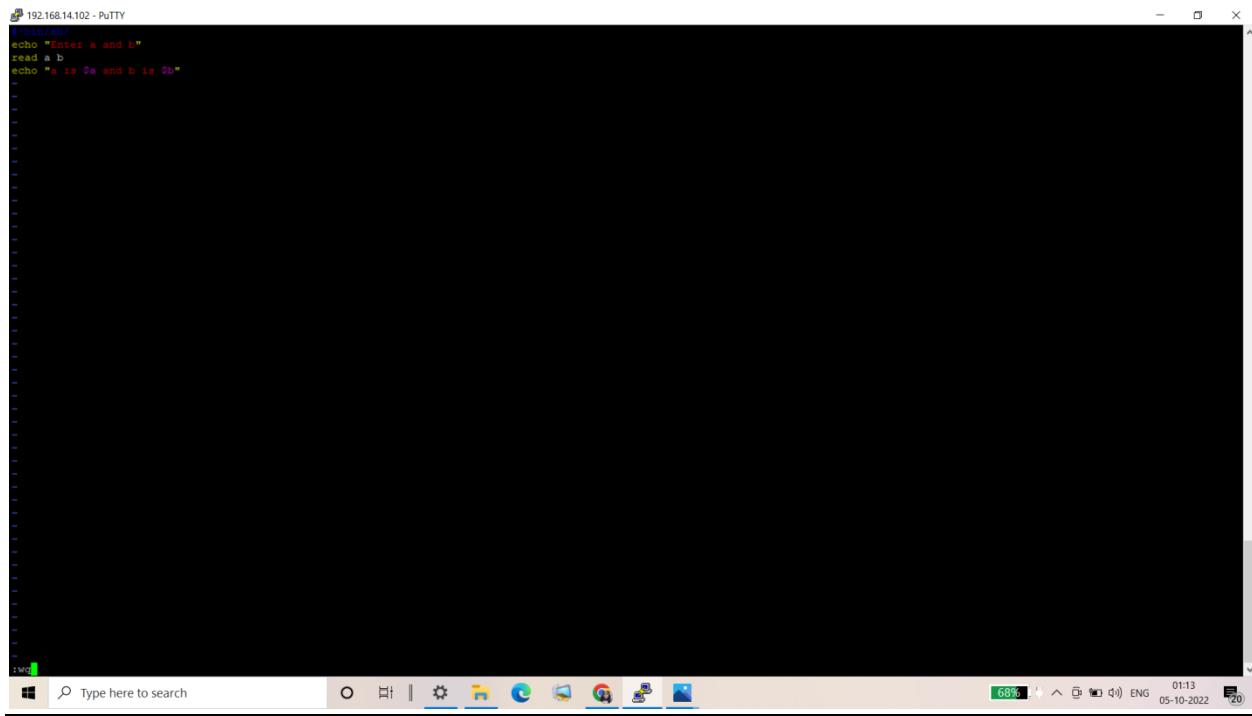
-bash-4.1$ chmod u+x 4.sh
-bash-4.1$ ls -l 4.sh
-rwxr--r-- 1 student student 11 Oct  4 10:46 4.sh
-bash-4.1$ ./4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 4.sh
. . . 1 1.txt 2.c 3.txt .3.txt.swp 4.sh 6.txt a.out ds.tar ds.zip mynew one.txt
/home/student/2016736_43
-bash-4.1$ sh 5.sh
-bash-4.1$ sh 5.sh
value of a is 10
value of b is 20
-bash-4.1$ b=20
-bash-4.1$ sh 5.sh
value of a is 10
value of b is
-bash-4.1$ export b
-bash-4.1$ sh 5.sh
value of a is 10
value of b is 20
-bash-4.1$ b=30
-bash-4.1$ ./5.sh
value of a is 10
value of b is 30
-bash-4.1$
```



```
192.168.14.102 - Putty
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 5.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 5.sh
-bash-4.1$ sh 5.sh
value of a is 10
value of c is
-bash-4.1$ . ./5.sh
value of a is 10
value of c is 30
-bash-4.1$
```

```
192.168.14.102 - PuTTY
/bach-4.10 pwd
/home/student/2016736_43
-bash-4.10 ls
l 1.txt 2.c 3.txt 4.sh 5.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.10 vi 8.sh
-bash-4.10
-bash-4.10 sh 5.sh
value of a is 10
value of c is
-bash-4.10 ./.5.sh
value of a is 10
value of c is 30
-bash-4.10 source 5.sh
value of a is 10
value of c is 30
-bash-4.10
```

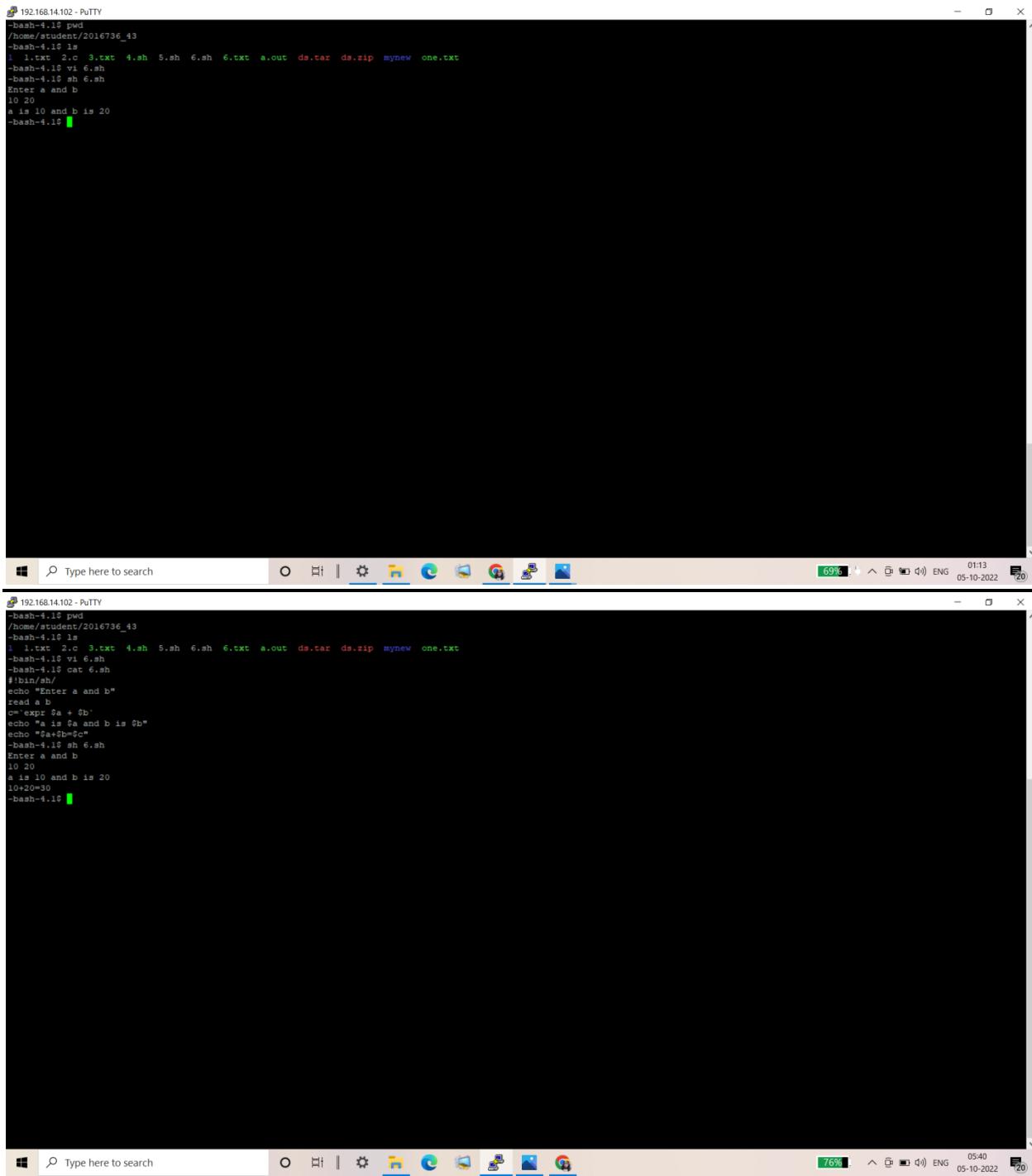
Reference p3->



A screenshot of a Windows desktop environment. In the center is a terminal window titled "192.168.14.102 - PuTTY". The window contains the following text:

