Operating System Assignment

Name- Sanket Kumbhar

PRN No.- 12110235

Roll no.- 14

Basic and Advanced Linux Command

Basic Linux Command -

1. pwd Command

```
sanket@sanket:~$ pwd
/home/sanket
```

2. mkdir Command

```
sanket@sanket:~$ mkdir new_dir
```

3. rmdir Command

```
sanket@sanket:~$ rmdir new_dir
```

4. ls Command

```
sanket@sanket:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Videos
```

5. cd Command

```
sanket@sanket:~$ cd Desktop
sanket@sanket:~/Desktop$
```

6. touch Command

```
sanket@sanket:~/Desktop$ touch demo.txt
sanket@sanket:~/Desktop$ ls
demo.txt
```

7. cat Command

```
sanket@sanket:~/Desktop$ cat > demo.txt
Hello Sir
```

```
sanket@sanket:~/Desktop$ cat demo.txt
Hello Sir
```

8. rm Command

```
sanket@sanket:~/Desktop$ rm demo.txt
```

9. id Command

```
sanket@sanket:~/Desktop$ id
uid=1000(sanket) gid=1000(sanket) groups=1000(sanket),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),122(lpadmin),134(lxd),135(sambashare)
```

10. date Command

```
sanket@sanket:~/Desktop$ date
Thursday 27 July 2023 11:22:56 PM IST
```

11. cal Command

```
sanket@sanket:~$ cal
     July 2023
Su Mo Tu We Th Fr Sa
                   1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

Advanced Linux Command –

1. ifconfig Command

```
sanket@sanket:~$ ifconfig -a
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.1.8  netmask 255.255.255.0  broadcast 192.168.1.255
        inet6 fe80::f419:58f8:fcf1:ae6b  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:a3:cf:7d  txqueuelen 1000  (Ethernet)
        RX packets 1242644  bytes 1853863179 (1.8 GB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 89711  bytes 6230757 (6.2 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 206  bytes 23313 (23.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 206  bytes 23313 (23.3 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

2. netstat Command

```
sanket@sanket:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:57137           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 sanket:bootpc           _gateway:bootps         ESTABLISHED
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:44886              [::]:*
udp6       0      0 sanket:dhcpv6-client    [::]:*
udp6       0      0 [::]:mdns               [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     23181    @/tmp/.ICE-unix/1707
unix  2      [ ACC ]     STREAM     LISTENING     20666    /tmp/.iprt-localipc-DRMIpcServer
unix  2      [ ACC ]     STREAM     LISTENING     23303    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     23305    @/tmp/.X11-unix/X1
unix  2      [ ]         DGRAM      CONNECTED     21070    /run/user/1000/systemd/notify
unix  2      [ ACC ]     STREAM     LISTENING     21073    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     21080    /run/user/1000/bus
unix  2      [ ACC ]     STREAM     LISTENING     21082    /run/user/1000/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     21084    /run/user/1000/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     21086    /run/user/1000/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     21088    /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     21090    /run/user/1000/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     21092    /run/user/1000/pipewire-0
unix  2      [ ACC ]     STREAM     LISTENING     21094    /run/user/1000/pk-debconf-socket
unix  2      [ ACC ]     STREAM     LISTENING     21096    /run/user/1000/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     21098    /run/user/1000/snapd-session-agent.socket
unix  3      [ ]         DGRAM      CONNECTED     16751    /run/systemd/notify
unix  2      [ ACC ]     STREAM     LISTENING     23182    /tmp/.ICE-unix/1707
unix  2      [ ACC ]     STREAM     LISTENING     23304    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     23836    /run/user/1000/keyring/control
unix  2      [ ]         DGRAM                    16767    /run/systemd/journal/syslog
unix  2      [ ACC ]     STREAM     LISTENING     16769    /run/systemd/fsck.progress
unix  2      [ ACC ]     STREAM     LISTENING     23306    /tmp/.X11-unix/X1
unix  19     [ ]         DGRAM      CONNECTED     16776    /run/systemd/journal/dev-log
unix  9      [ ]         DGRAM      CONNECTED     16778    /run/systemd/journal/socket
unix  2      [ ACC ]     STREAM     LISTENING     16780    /run/systemd/journal/stdout
unix  2      [ ACC ]     SEQPACKET  LISTENING     16782    /run/udev/control
unix  2      [ ACC ]     STREAM     LISTENING     116744   @/tmp/dbus-HHvdvyQg
unix  2      [ ACC ]     STREAM     LISTENING     24641    /run/user/1000/keyring/pkcs11
unix  2      [ ACC ]     STREAM     LISTENING     24645    /run/user/1000/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     24799    /run/user/1000/at-spi/bus
```

3. free Command

```
sanket@sanket:~$ free
              total        used        free      shared  buff/cache   available
Mem:        4868672      857060      688832       38016     3322780     3693808
Swap:       2744316        8252     2736064
```

