

Operating Systems – COC 3071L

SE 5th A – Fall 2025 Part

1: File and Directory Operations

1. Create the following directory structure in your home directory:

```
Lab_3/
├── docs/
│   └── drafts/
├── data/
│   ├── raw/
│   └── processed/
└── scripts/
```

2. Inside `docs/`:

- Create three files: `intro.txt`, `notes.txt`, `summary.txt`.
- Add at least **two lines of text** into each using `echo >>`.
- Copy `summary.txt` into the `drafts/` folder using `cp` command.

3. Inside `data/raw/`:

- Create two files: `raw1.txt`, `raw2.txt`.
- Append the **current date** into `raw1.txt` using the `date` command.
- Move `raw2.txt` into `processed/` using `mv`. The syntax is:

```
mv source destination
```

4. Inside `scripts/`:

- Create a script named `hello.sh` with the following content:

```
echo "Hello World"
pwd
ls -lh
```

- Later, you will make it executable (in Part 3).

5. Display the directory structure recursively and take a screenshot:

```
ls -R
```

1. Create directory structure:

```
[1] farah@DESKTOP-LI8S698: ~/Lab_3_1152_assignment/scripts
farah@DESKTOP-LI8S698:~$ mkdir Lab_3_1152_assignment
farah@DESKTOP-LI8S698:~$ ls
Lab_3_1152_assignment
farah@DESKTOP-LI8S698:~$ cd Lab_3_1152_assignment/
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ mkdir drafts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
drafts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ rmdir drafts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ mkdir docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ mkdir data
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ mkdir scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
docs data scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ mkdir drafts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls
drafts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cd ..
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd data
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ mkdir raw
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ mkdir processed
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ ls
processed raw
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ cd ..
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$
```

2. Inside docs:

- Create three files inside docs:

```
[1] farah@DESKTOP-LI8S698: ~/Lab_3_1152_assignment/docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cd ..
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ touch intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ touch notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ touch summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls
drafts intro.txt notes.txt summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

- Add at least two lines of text into each using echo command:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ echo "I have added this text in intro.txt" > intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ echo "I have added this text in notes.txt" > notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ echo "I have added this text in summary.txt" > summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cat intro.txt
I have added this text in intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cat notes.txt
I have added this text in notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cat summary.txt
I have added this text in summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

- iii) Copy summary.txt in the docs folder:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cp summary.txt drafts/
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls drafts
summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

3. Inside data/raw/:

- i) Create two files raw1.txt, raw2.txt:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ touch raw1.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ ls
raw1.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ touch raw2.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ ls
raw1.txt  raw2.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$
```



- ii) Append the current date into raw1.txt using date command

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ echo date >>raw1.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ cat raw1.txt
date
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ date >> raw1.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$ cat raw1.txt
date
Sun Oct  5 21:49:32 PKT 2025
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data/raw$
```



- iii) Move raw2.txt in processed using mv command:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ mv raw/raw2.txt processed/
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ ls raw
raw1.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ ls peocessed
ls: cannot access 'peocessed': No such file or directory
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$ ls processed
raw2.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/data$
```

The screenshot shows a Windows terminal window with a black background and white text. The command `mv raw/raw2.txt processed/` is run, followed by `ls raw` which lists `raw1.txt`. Then, `ls peocessed` is run, resulting in an error message: `ls: cannot access 'peocessed': No such file or directory`. Finally, `ls processed` is run, listing `raw2.txt`. The taskbar at the bottom shows various icons including File Explorer, Edge, and File Manager.

