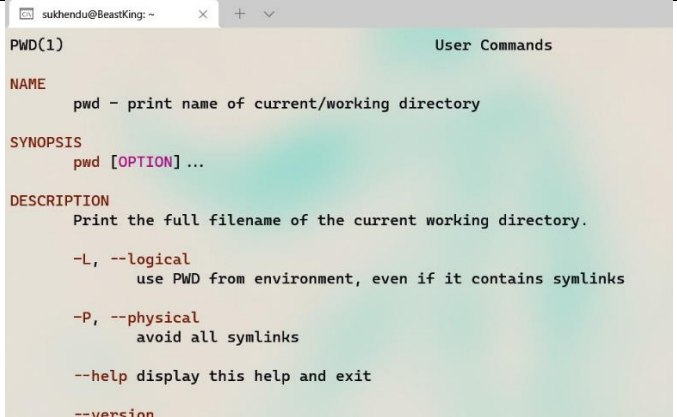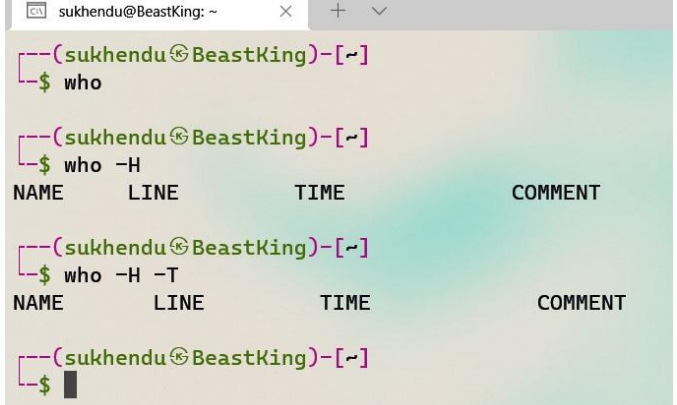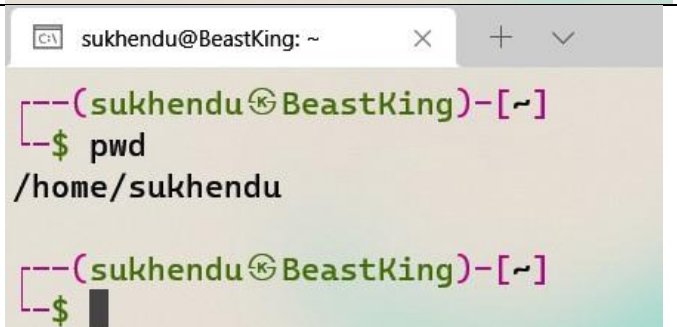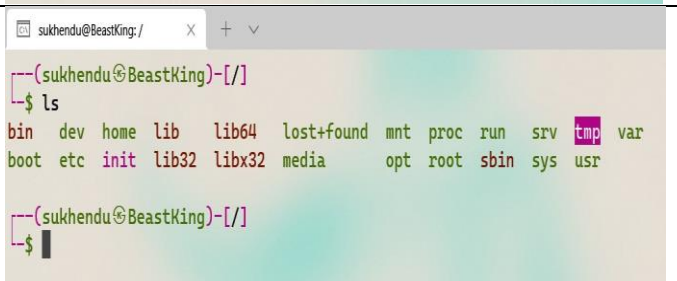0. For each command mentioned above, give a brief description of what it does and how it can be used
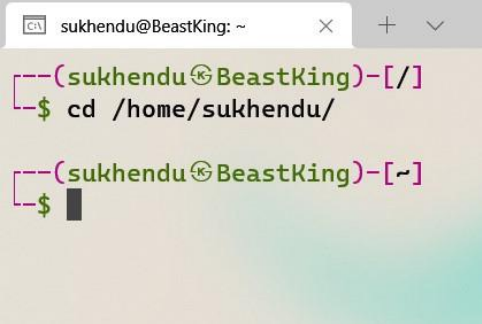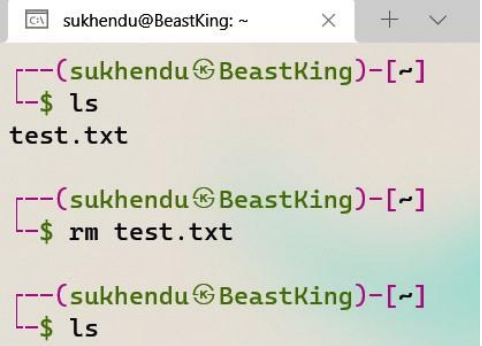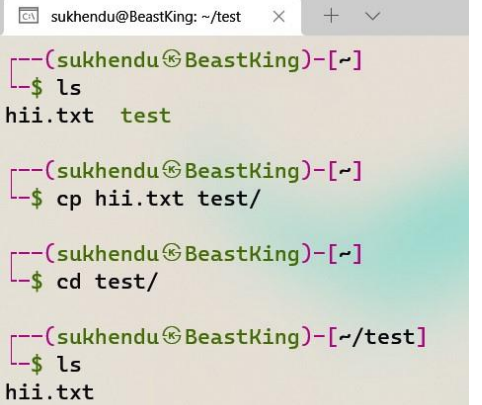
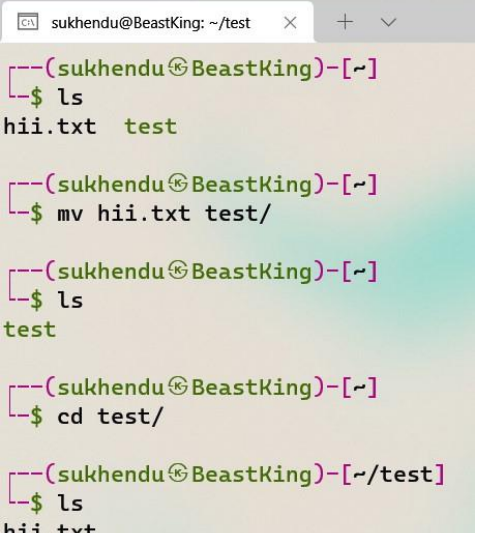| Command | Description | Syntax | Sample Output |
|---|---|---|---|
| man | man - an interface to the system reference manuals | $man pwd | PWD(1)                                    User Commands<br><br>NAME<br>        pwd – print name of current/working directory<br><br>SYNOPSIS<br>        pwd [OPTION] ...<br><br>DESCRIPTION<br>        Print the full filename of the current working directory.<br><br>        -L, --logical<br>                use PWD from environment, even if it contains symlinks<br><br>        -P, --physical<br>                avoid all symlinks<br><br>        --help display this help and exit |
| who | who - To display all the users who are currently using the system. | $who -H | ┌──(sukhendu@BeastKing)-[~]<br>└─$ who<br><br>┌──(sukhendu@BeastKing)-[~]<br>└─$ who -H<br>NAME      LINE          TIME              COMMENT<br><br>┌──(sukhendu@BeastKing)-[~]<br>└─$ who -H -T<br>NAME       LINE          TIME              COMMENT<br><br>┌──(sukhendu@BeastKing)-[~]<br>└─$ |
| pwd | Print the full filename of the current working directory. | $pwd | ┌──(sukhendu@BeastKing)-[~]<br>└─$ pwd<br>/home/sukhendu<br><br>┌──(sukhendu@BeastKing)-[~]<br>└─$ |
| ls | List information about the FILEs (the current directory by default). | $ls | ┌──(sukhendu@BeastKing)-[/]<br>└─$ ls<br>bin  dev  home  lib   lib64  lost+found  mnt  proc  run   srv  tmp  var<br>boot  etc  init  lib32  libx32  media       opt  root  sbin  sys  usr<br><br>┌──(sukhendu@BeastKing)-[/]<br>└─$ |