4. uptime Command

```
sanket@sanket:~$ uptime
 00:41:36 up 31 min,  1 user,  load average: 0.09, 0.22, 0.52
```

5. nslookup Command

```
sanket@sanket:~$ nslookup tecmint.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   tecmint.com
Address: 104.26.3.23
Name:   tecmint.com
Address: 172.67.72.207
Name:   tecmint.com
Address: 104.26.2.23
Name:   tecmint.com
Address: 2606:4700:20::681a:217
Name:   tecmint.com
Address: 2606:4700:20::ac43:48cf
Name:   tecmint.com
Address: 2606:4700:20::681a:317
```

6. dig Command

```
sanket@sanket:~$ dig tecmint.com

; <<>> DiG 9.18.12-0ubuntu0.22.04.2-Ubuntu <<>> tecmint.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 36500
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL:

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;tecmint.com.                   IN      A

;; ANSWER SECTION:
tecmint.com.            294     IN      A       172.67.72.207
tecmint.com.            294     IN      A       104.26.3.23
tecmint.com.            294     IN      A       104.26.2.23

;; Query time: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Fri Jul 28 00:42:27 IST 2023
;; MSG SIZE  rcvd: 88
```

7. top Command

```
sanket@sanket:~$ top

top - 00:38:07 up 28 min,  1 user,  load average: 0.08, 0.28, 0.62
Tasks: 212 total,   2 running, 210 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.7 us,  0.2 sy,  0.0 ni, 99.1 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :   4754.6 total,    681.9 free,    839.7 used,   3233.0 buff/cache
MiB Swap:   2680.0 total,   2671.9 free,      8.1 used.   3604.5 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
   1727 sanket    20   0 5435188 356968 119032 R   2.6   7.3   1:02.39 gnome-shell
  58466 sanket    20   0  567968  58008  44876 S   0.7   1.2   0:05.13 gnome-terminal-
   2236 sanket    20   0  226988   1132    808 S   0.3   0.0   0:00.95 VBoxClient
   2244 sanket    20   0  227504   1324    968 S   0.3   0.0   0:03.39 VBoxClient
  58878 root      20   0       0      0      0 I   0.3   0.0   0:00.02 kworker/u8:2-events_freezable_power_
      1 root      20   0  167996  13428   8272 S   0.0   0.3   0:22.62 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 slub_flushwq
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 netns
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
     10 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     11 root      20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_rude_
     12 root      20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_trace
     13 root      20   0       0      0      0 S   0.0   0.0   0:00.45 ksoftirqd/0
     14 root      20   0       0      0      0 I   0.0   0.0   0:01.36 rcu_sched
     15 root      rt   0       0      0      0 S   0.0   0.0   0:00.01 migration/0
     16 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
     18 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     19 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
     20 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
     21 root      rt   0       0      0      0 S   0.0   0.0   0:00.23 migration/1
     22 root      20   0       0      0      0 S   0.0   0.0   0:00.50 ksoftirqd/1
     23 root      20   0       0      0      0 I   0.0   0.0   0:00.03 kworker/1:0-events
     24 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H-events_highpri
     25 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/2
     26 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/2
     27 root      rt   0       0      0      0 S   0.0   0.0   0:00.23 migration/2
     28 root      20   0       0      0      0 S   0.0   0.0   0:00.53 ksoftirqd/2
     30 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/2:0H-events_highpri
     31 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/3
     32 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/3
     33 root      rt   0       0      0      0 S   0.0   0.0   0:00.23 migration/3
     34 root      20   0       0      0      0 S   0.0   0.0   0:01.10 ksoftirqd/3
     36 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/3:0H-kblockd
```

8. w Command

```
sanket@sanket:~$ w
 00:44:51 up 34 min,  1 user,  load average: 0.09, 0.15, 0.44
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
sanket   tty2     tty2             00:10    24:23  0.03s  0.03s /usr/libexec/gnome-session-binary --session=ubuntu
```

```
MAN(1)                                    Manual pager utils                                    MAN(1)

NAME
       man - an interface to the system reference manuals

SYNOPSIS
       man [man options] [[section] page ...] ...
       man -k [apropos options] regexp ...
       man -K [man options] [section] term ...
       man -f [whatis options] page ...
       man -l [man options] file ...
       man -w|-W [man options] page ...

DESCRIPTION
       man  is  the  system's manual pager.  Each page argument given to man is normally the name of a program, utility or function.  The manual page associated with each of these arguments is then
       found and displayed.  A section, if provided, will direct man to look only in that section of the manual.  The default action is to search in all of the available sections following  a  pre-
       defined order (see DEFAULTS), and to show only the first page found, even if page exists in several sections.

       The table below shows the section numbers of the manual followed by the types of pages they contain.

       1   Executable programs or shell commands
       2   System calls (functions provided by the kernel)
       3   Library calls (functions within program libraries)
       4   Special files (usually found in /dev)
       5   File formats and conventions, e.g. /etc/passwd
       6   Games
       7   Miscellaneous (including macro packages and conventions), e.g. man(7), groff(7), man-pages(7)
       8   System administration commands (usually only for root)
       9   Kernel routines [Non standard]

       A manual page consists of several sections.

       Conventional  section names include NAME, SYNOPSIS, CONFIGURATION, DESCRIPTION, OPTIONS, EXIT STATUS, RETURN VALUE, ERRORS, ENVIRONMENT, FILES, VERSIONS, CONFORMING TO, NOTES, BUGS, EXAMPLE,
       AUTHORS, and SEE ALSO.

       The following conventions apply to the SYNOPSIS section and can be used as a guide in other sections.

       bold text          type exactly as shown.
       italic text        replace with appropriate argument.
       [-abc]             any or all arguments within [ ] are optional.
       -a|-b              options delimited by | cannot be used together.
       argument ...       argument is repeatable.
       [expression] ...   entire expression within [ ] is repeatable.

       Exact rendering may vary depending on the output device.  For instance, man will usually not be able to render italics when running in a  terminal,  and  will  typically  use  underlined  or
       coloured text instead.

Manual page man(1) line 1/455 9% (press h for help or q to quit)
```