```
#!/bin/sh
echo "Enter a and b"
read a b
echo "a is $a and b is $b"
~
```

The terminal window has a dark background and light-colored text. The desktop taskbar at the bottom shows various icons for applications like File Explorer, Edge, and Google Chrome. The system tray on the right displays battery status (68%), network connectivity, and the date and time (05-10-2022, 01:13). A search bar is also visible on the taskbar.

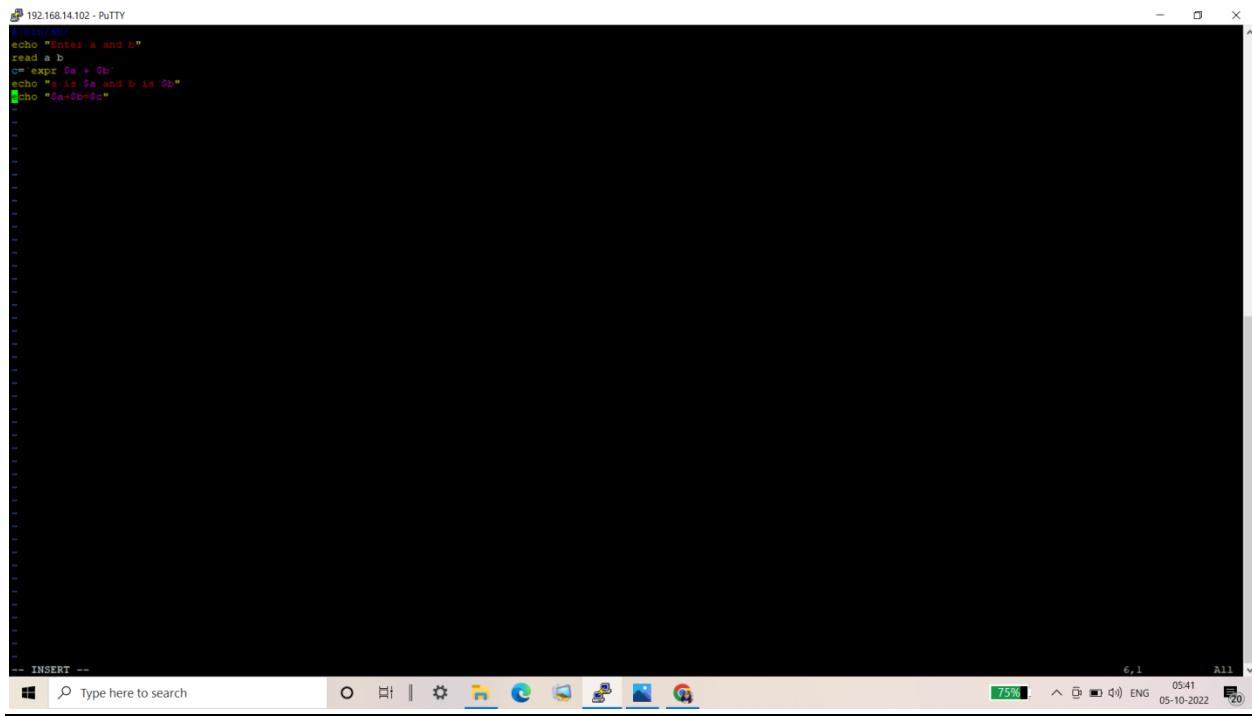


The image shows a Windows desktop environment with two terminal windows running on Putty. Both windows display a bash shell session on a Linux system (IP 192.168.14.102). The user has navigated to the directory /home/student/2016736_43 and listed files. They then run a script named 6.sh which prompts for 'a' and 'b', calculates their sum, and prints the result. The desktop taskbar at the bottom shows standard icons like File Explorer, Edge, and Google Chrome.

```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 6.sh
-bash-4.1$ sh 6.sh
Enter a and b
10 20
a is 10 and b is 20
-bash-4.1$ [REDACTED]

192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a
c=$(expr $a + $b)
echo "a is $a and b is $b"
echo "a+b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
10 20
a is 10 and b is 20
10+20=30
-bash-4.1$ [REDACTED]
```

Reference p4->

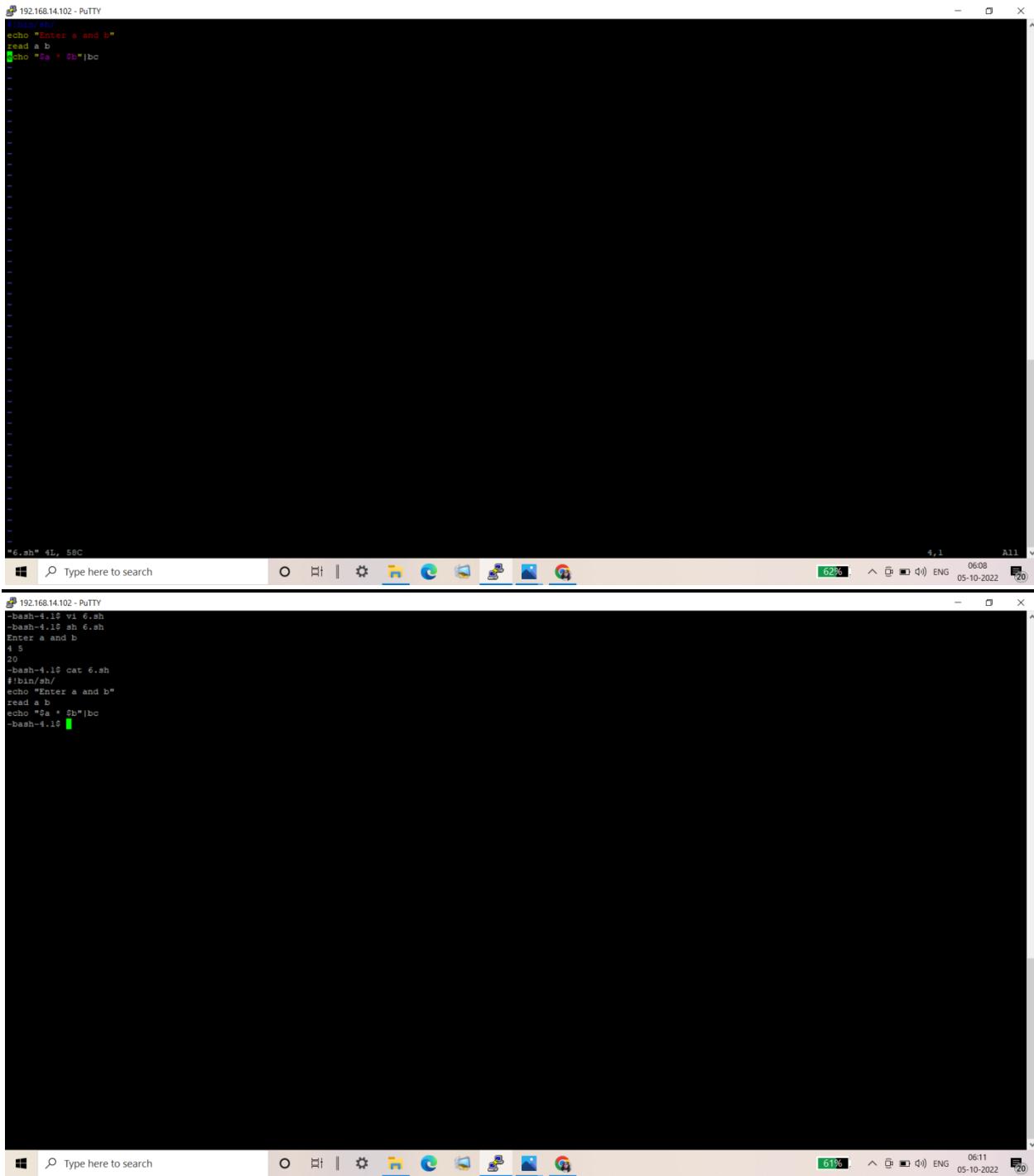


A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a shell script that adds two numbers and prints the result. The script is as follows:

```
#!/bin/sh
echo "Enter a and b"
read a
c=$(expr $a + $b)
echo "a is $a and b is $b"
echo "$a+$b=$c"
```

The terminal window has a scroll bar on the right. Below the terminal is the Windows taskbar. On the taskbar, from left to right, there is a search bar with the placeholder "Type here to search", a Start button, pinned icons for File Explorer, Edge browser, File History, Task View, and Google Chrome, and system status icons for battery level (75%), signal strength, and date/time (05-10-2022). The status bar at the bottom of the screen shows "6,1 All" on the left, "75%" in the middle, and "05:41 ENG 05-10-2022" on the right.

Reference p5->



The image consists of two vertically stacked screenshots of a Windows desktop environment. Both screenshots show a terminal window titled "192.168.14.102 - PuTTY".

Screenshot 1: The terminal window displays the following script:

```
#!/bin/sh
echo "Enter a and b"
read a b
echo "$a + $b" | bc
```

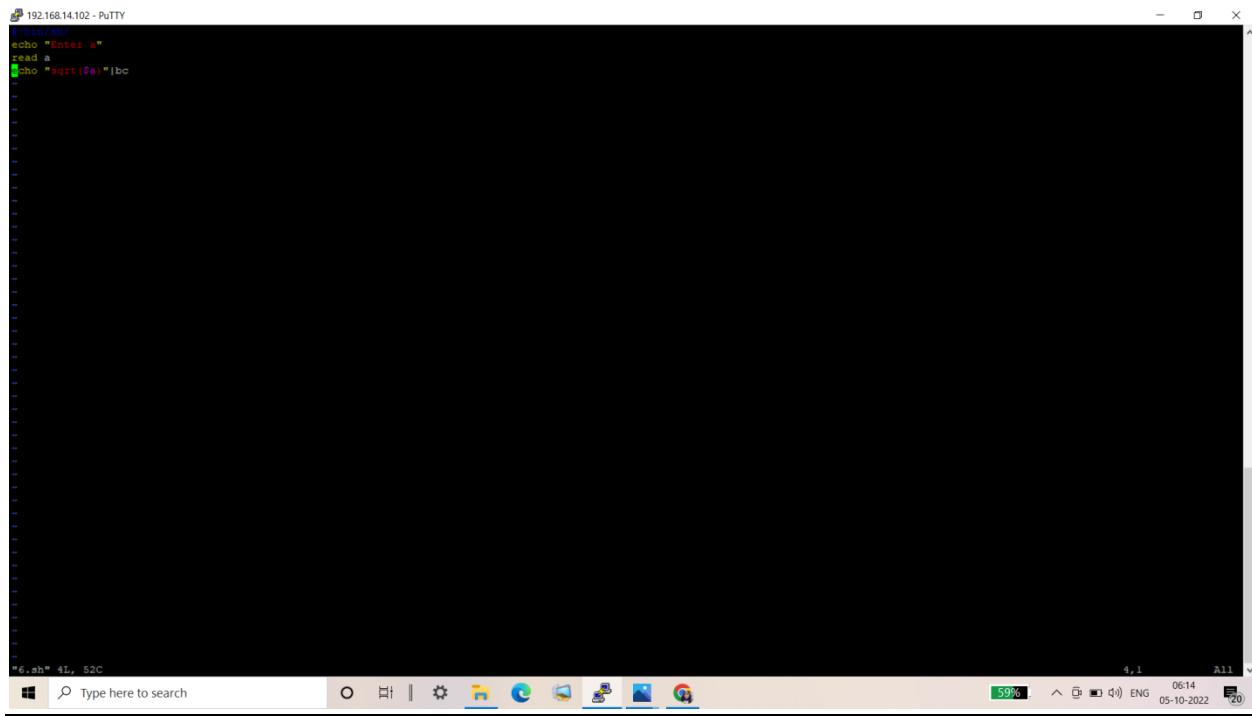
The terminal prompt shows several carriage returns and newlines, indicating the user has pressed Enter multiple times.

Screenshot 2: The terminal window displays the following command and its output:

```
-bash-4.1$ vi 6.sh
-bash-4.1$ sh 6.sh
Enter a and b
4 5
20
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a b
echo "$a + $b" | bc
-bash-4.1$
```

The desktop interface includes a taskbar at the bottom with icons for File Explorer, Task View, Settings, and other applications. The system tray shows battery level (62%), network status, language (ENG), date (05-10-2022), and a clock.

Reference p6->



A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a shell script:

```
*!/bin/sh
echo "Enter a"
read a
echo "sqrt($a)"|bc
```

The terminal window has a dark background and light-colored text. At the bottom of the window, it shows "4,1" and "All". The desktop taskbar at the bottom has several icons, including Start, Task View, Settings, File Explorer, Edge, and Google Chrome. A search bar says "Type here to search". On the far right of the taskbar, there are system status icons: battery level (59%), signal strength, volume, and a date/time stamp "06:14 05-10-2022".

The image shows a Windows desktop with two PuTTY windows open. Both windows have the title "192.168.14.102 - PuTTY". The top window shows a command-line session where the user runs "vi 6.sh", "sh 6.sh", and enters values 5 and 2. The bottom window shows a more detailed session where the user runs "vi 6.sh", "cat 6.sh", and "bc" to calculate the square root of 5. The desktop taskbar at the bottom includes icons for File Explorer, Edge, and other applications.