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| Command | Description | Syntax | Sample Output |
|---|---|---|---|
| cd | Change the current working directory to dirName, or to the home directory if dirName is not given. | $cd<br>$cd .. |  |
| rm | rm removes each specified file | $rm test.txt |  |
| cp | Makes copies of files and directories. | $cp hii.txt test/ |  |
| mv | Moves files to other directory. | $mv hii.txt test/ |  |

| Command | Description | Syntax | Sample Output |
|---------|-------------|--------|---------------|
| mkdir | Creates directory under the current working directory. | $mkdir test1 | sukhendu@BeastKing: ~<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>test<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ mkdir test1<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>test  test1 |
| rmdir | Removes directory under the current working directory. | $rmdir test1 | sukhendu@BeastKing: ~<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>test  test1<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ rmdir test1/<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>test |
| echo | Displays a text or message on the screen. | $echo "Hii I am …" | sukhendu@BeastKing: ~<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ echo "Hii i am Sukhendu"<br>Hii i am Sukhendu |
| cat | Universal file viewer. Displays the content of a file. | $cat lab.txt | sukhendu@BeastKing: ~<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>lab.txt<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ cat lab.txt<br>THIS IS MY FIRST OS LAB ASSIGNMENT |
| wc | Count lines, words, and characters of a file. | $wc lab.txt | sukhendu@BeastKing: ~<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ ls<br>lab.txt<br><br>┌──(sukhendu㉿BeastKing)-[~]<br>└─$ wc lab.txt<br> 1  7 35 lab.txt |

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1. <u>Provide a short write-up (1 or 2 paragraphs) on the following:</u>

- History of Unix and Linux
- Kernel of an Operating System
- Multi-Tasking OS
- Multi-User OS

<u>History of Unix and Linux:</u>

In 1969-1970, Kenneth Thompson, Dennis Ritchie, and others at AT&T Bell Labs began developing a small operating system on a little-used PDP-7. The operating system was soon christened Unix, a pun on an earlier operating system project called MULTICS. In 1972-1973 the system was rewritten in the programming language C, an unusual step that was visionary: due to this decision, Unix was the first widely used operating system that could switch from and outlive its original hardware. Other innovations were added to Unix as well, in part due to synergies between Bell Labs and the academic community. In 1979, the "seventh edition" (V7) version of Unix was released, the grandfather of all extant Unix systems.

<u>Kernel of an Operating System:</u>

Kernel is central component of an operating system that manages operations of computer and hardware. It basically manages operations of memory and CPU time. It is core component of an operating system. Kernel acts as a bridge between applications and data processing performed at hardware level using inter-process communication and system calls.

Kernel loads first into memory when an operating system is loaded and remains into memory until operating system is shut down again. It is responsible for various tasks such as disk management, task management, and memory management.

<u>Multi-Tasking OS:</u>

Multitasking operating system provides the interface for executing the multiple program tasks by single user at a same time on the one computer system. For example, any editing task can be performed while other programs are executing concurrently. Other example, user can open Gmail and Power Point same time.

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## Multi-User OS:

A multi-user operating system is an operating system that permits several users to access a single system running to a single operating system. These systems are frequently quite complex, and they must manage the tasks that the various users connected to them require. Users will usually sit at terminals or computers connected to the system via a network and other system machines like printers. A multi-user operating system varies from a connected single-user operating system in that each user accesses the same operating system from different machines.

## 2. List all the files and directories of '/bin' with detail information from your current directory.

```
┌──(sukhendu☺BeastKing)-[~]
└─$ ls -l /usr/bin/
total 91016
-rwxr-xr-x 1 root root      60224 Oct 24 00:59 '['
-rwxr-xr-x 1 root root      31040 Jan 27 04:21  addpart
lrwxrwxrwx 1 root root         26 Feb 18 10:16  addr2line → x86_64-linux-gnu-addr2line
lrwxrwxrwx 1 root root          6 Feb 10 18:06  apropos → whatis
-rwxr-xr-x 1 root root      22848 Feb  1 22:34  apt
-rwxr-xr-x 1 root root      92552 Feb  1 22:34  apt-cache
-rwxr-xr-x 1 root root      27016 Feb  1 22:34  apt-cdrom
-rwxr-xr-x 1 root root      31040 Feb  1 22:34  apt-config
-rwxr-xr-x 1 root root      27024 Feb  1 22:34  apt-extracttemplates
-rwxr-xr-x 1 root root     276880 Feb  1 22:34  apt-ftparchive
-rwxr-xr-x 1 root root      55688 Feb  1 22:34  apt-get
-rwxr-xr-x 1 root root      27889 Feb  1 22:34  apt-key
-rwxr-xr-x 1 root root      55688 Feb  1 22:34  apt-mark
-rwxr-xr-x 1 root root      43336 Feb  1 22:34  apt-sortpkgs
lrwxrwxrwx 1 root root         19 Feb 18 10:16  ar → x86_64-linux-gnu-ar
-rwxr-xr-x 1 root root      39744 Oct 24 00:59  arch
lrwxrwxrwx 1 root root         19 Feb 18 10:16  as → x86_64-linux-gnu-as
lrwxrwxrwx 1 root root         21 Sep 13 19:06  awk → /etc/alternatives/awk
-rwxr-xr-x 1 root root      60352 Oct 24 00:59  b2sum
-rwxr-xr-x 1 root root      47968 Oct 24 00:59  base32
-rwxr-xr-x 1 root root      47968 Oct 24 00:59  base64
-rwxr-xr-x 1 root root      35616 Oct 24 00:59  basename
-rwxr-xr-x 1 root root      56160 Oct 24 00:59  basenc
-rwxr-xr-x 1 root root    1230360 Jan  6 21:46  bash
-rwxr-xr-x 1 root root       6760 Jan  6 21:46  bashbug
-rwxr-xr-x 1 root root      80320 Jan 27 05:05  bootctl
-rwxr-xr-x 1 root root      88496 Jan 27 05:05  busctl
```