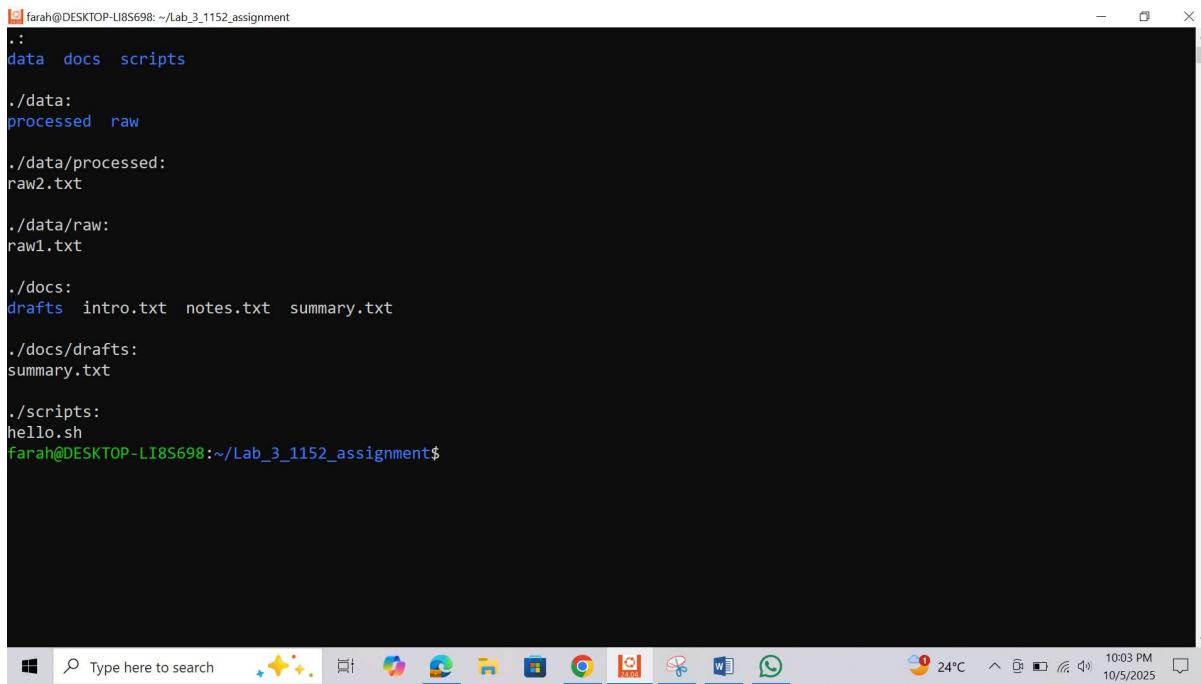
4. Inside scripts:

- i) Create a script named hello.sh:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts
GNU nano 7.2                                     hello.sh *
echo "Hello World"
pwd
ls -lh
```

The screenshot shows a Windows terminal window with a black background and white text. It displays the contents of a file named `hello.sh` created with `nano`. The file contains the command `echo "Hello World"`. The taskbar at the bottom shows various icons including File Explorer, Edge, and File Manager.

5. Display directory structure:



```
farah@DESKTOP-LI8S698: ~/Lab_3_1152_assignment
.:
data  docs  scripts

./data:
processed  raw

./data/processed:
raw2.txt

./data/raw:
raw1.txt

./docs:
drafts  intro.txt  notes.txt  summary.txt

./docs/drafts:
summary.txt

./scripts:
hello.sh
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```

Part 2: Practice with Basic Linux Commands

Run the following commands inside `Lab_3/` and note their outputs:

- `pwd` → Show current working directory.
- `whoami` → Display the current logged-in user.
- `touch extra.txt` → Create an empty file. `cat`
- `intro.txt` → Display file contents. `rm extra.txt` →
- Delete a file.
- `history | tail -n 5` → Show your last 5 executed commands. `clear` → Clear the terminal.

Take screenshots of commands and outputs.

i) Pwd:



```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ pwd
/home/farah/Lab_3_1152_assignment
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```

ii) Whoami:



```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ whoami
farah
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```

iii) Touch extra.txt

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ touch extra.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
data docs extra.txt scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```



iv) Display intro.txt

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cat docs/intro.txt
I have added this text in intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```



v) Delete a file -> rm extra.txt:

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
data docs extra.txt scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ rm extra.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ ls
data docs scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```



vi) **history | tail -n 5 → Show your last 5 executed commands.**

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ history | tail -n 5
82 cat docs/intro.txt
83 ls
84 rm extra.txt
85 ls
86 history | tail -n 5
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```



vii) **clear → Clear the terminal.**

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$
```

Part 3: File Permissions and Ownership

1. Change the permissions of `hello.sh` so that:

- Owner → Read, Write & Execute
- Group → Read, Write & Execute
- Others → No permissions
- Run the script using:

```
./hello.sh
```

Take a screenshot of its output.

2. Change the permissions of `intro.txt` using **numeric notation** so that:

- Owner → Read & Write
- Group → Read & Write
- Others → Read only

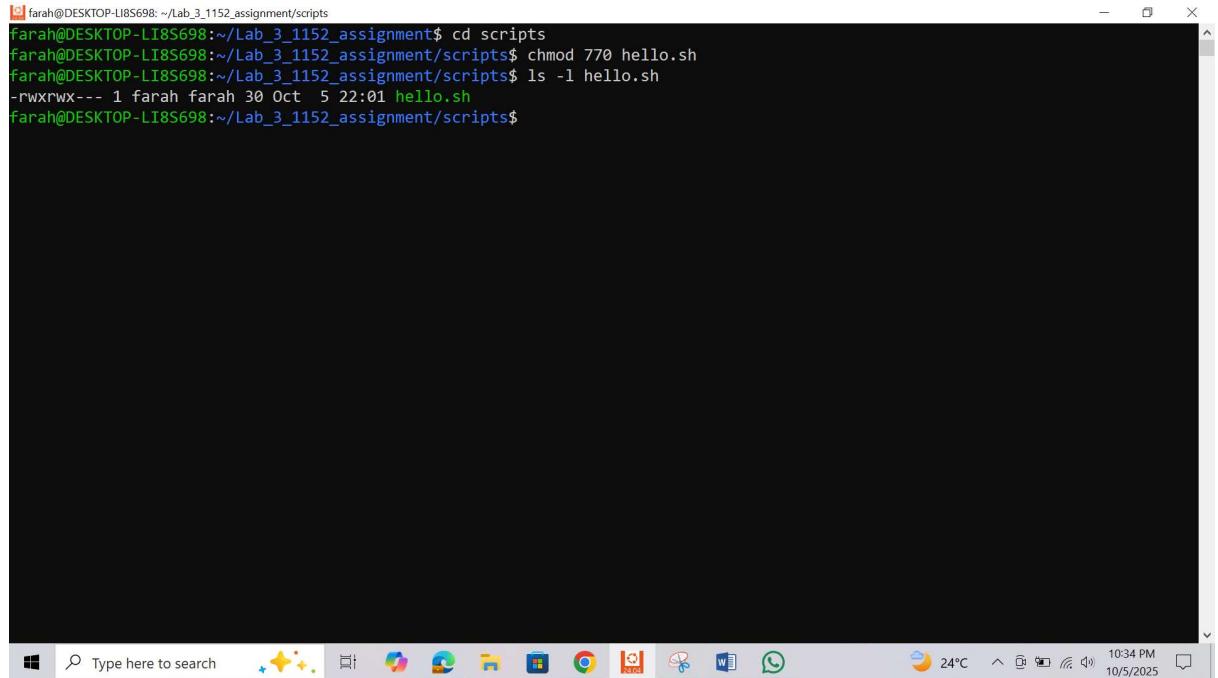
3. Change the permissions of `notes.txt` using **symbolic notation** so that others don't have any permission on it.

4. Verify all changes with:

```
ls -l
```

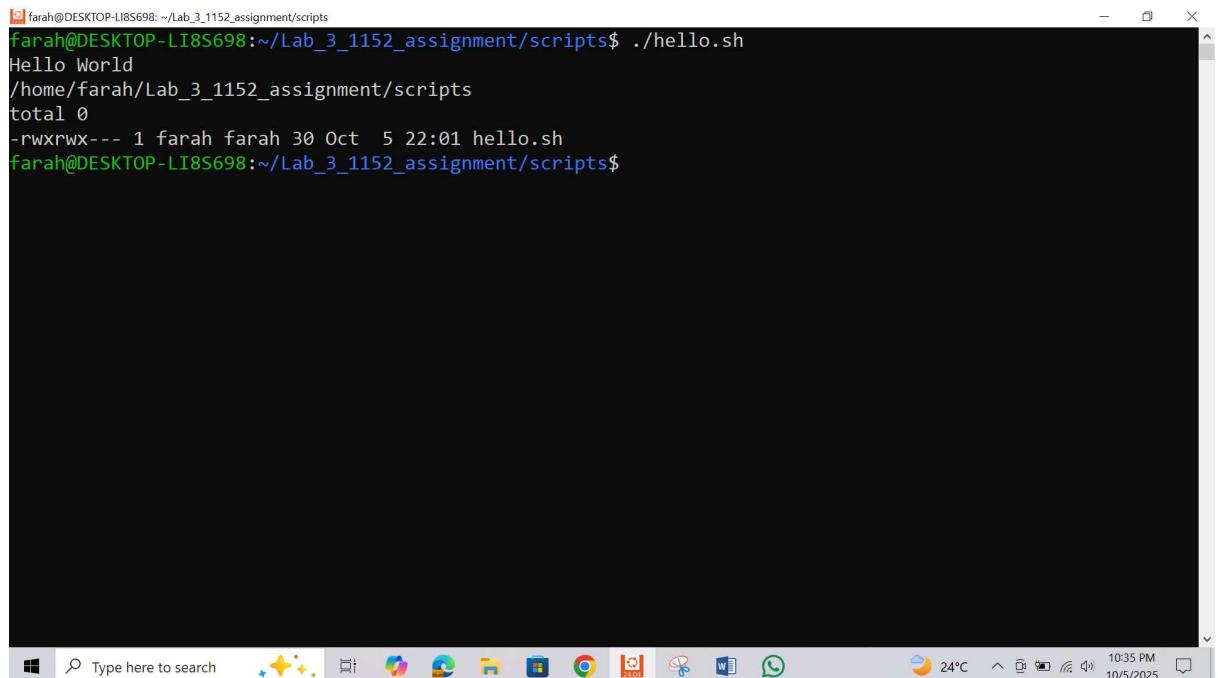
Take a screenshot of the output.

1. Change the permissions of hello.sh such that:



```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ cd scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ chmod 770 hello.sh
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ ls -l hello.sh
-rwxrwx--- 1 farah farah 30 Oct  5 22:01 hello.sh
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$
```

Run the script file:



```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ ./hello.sh
Hello World
/home/farah/Lab_3_1152_assignment/scripts
total 0
-rwxrwx--- 1 farah farah 30 Oct  5 22:01 hello.sh
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$
```

2. Change the permissions of intro.txt using numeric notation so that:

- Owner → Read & Write
- Group → Read & Write
- Others → Read only

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cd docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls -l intro.txt
-rw-r--r-- 1 farah farah 36 Oct  5 21:31 intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ chmod 664 intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls -l intro.txt
-rw-rw-r-- 1 farah farah 36 Oct  5 21:31 intro.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

3. Change the permissions of notes.txt using symbolic notation so that others don't have any permission on it.

```
Select farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls -l notes.txt
-rw-r--r-- 1 farah farah 36 Oct  5 21:31 notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ chmod o-r notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ ls -l notes.txt
-rw-r----- 1 farah farah 36 Oct  5 21:31 notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