```
-bash-4.1$ vi 6.sh
-bash-4.1$ sh 6.sh
Enter a
5
2
-bash-4.1$
```



```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a"
read a
echo "scale=5;sqrt($a)"|bc
-bash-4.1$ sh 6.sh
Enter a
4
2.00000
-bash-4.1$ sh 6.sh
Enter a
7
2.64575
-bash-4.1$
```

Reference p7->

The image shows two side-by-side screenshots of a Windows desktop environment. Both screens feature a taskbar at the bottom with icons for File Explorer, Task View, Settings, and other standard Windows applications. The system tray on the right of each taskbar shows battery level (57% and 55%), signal strength, and the date and time (06:19 and 06:23, 05-10-2022).

The left screen displays a terminal window titled "192.168.14.102 - PuTTY". The command entered is:

```
#!/bin/sh
echo "Enter a"
read a
c=echo "scale=5;sqrt($a)"|bc
```

The right screen also displays a terminal window titled "192.168.14.102 - PuTTY". The command entered is:

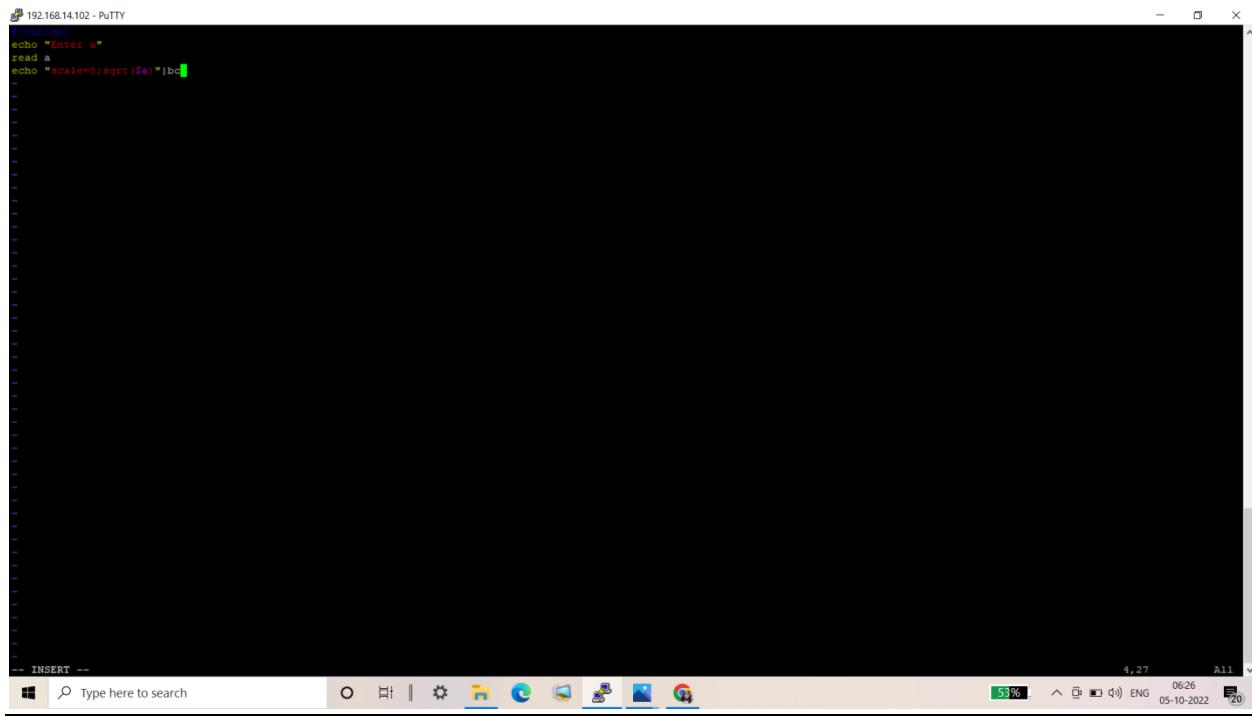
```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a"
read a
c=echo "scale=5;sqrt($a)"|bc
echo "Value of square root of $a is $c"
-bash-4.1$ sh 6.sh
Enter a
7
Value of square root of 7 is 2.64575
-bash-4.1$
```

A screenshot of a Windows desktop environment. At the top, there is a black terminal window titled "192.168.14.102 - PuTTY". The window contains the following text:

```
#!/bin/sh
echo "Enter a"
read a
c= echo "scale=5;sqrt($a)"|bc
echo "Value of square root of $a is $c"
```

The terminal window has a scroll bar on the right side. Below the terminal window is a white taskbar. On the taskbar, there is a search bar with the placeholder text "Type here to search". To the right of the search bar are several icons: Start button, Task View button, Settings gear icon, File Explorer icon, Taskbar settings icon, and a folder icon. Further to the right are system status icons: battery level (55%), signal strength, volume, language (ENG), date (05-10-2022), and time (06:24). The taskbar also shows the current resolution as "1040x576".

Reference p8->

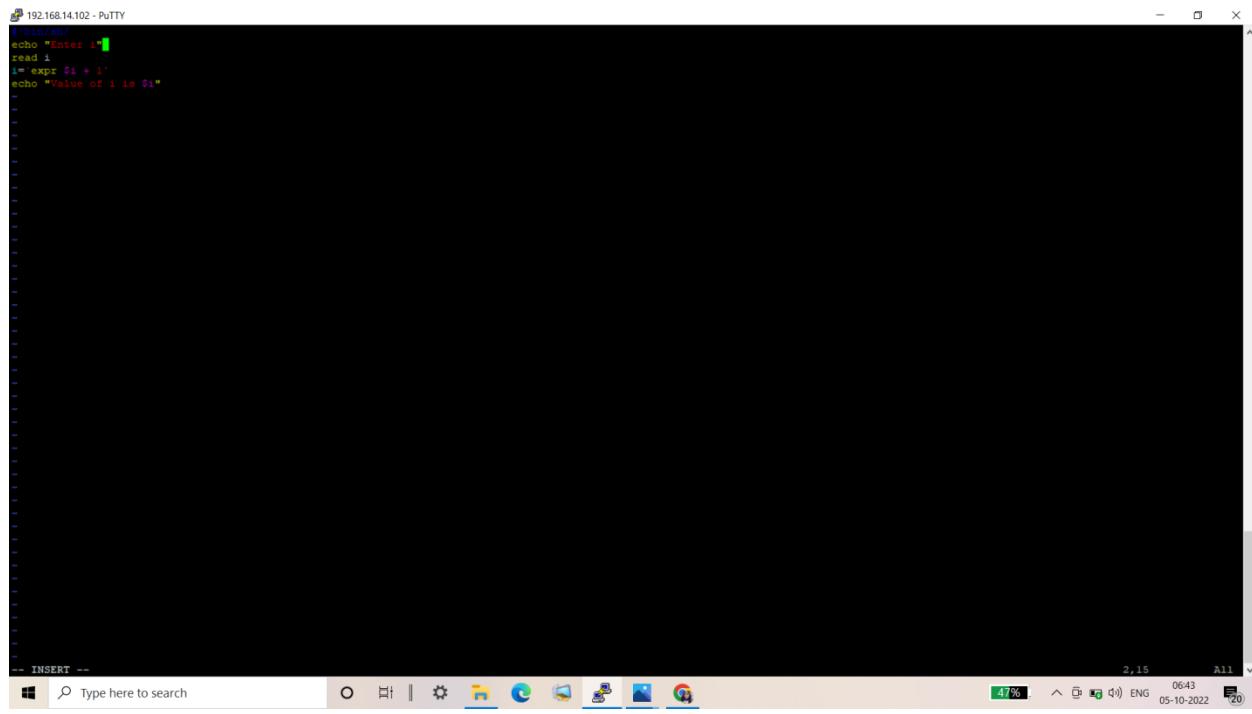


The screenshot shows a Windows desktop environment. A PuTTY terminal window is open, titled "192.168.14.102 - PuTTY". The terminal displays a shell script being run:

```
#!/bin/sh
echo "Enter a"
read a
echo "scale=5;sqrt($a)" | bc
```

The command "bc" is currently being executed, indicated by a green cursor at the end of the line. The desktop taskbar at the bottom shows various pinned icons and the system tray with battery level (53%), network status, and date/time (05-10-2022).

Reference p9->



A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a shell script:

```
#!/bin/sh
echo "Enter i"
read i
i=expr $i + 1
echo "Value of i is $i"
```

The script prompts for an input value, adds one to it, and then prints the result. Below the terminal window is the Windows taskbar. On the left of the taskbar is a search bar with the placeholder "Type here to search". To its right are several pinned icons: File Explorer, Task View, Settings, Microsoft Edge, File History, Task Scheduler, and Google Chrome. On the far right of the taskbar are system status icons for battery level (47%), signal strength, and network connection, along with the date and time (05-10-2022 06:43). The desktop background is a solid light color.

The image shows two PuTTY windows running on a Windows 10 desktop. Both windows are titled "192.168.14.102 - PuTTY".

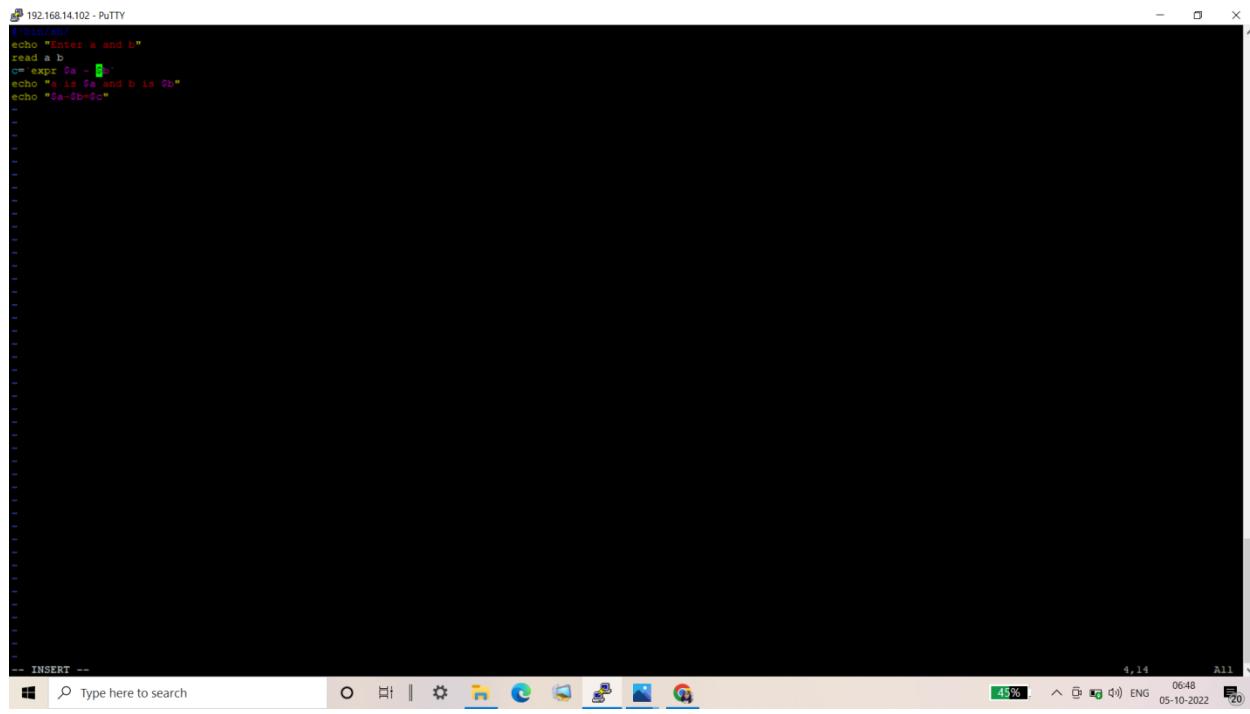
The top window displays the following script:

```
#!/bin/sh
echo "Enter a and b"
read a b
c=$(expr $a + $b)
echo "a is $a and b is $b"
echo "a+$b=$c"
```

The bottom window displays the following session output:

```
-bash-4.1$ ls vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a b
c=$(expr $a + $b)
echo "a is $a and b is $b"
echo "a+$b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
4 5
a is 4 and b is 5
4+5=9
-bash-4.1$
```

Reference p10->



The screenshot shows a Windows desktop environment. A PuTTY terminal window is open, titled "192.168.14.102 - PuTTY". The terminal displays a shell script that calculates the difference between two numbers. The script reads two integers from the user, performs subtraction using the expr command, and then prints the result. The terminal window has a dark background and white text. The desktop taskbar at the bottom shows various pinned icons and the system tray with battery level (45%), network status, and date/time (06:48, 05-10-2022).

```
#!/bin/sh
echo "Enter a and b"
read a
c=expr $a - $b
echo "a is $a and b is $b"
echo "$a-$b=$c"
```

The image displays three separate PuTTY sessions running on a Windows 10 desktop. Each session shows a terminal window with a black background and white text. The top two windows are identical, while the bottom one shows slightly different output due to a bug in the script.

Top Window (Correct Output):

```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a b
c=$((a - $b))
echo "a is $a and b is $b"
echo "$a-$b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
2 3
a is 2 and b is 3
2-3=-1
-bash-4.1$
```

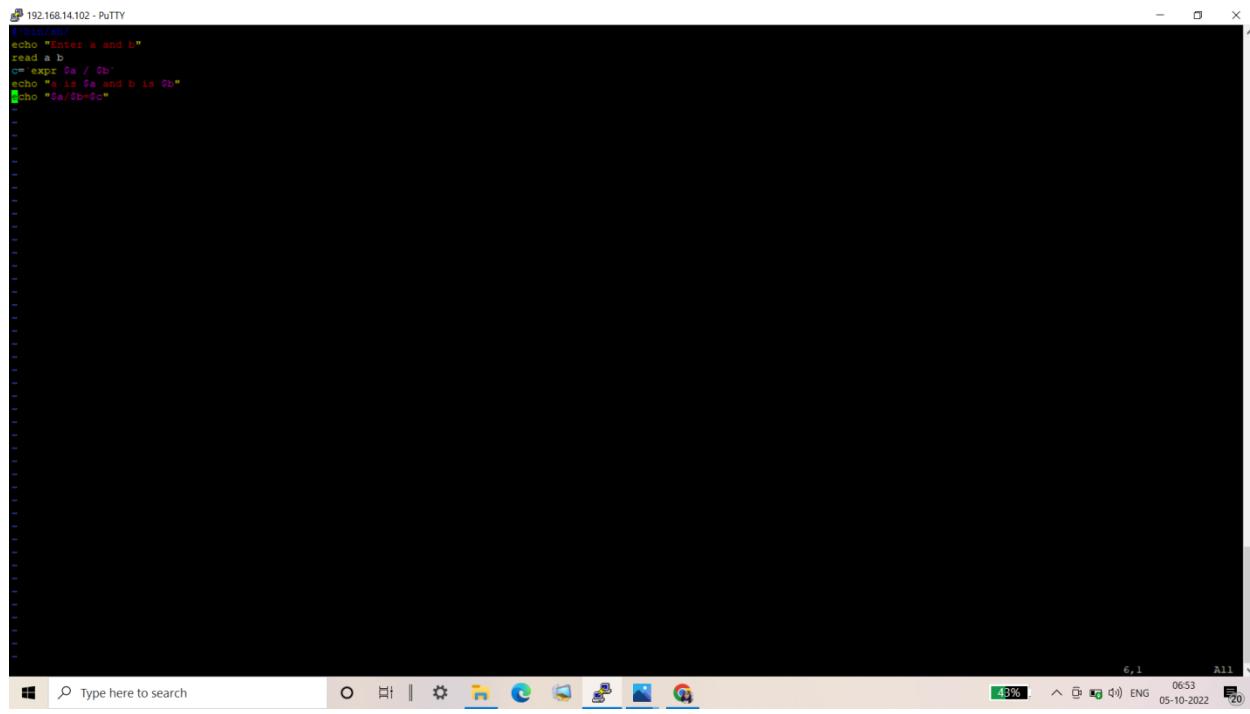
Middle Window (Correct Output):

