Practical 2, 3

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2. Execute various LINUX Commands for:

 i. Information maintenance

  a. Wc

```
[root@localhost ~]# wc file.txt
 4 17 70 file.txt
[root@localhost ~]#
```

  b. Clear

```
[root@localhost ~]#
```

  c. cal

```
[root@localhost ~]# cal
    September 2025
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

[root@localhost ~]#
```

  d. who

```
[root@localhost ~]# who
[root@localhost ~]#
```

  e. date

```
[root@localhost ~]# date
Tue Sep 23 10:36:43 PM UTC 2025
[root@localhost ~]#
```

  f. pwd

```
[root@localhost ~]# pwd
/root
[root@localhost ~]#
```

ii. File management
    a. cat

```
[root@localhost ~]# cat file.txt
this is a file
this is the content of the file
line no. 3
end of file
[root@localhost ~]#
```

    b. cp

```
[root@localhost ~]# cp file.txt copy.txt
[root@localhost ~]# cat copy.txt
this is a file
this is the content of the file
line no. 3
end of file
[root@localhost ~]#
```

    c. rm

```
[root@localhost ~]# rm copy.txt
[root@localhost ~]# ls
bench.py  file.txt  hello.c
[root@localhost ~]#
```

    d. mv

```
[root@localhost ~]# mv file.txt newfile.txt
[root@localhost ~]# ls
bench.py  hello.c  newfile.txt
[root@localhost ~]#
```

    e. cmp

```
[root@localhost ~]# cmp file.txt file2.txt
file.txt file2.txt differ: byte 10, line 1
[root@localhost ~]#
```

    f. comm

```
[root@localhost ~]# comm file.txt file2.txt
this is a file
        this is another file
this is the content of the file
comm: file 1 is not in sorted order
line no. 3
end of file
        with different content
comm: file 2 is not in sorted order
        this has some changes
        end of line
comm: input is not in sorted order
[root@localhost ~]#
```

g. diff

```
[root@localhost ~]# diff file.txt file2.txt
1,4c1,4
< this is a file
< this is the content of the file
< line no. 3
< end of file
---
> this is another file
> with different content
> this has some changes
> end of line
[root@localhost ~]#
```

h. find

```
[root@localhost ~]# find . -name '*.txt'
./file.txt
./file2.txt
[root@localhost ~]#
```

i. grep

```
[root@localhost ~]# grep "file" file.txt
this is a file
this is the content of the file
end of file
[root@localhost ~]#
```

j. awk

```
[root@localhost ~]# awk '{print $1}' file.txt
this
this
line
end
[root@localhost ~]#
```

iii.   Directory management
    a. cd

```
[root@localhost ~]# cd testdir
[root@localhost testdir]# pwd
/root/testdir
[root@localhost testdir]#
```

    b. mkdir

```
[root@localhost ~]# mkdir testdir
[root@localhost ~]# ls
bench.py  file2.txt  file.txt  hello.c  testdir
[root@localhost ~]#
```

    c. rmdir

```
[root@localhost ~]# rmdir testdir
[root@localhost ~]# ls
bench.py  file2.txt  file.txt  hello.c
[root@localhost ~]#
```

    d. ls

```
[root@localhost ~]# ls
bench.py  file2.txt  file.txt  hello.c
[root@localhost ~]#
```

3. Execute various LINUX commands for:

i. Process Control

    a. fork

```
  GNU nano 5.3
#include <unistd.h>
#include <stdio.h>

int main() {
        fork();
        printf("Hello\n");
        return 0;
}
```

```
[root@localhost ~]# gcc fork_demo.c
[root@localhost ~]# ./a.out
Hello
[root@localhost ~]# Hello
```

    b. getpid

```
  GNU nano 5.3
#include <unistd.h>
#include <stdio.h>

int main() {
        printf("PID: %d\n", getpid());
        return 0;
}
```

```
[root@localhost ~]# gcc getpid.c
[root@localhost ~]# ./a.out
PID: 242
[root@localhost ~]#
```

    c. ps

```
[root@localhost ~]# ps
  PID TTY          TIME CMD
   47 hvc0     00:00:02 sh
  244 hvc0     00:00:00 ps
[root@localhost ~]#
```

    d. kill

```
[root@localhost ~]# ps
  PID TTY          TIME CMD
   47 hvc0     00:00:02 sh
  244 hvc0     00:00:00 ps
[root@localhost ~]# kill 47
[root@localhost ~]#
```

e. sleep

```
[root@localhost ~]# sleep 5
[root@localhost ~]#
```

ii. Communication
   a. Input-direction

```
[root@localhost ~]# echo "hello world" > new.txt
[root@localhost ~]# cat new.txt
hello world
[root@localhost ~]#
```

   b. Pipe

```
[root@localhost ~]# cat file.txt | grep file
this is a file
this is the content of the file
end of file
[root@localhost ~]#
```

iii. Protection Management
   a. chmod

```
[root@localhost ~]# chmod 755 file.txt
[root@localhost ~]# ls -l file.txt
-rwxr-xr-x 1 root root 70 Sep 23 22:34 file.txt
[root@localhost ~]#
```

   b. chown

```
[root@localhost ~]# sudo chown root file.txt
[root@localhost ~]# ls -l file.txt
-rwxr-xr-x 1 root root 70 Sep 23 22:34 file.txt
[root@localhost ~]#
```

   c. chgrp

```
[root@localhost ~]# sudo chgrp bin file.txt
[root@localhost ~]# ls -l file.txt
-rwxr-xr-x 1 root bin 70 Sep 23 22:34 file.txt
[root@localhost ~]#
```