4. Verify all changes with: ls -l

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ ls -l
total 0
drwxr-xr-x 1 farah farah 512 Oct  5 21:36 drafts
-rw-rw-r-- 1 farah farah  36 Oct  5 21:31 intro.txt
-rw-r----- 1 farah farah  36 Oct  5 21:31 notes.txt
-rw-r--r-- 1 farah farah  38 Oct  5 21:32 summary.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ cd ..
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd scripts
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$ ls -l
total 0
-rwxrwx--- 1 farah farah 30 Oct  5 22:01 hello.sh
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/scripts$
```

Part 4: Reading & Searching Files

Inside docs/ :

1. Count the number of lines, words, and characters in notes.txt using wc .
2. Show only the **first 2 lines** of summary.txt using head -n 2 .
3. Show the **last line** of summary.txt using tail -n 1 .
4. Search for a keyword (of your choice) in intro.txt using grep .

Take screenshots.

1. Count the number of lines, words, and characters in notes.txt using wc

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment$ cd docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ wc notes.txt
1 7 36 notes.txt
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

2. Show only the **first 2 lines** of summary.txt using head -n 2 .

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ head -n 2 summary.txt
I have added this text in summary.txt
this is my second line
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

3. Show the **last line** of summary.txt using tail -n 1 .

```
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ tail -n 1 summary.txt
this is my last line
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

4. Search for a keyword (of your choice) in intro.txt using grep .

```
[Select farah@DESKTOP-LI8S698: ~/Lab_3_1152_assignment/docs
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$ grep of intro.txt
i like apples but sometimes i get bored of its flavour. but one thing i can never get bored of
are strawberries and mangoes.
farah@DESKTOP-LI8S698:~/Lab_3_1152_assignment/docs$
```

The screenshot shows a Windows desktop environment. A terminal window is open in the center, displaying the output of a `grep` command. The command `grep of intro.txt` was run, and it found several matches in the file `intro.txt`. The desktop taskbar at the bottom shows various pinned icons and the system tray displays the date and time as 10/5/2025 at 11:06 PM.

Part 5: Linux Process Commands

1. Exploring Processes

- Use **ps -ef** and identify **3 processes** running on your system. Note their **PID, PPID, and command**.

```
[Select farah@DESKTOP-LI8S698: ~
farah@DESKTOP-LI8S698:~$ ps -ef
UID      PID  PPID  C STIME TTY          TIME CMD
root      1      0  0 18:29 ?        00:00:00 /init
root      6      1  0 18:29 ?        00:00:00 plan9 --control-socket 6 --log-level 4 --server-fd 7 --pipe-fd 9 --socketroot
t
farah    10      9  0 18:29 ttys1   00:00:00 -bash
farah    57    10 99 18:30 ttys1   00:00:00 ps -ef
farah@DESKTOP-LI8S698:~$
```

The screenshot shows a Windows desktop environment. A terminal window is open in the center, displaying the output of the `ps -ef` command. This command lists all processes running on the system, showing columns for User ID (UID), Process ID (PID), Parent Process ID (PPID), CPU usage (C), Start Time (STIME), Terminal (TTY), and Command (CMD). The desktop taskbar at the bottom shows various pinned icons and the system tray displays the date and time as 10/7/2025 at 6:32 PM.

Run top for 20–30 seconds. Write down:

Select farah@DESKTOP-LIB8S698: ~

```
farah@DESKTOP-LIB8S698:~$ timeout 30 top
top - 18:42:46 up 12 min, 0 user, load average: 0.52, 0.58, 0.59
Tasks: 6 total, 1 running, 5 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.5 us, 2.8 sy, 0.0 ni, 92.8 id, 0.0 wa, 0.9 hi, 0.0 si, 0.0 st
MiB Mem : 16144.7 total, 8401.5 free, 7743.2 used, 224.0 buff/cache
MiB Swap: 15185.9 total, 15123.9 free, 62.0 used. 8401.5 avail Mem

 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
  1 root      20   0 11128 1108 1040 S  0.0  0.0  0:00.17 init(Ubuntu-24.
  6 root      20   0 11112  628 492 S  0.0  0.0  0:00.00 init
  9 root      20   0 11128  572 520 S  0.0  0.0  0:00.01 SessionLeader
 10 farah    20   0 14112 3844 3704 S  0.0  0.0  0:00.21 bash
 58 farah    20   0 11172  924  900 S  0.0  0.0  0:00.01 timeout
 59 farah    20   0 17336 3848 1636 R  0.0  0.0  0:00.07 top
```

Which process is consuming the most CPU.

System is idle

Which process is consuming the most memory.