9. ps Command

```
sanket@sanket:~$ ps
   PID TTY          TIME CMD
 58484 pts/0    00:00:00 bash
 58921 pts/0    00:00:00 ps
```

10. df Command

```
sanket@sanket:~$ df
Filesystem     1K-blocks     Used Available Use% Mounted on
tmpfs             486868     1568    485300   1% /run
/dev/sda3       25106692 15256168   8549840  65% /
tmpfs            2434336        0   2434336   0% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
/dev/sda2         524252     6216    518036   2% /boot/efi
tmpfs             486864      116    486748   1% /run/user/1000
```

11. du Command

```
sanker@sanker:~$ du
 LibreOffice Writer  /share/ibus-table
80        ./.local/share/gvfs-metadata
4         ./.local/share/evolution/memos/trash
8         ./.local/share/evolution/memos
4         ./.local/share/evolution/mail/trash
8         ./.local/share/evolution/mail
8         ./.local/share/evolution/calendar/system
4         ./.local/share/evolution/calendar/trash
16        ./.local/share/evolution/calendar
8         ./.local/share/evolution/tasks/system
4         ./.local/share/evolution/tasks/trash
16        ./.local/share/evolution/tasks
4         ./.local/share/evolution/addressbook/system/photos
92        ./.local/share/evolution/addressbook/system
4         ./.local/share/evolution/addressbook/trash
100       ./.local/share/evolution/addressbook
152       ./.local/share/evolution
324       ./.local/share/nautilus/tags
4         ./.local/share/nautilus/scripts
332       ./.local/share/nautilus
4         ./.local/share/applications
4         ./.local/share/icc
4         ./.local/share/backgrounds
4         ./.local/share/webkitgtk/deviceidhashsalts/1
8         ./.local/share/webkitgtk/deviceidhashsalts
16        ./.local/share/webkitgtk/localstorage
8         ./.local/share/webkitgtk/storage/CvQFBF1RGsM9gqjZzF79MTZ7oGCyS6hzzmiKSGoy5tU/CvQFBF1RGsM9gqjZzF79MTZ7oGCyS6hzzmiKSGoy5tU
8         ./.local/share/webkitgtk/storage/CvQFBF1RGsM9gqjZzF79MTZ7oGCyS6hzzmiKSGoy5tU/oLzoNbeVEbpiQWbPG7LKeHrj6xO-9Zm-eH3_nkvjEJ4
20        ./.local/share/webkitgtk/storage/CvQFBF1RGsM9gqjZzF79MTZ7oGCyS6hzzmiKSGoy5tU
```

Basic Linux Commands:

1. `pwd`: Print the current working directory.
2. `mkdir`: Create a new directory.
3. `rmdir`: Remove an empty directory.
4. `ls`: List files and directories in the current location.
5. `cd`: Change the current directory.
6. `touch`: Create an empty file.
7. `cat`: Display the contents of a file.
8. `rm`: Remove files or directories.
9. `id`: Display user and group information.
10. `date`: Display or set the system date and time.
11. `cal`: Display a calendar.

Advanced Linux Commands:

1. `ifconfig`: Display and configure network interfaces.
2. `netstat`: Display network connections, routing tables, interface statistics, masquerade connections, and multicast memberships.
3. `free`: Display amount of free and used system memory.
4. `uptime`: Display the system uptime and load average.

5. `nslookup`: Query Internet name servers interactively for DNS information.
6. `dig`: Perform DNS lookups and display the answers.
7. `top`: Display and update sorted information about system processes.
8. `w`: Display information about the users currently on the machine.
9. `ps`: Display information about a selection of the active processes.
10. `df`: Display information about disk space usage.
11. `du`: Estimate file space usage.