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## 3. List all the files including hidden files in your parent directory.

```
┌──(sukhendu⊛BeastKing)-[~]
└─$ ls -la /usr/
total 88
drwxr-xr-x 14 root root  4096 Sep 13 19:06 .
drwxr-xr-x 18 root root  4096 Feb 27 20:29 ..
drwxr-xr-x  2 root root 20480 Feb 27 10:34 bin
drwxr-xr-x  2 root root  4096 Aug 31 19:33 games
drwxr-xr-x 33 root root 12288 Feb 27 10:26 include
drwxr-xr-x 37 root root  4096 Feb 27 10:34 lib
drwxr-xr-x  2 root root  4096 Sep 13 19:06 lib32
drwxr-xr-x  2 root root  4096 Feb 27 10:21 lib64
drwxr-xr-x  7 root root  4096 Feb 27 10:34 libexec
drwxr-xr-x  2 root root  4096 Sep 13 19:06 libx32
drwxr-xr-x 10 root root  4096 Sep 13 19:06 local
drwxr-xr-x  2 root root 12288 Feb 27 10:34 sbin
drwxr-xr-x 64 root root  4096 Feb 27 10:34 share
drwxr-xr-x  2 root root  4096 Aug 31 19:33 src

┌──(sukhendu⊛BeastKing)-[~]
└─$
```

## 4. List only the directory files in your current directory.

```
┌──(sukhendu⊛BeastKing)-[~]
└─$ ls
lab.txt  test

┌──(sukhendu⊛BeastKing)-[~]
└─$ ls -ld */
drwxr-xr-x 2 sukhendu sukhendu 4096 Feb 27 11:10 test/

┌──(sukhendu⊛BeastKing)-[~]
└─$
```

## 5. Create a file 'text 1' by taking input from the keyboard.

```
┌──(sukhendu⊛BeastKing)-[~]
└─$ touch text1

┌──(sukhendu⊛BeastKing)-[~]
└─$ ls
lab.txt  test  text1

┌──(sukhendu⊛BeastKing)-[~]
└─$
```

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## 6. Copy the contents of file' text1' to another file 'text2'.

```
┌──(sukhendu☻BeastKing)-[~]
└─$ ls
lab.txt  test  test1  test2  text1

┌──(sukhendu☻BeastKing)-[~]
└─$ cp test1 test2

┌──(sukhendu☻BeastKing)-[~]
└─$ cat test2
hi

┌──(sukhendu☻BeastKing)-[~]
└─$ cat test1
hi
```

## 7. Append the contents of file 'test2 'to file 'test1'.

```
┌──(sukhendu☻BeastKing)-[~]
└─$ ls
lab.txt  test  test1  test2  text1

┌──(sukhendu☻BeastKing)-[~]
└─$ cat test1 >> test2

┌──(sukhendu☻BeastKing)-[~]
└─$ cat test1
hi

┌──(sukhendu☻BeastKing)-[~]
└─$ cat test2
hi
hi
```

## 8. Count the number of lines in the file 'test1'.

```
┌──(sukhendu☻BeastKing)-[~]
└─$ ls
lab.txt  test  test1  test2  text1

┌──(sukhendu☻BeastKing)-[~]
└─$ wc test1
1 1 3 test1
```

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