System is idle

2. Practice with Infinite Process

- Start:

```
yes > /dev/null &
```

- Locate its PID using `ps -ef | grep yes`.
- Kill it using `kill <PID>` and verify using `ps`.

3. Foreground & Background Jobs

- Run `sleep 60` in **foreground** and terminate it with **Ctrl + C**.
- Run `sleep 60 &` in **background**, bring it to foreground with `fg`, stop with `Ctrl + Z`, then resume in background using `bg`.

2. Practice with Infinite processes:

```
farah@DESKTOP-LI8S698:~$ yes > /dev/null &
[1] 67
farah@DESKTOP-LI8S698:~$ ps -ef | grep yes
farah      67  10 99 19:27 tty1    00:00:03 yes
farah      69  10  0 19:27 tty1    00:00:00 grep --color=auto yes
farah@DESKTOP-LI8S698:~$ kill 67
farah@DESKTOP-LI8S698:~$ ps
  PID TTY      TIME CMD
 10  tty1    00:00:00 bash
 70  tty1    00:00:00 ps
[1]+  Terminated                  yes > /dev/null
farah@DESKTOP-LI8S698:~$
```



3. Foreground and Background processes:

```
farah@DESKTOP-LI8S698:~$ sleep 60 &
[1] 71
farah@DESKTOP-LI8S698:~$ fg
sleep 60

^Z
[1]+  Stopped                  sleep 60
farah@DESKTOP-LI8S698:~$ bg
[1]+ sleep 60 &
farah@DESKTOP-LI8S698:~$
```



Part 6: C Programs on Processes

Program 1 – Exec with top

- Modify the exec program so that the child runs `top` instead of `ls -l`.
- Run the program.
- In another terminal, use `ps -ef | grep top` (or run `top`) to find the child's PID.
- Use the child's process ID to kill it manually.

The screenshot shows the Windows taskbar at the bottom with icons for File Explorer, Task View, Start, Taskbar settings, and a search bar. The main window is VS Code with the title bar 'OS_LABS_1152'. The left sidebar shows a file tree with several files under 'OS_LABS_1152'. The right pane displays the terminal output of the 'top' command. The output shows various processes running, including 'init(Ubuntu-24)', 'SessionLeader', and multiple instances of 'bash'. A specific process with PID 735 is identified as the child process. The terminal status bar at the bottom indicates 'Ln 15, Col 27' and the date '10/8/2025'.

```
top - 23:28:12 up 1:29, 0 user, load average: 0.52, 0.58, 0.59
Tasks: 8 total, 1 running, 7 sleeping, 0 stopped, 0 zombie
%CPU(s): 6.1 us, 6.6 sy, 0.0 ni, 86.7 id, 0.0 wa, 0.6 hi, 0.0 si, 0.0 st
MiB Mem : 16144.7 total, 6731.0 free, 9413.7 used, 224.0 buff/cache
MiB Swap: 15185.9 total, 14749.2 free, 436.7 used. 6731.0 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
 1 root 20 0 11128 1108 1048 S 0.0 0.0 0:00.31 init(Ubuntu-24).
 6 root 20 0 11112 612 488 S 0.0 0.0 0:00.00 init
438 root 20 0 11128 576 544 S 0.0 0.0 0:00.00 SessionLeader
439 farah 20 0 14248 4888 3980 S 0.0 0.0 0:00.24 bash
541 root 20 0 11128 576 544 S 0.0 0.0 0:00.00 SessionLeader
542 farah 20 0 14198 3832 3336 S 0.0 0.0 0:00.04 bash
734 farah 20 0 18588 552 532 S 0.0 0.0 0:00.01 output1
735 farah 20 0 17316 3800 1636 R 0.0 0.0 0:00.01 top
```

Killed the child with ID 735 immediately:

This screenshot is identical to the previous one, showing the Windows taskbar and VS Code interface. The terminal output now includes the command to kill the process. The user 'farah' runs 'kill 735', which results in the child process being terminated. The terminal status bar at the bottom indicates 'Ln 15, Col 27' and the date '10/8/2025'.

```
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ ps -ef | grep top
farah 560 542 0 22:05 tty2 00:00:00 grep --color=auto top
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ ps -ef | grep top
farah 735 734 0 23:28 tty1 00:00:00 top
farah 741 542 0 23:28 tty2 00:00:00 grep --color=auto top
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ kill 735
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ ps
```