```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a b
c=$((a / $b))
echo "a is $a and b is $b"
echo "$a/$b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
2 4
a is 2 and b is 4
2/4=0
-bash-4.1$ sh 6.sh
Enter a and b
3 9
a is 9 and b is 3
9/3=3
-bash-4.1$
```

Bottom Window (Incorrect Output Due to Bug):

```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a b
c=$((a / $b))
echo "a is $a and b is $b"
echo "$a/$b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
2 4
a is 2 and b is 4
2/4=0
-bash-4.1$ sh 6.sh
Enter a and b
3 9
a is 9 and b is 3
9/3=3
-bash-4.1$
```

Reference p11->



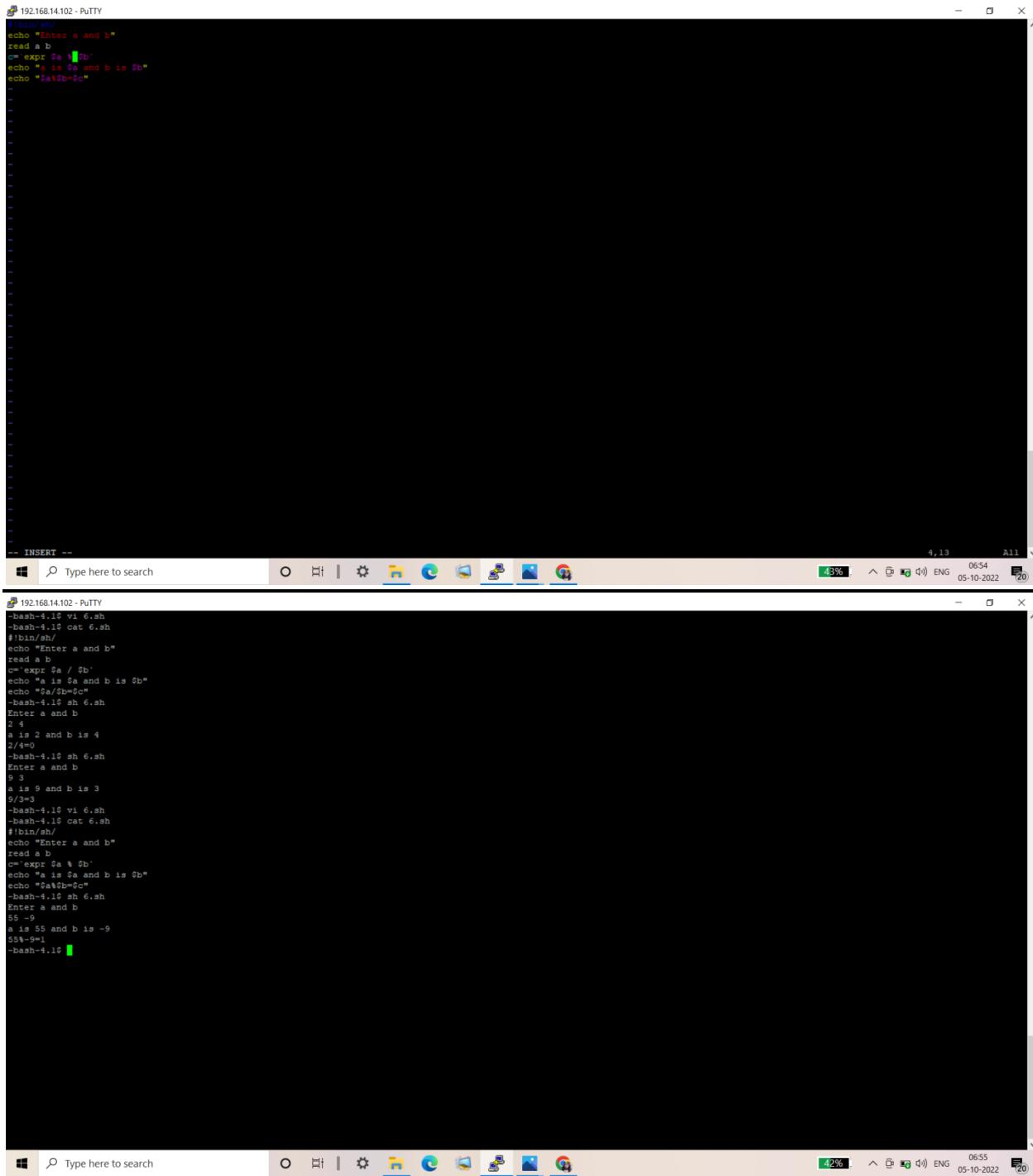
A screenshot of a Windows desktop environment. In the center is a PuTTY terminal window titled "192.168.14.102 - PuTTY". The terminal displays a shell script that prompts for two numbers, performs division, and prints the result. The script is as follows:

```
#!/bin/sh
echo "Enter a and b"
read a
c=$(expr $a / $b)
echo "a is $a and b is $b"
echo "$a/$b=$c"
```

The terminal window has a dark background with white text. The bottom right corner of the window shows the file number "6,1" and the word "All".

The Windows taskbar at the bottom of the screen includes the Start button, a search bar with the placeholder "Type here to search", and several pinned icons for applications like File Explorer, Edge, and Google Chrome. On the far right of the taskbar, there are system status icons for battery level (43%), signal strength, and network connection, along with the date and time "05-10-2022 06:53".

Reference p12->

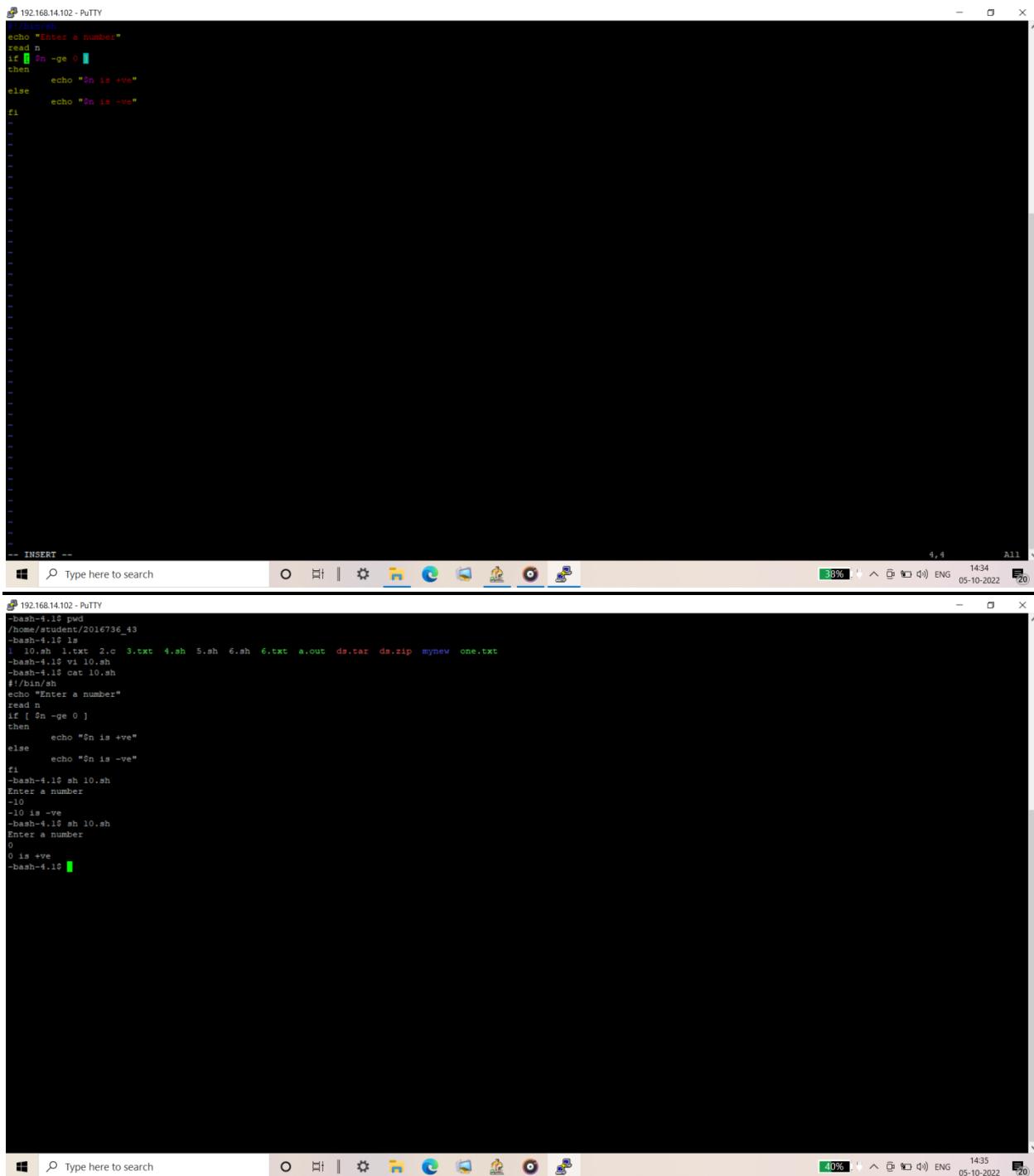


```
#!/bin/sh
echo "Enter a and b"
read a
c=$((a + $b))
echo "a is $a and b is $b"
echo "a+b=$c"
-- INSERT --

```

```
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a
c=$((a + $b))
echo "a is $a and b is $b"
echo "a+b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
2 4
a is 2 and b is 4
2+4=6
-bash-4.1$ sh 6.sh
Enter a and b
9 3
a is 9 and b is 3
9+3=12
-bash-4.1$ vi 6.sh
-bash-4.1$ cat 6.sh
#!/bin/sh
echo "Enter a and b"
read a
c=$((a + $b))
echo "a is $a and b is $b"
echo "a+b=$c"
-bash-4.1$ sh 6.sh
Enter a and b
55 -9
a is 55 and b is -9
55+-9=46
-bash-4.1$
```

Reference p13->



The image consists of two vertically stacked screenshots of a Windows desktop environment. Both screenshots show a terminal window titled "192.168.14.102 - PuTTY".

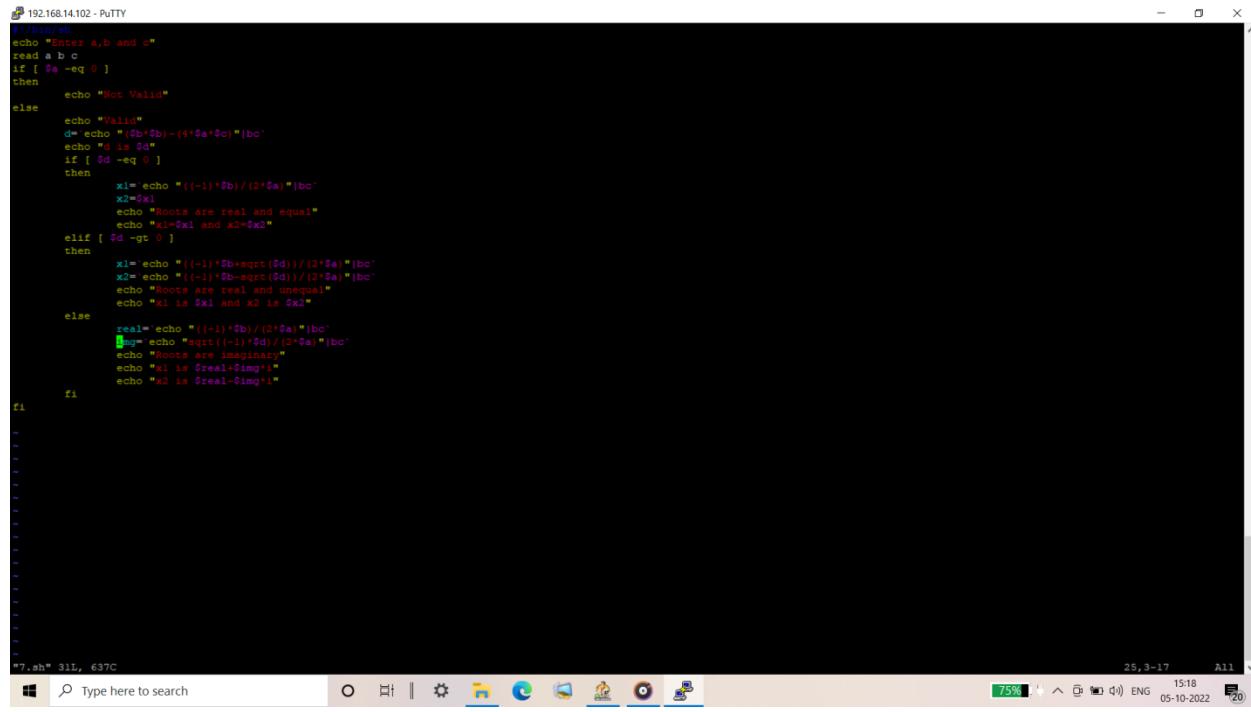
The top screenshot shows a blank terminal window with the following text at the bottom:

```
-- INSERT --
```

The bottom screenshot shows a terminal window with the following session history:

```
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 10.sh 11.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt a.out ds.tar ds.zip mynew one.txt
-bash-4.1$ vi 10.sh
-bash-4.1$ cat 10.sh
#!/bin/sh
echo "Enter a number"
read n
if [ $n -ge 0 ]
then
    echo "$n is +ve"
else
    echo "$n is -ve"
fi
-bash-4.1$ sh 10.sh
Enter a number
1
1 is -ve
-bash-4.1$ sh 10.sh
Enter a number
0
0 is +ve
-bash-4.1$
```

Reference p14->



```
#!/bin/sh
echo "Enter a,b and c"
read a b c
if [ $a -eq 0 ]
then
    echo "Not Valid"
else
    echo "Valid"
    d=$((b*b)-(4*a*c))`bc`
    echo "$d is $d"
    if [ $d -eq 0 ]
    then
        x1=$(echo "((-1)*$b)/(2*$a)"`bc`)
        x2=$x1
        echo "Roots are real and equal"
        echo "x1=$x1 and x2=$x2"
    elif [ $d -gt 0 ]
    then
        x1=$(echo "((-1)*$b+$sqrt($d))/(2*$a)"`bc`)
        x2=$(echo "((-1)*$b-$sqrt($d))/(2*$a)"`bc`)
        echo "Roots are real and unequal"
        echo "x1 is $x1 and x2 is $x2"
    else
        real=$(echo "((-1)*$b)/(2*$a)"`bc`)
        img=$(echo "sqrt((-1)*$d)/(2*$a)"`bc`)
        echo "Roots are imaginary"
        echo "x1 is $real+$img*i"
        echo "x2 is $real-$img*i"
    fi
fi
```

```

192.168.14.102 - PuTTY
-bash-4.1$ vi 7.sh
-bash-4.1$ cat 7.sh
#!/bin/sh
echo "Enter a,b and c"
read a b c
if [ $a -eq 0 ]
then
    echo "Not Valid"
else
    echo "Valid"
    d=$(echo "$b*$b - (4*a*c)")|bc
    echo "d is $d"
    if [ $d -eq 0 ]
    then
        x1=$(echo "((-1)*$b)/(2*$a)"|bc)
        x2=$x1
        echo "Roots are real and equal"
        echo "x1=$x1 and x2=$x2"
    elif [ $d -gt 0 ]
    then
        x1=$(echo "((-1)*$b + sqrt($d))/(2*$a)"|bc)
        x2=$(echo "((-1)*$b - sqrt($d))/(2*$a)"|bc)
        echo "Roots are real and unequal"
        echo "x1 is $x1 and x2 is $x2"
    else
        real=$(echo "((-1)*$b)/(2*$a)"|bc)
        img=$(echo "sqrt((-1)*$d)/(2*$a)"|bc)
        echo "Roots are imaginary"
        echo "x1 is $real+$img*i"
        echo "x2 is $real-$img*i"
    fi
fi
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -4 4
Valid
d is 0
Roots are real and equal
x1=2 and x2=2
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -3 2
Valid
d is 1
Roots are real and unequal
x1 is 2 and x2 is 1
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -4 5

```

Type here to search

77% 15:21 ENG 05-10-2022


```

192.168.14.102 - PuTTY
then
    echo "Not Valid"
else
    echo "Valid"
    d=$(echo "$b*$b - (4*a*c)")|bc
    echo "d is $d"
    if [ $d -eq 0 ]
    then
        x1=$(echo "((-1)*$b)/(2*$a)"|bc)
        x2=$x1
        echo "Roots are real and equal"
        echo "x1=$x1 and x2=$x2"
    elif [ $d -gt 0 ]
    then
        x1=$(echo "((-1)*$b + sqrt($d))/(2*$a)"|bc)
        x2=$(echo "((-1)*$b - sqrt($d))/(2*$a)"|bc)
        echo "Roots are real and unequal"
        echo "x1 is $x1 and x2 is $x2"
    else
        real=$(echo "((-1)*$b)/(2*$a)"|bc)
        img=$(echo "sqrt((-1)*$d)/(2*$a)"|bc)
        echo "Roots are imaginary"
        echo "x1 is $real+$img*i"
        echo "x2 is $real-$img*i"
    fi
fi
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -4 4
Valid
d is 0
Roots are real and equal
x1=2 and x2=2
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -3 2
Valid
d is 1
Roots are real and unequal
x1 is 2 and x2 is 1
-bash-4.1$ sh 7.sh
Enter a,b and c
1 -4 5
Valid
d is -4
Roots are imaginary
x1 is 2+i
x2 is 2-i
-bash-4.1$ 

```

Type here to search

77% 15:21 ENG 05-10-2022

Reference p15->

```
192.168.14.102 - PuTTY
#!/bin/sh
echo "1. Create file"
echo "2. Create directory"
echo "3. Display"
echo "Enter choice (1-3) : "
read a
echo "You have entered $a"
if [ $a -eq 1 ]
then
    echo "Enter file name : "
    read fname
    ls
    touch $fname
    ls
elif [ $a -eq 2 ]
then
    echo "Enter directory name : "
    read dname
    ls
    mkdir $dname
    ls
elif [ $a -eq 3 ]
then
    echo "Contents are"
    ls
else
    echo "Wrong choice entered! Please try once again :("
fi
~
```

```
192.168.14.102 - PUTTY
-dash-4.1$ vi 8.sh
-dash-4.1$ sh 8.sh
1. Create file
2. Create directory
3. Display
Enter choice (1-3) :
1
You have entered 1
Enter file name :
test.c
1 10.sh 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out ds.tar ds.zip mynew one.txt
1 10.sh 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out ds.tar ds.zip mynew one.txt test.c
-dash-4.1$ sh 8.sh
1. Create file
2. Create directory
3. Display
Enter choice (1-3) :
2
You have entered 2
Enter directory name :
Deepali
1 10.sh 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out ds.tar ds.zip mynew one.txt test.c
1 10.sh 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out Deepali ds.tar ds.zip mynew one.txt test.c
-dash-4.1$ sh 8.sh
1. Create file
2. Create directory
3. Display
Enter choice (1-3) :
3
You have entered 3
Contents are
1 10.sh 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out Deepali ds.tar ds.zip mynew one.txt test.c
-dash-4.1$ sh 8.sh
1. Create file
2. Create directory
3. Display
Enter choice (1-3) :
66
You have entered 66
Wrong choice entered! Please try once again :(
-dash-4.1$
```

Reference p16->

```
192.168.14.102 - PuTTY
#!/bin/sh
echo "Enter three numbers : "
read a b c
if [ $a -gt $b ]
then
    if [ $a -gt $c ]
    then
        echo "$a is greater"
    else
        echo "$c is greater"
    fi
else
    if [ $b -gt $c ]
    then
        echo "$b is greater"
    else
        echo "$c is greater"
    fi
fi
```

```
192.168.14.102 - PuTTY
-bash-4.1$ pwd
/home/student/2016736_43
-bash-4.1$ ls
1 10 11 1.txt 2.c 3.txt 4.sh 5.sh 6.sh 6.txt 7.sh 8.sh a.out Deepali ds.tar ds.zip mynew one.txt test.c
-bash-4.1$ vi 9.sh
-bash-4.1$ sh 9.sh
Enter three numbers :
1 -0 99
99 is greater
-bash-4.1$ sh 9.sh
Enter three numbers :
1 3 2
3 is greater
-bash-4.1$ sh 9.sh
Enter three numbers :
11 0 -1
11 is greater
-bash-4.1$
```