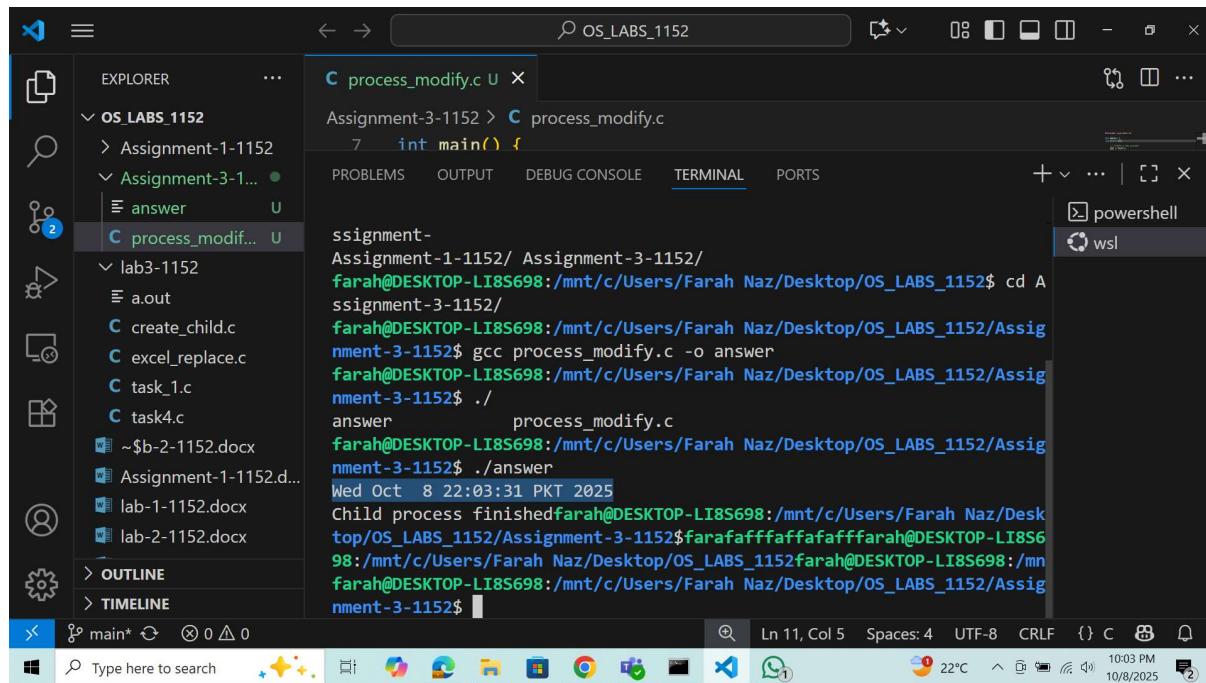
Program 2 – Incomplete Program

```
pid_t pid = fork();

if (pid == 0) {
    // TODO: Replace this child process with the "date" command using
execvp
    // Hint: execvp("date", "date", NULL);
} else {
    // TODO: Make parent wait for child before printing "Child finished"
}

return 0;
}
```

Task: Complete the missing parts, run the program, and take a screenshot of the output.



The screenshot shows the Visual Studio Code interface with the terminal tab active. The terminal window displays the following session:

```
ssignment-
Assignment-1-1152/ Assignment-3-1152/
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ cd A
ssignment-3-1152/
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152/Assig
nment-3-1152$ gcc process_modify.c -o answer
farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152/Assig
nment-3-1152$ ./answer
Wed Oct  8 22:03:31 PKT 2025
Child process finishedfarah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152/Assignment-3-1152$ farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ farah@DESKTOP-LI8S698:/mnt/c/Users/Farah Naz/Desktop/OS_LABS_1152$ Assig
nment-3-1152$
```