



National Textile University
Department of Computer Science

Subject: Web Development

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Reg number: 23-NTU-CS-1146

Section : BS SE A

Semester: 5th

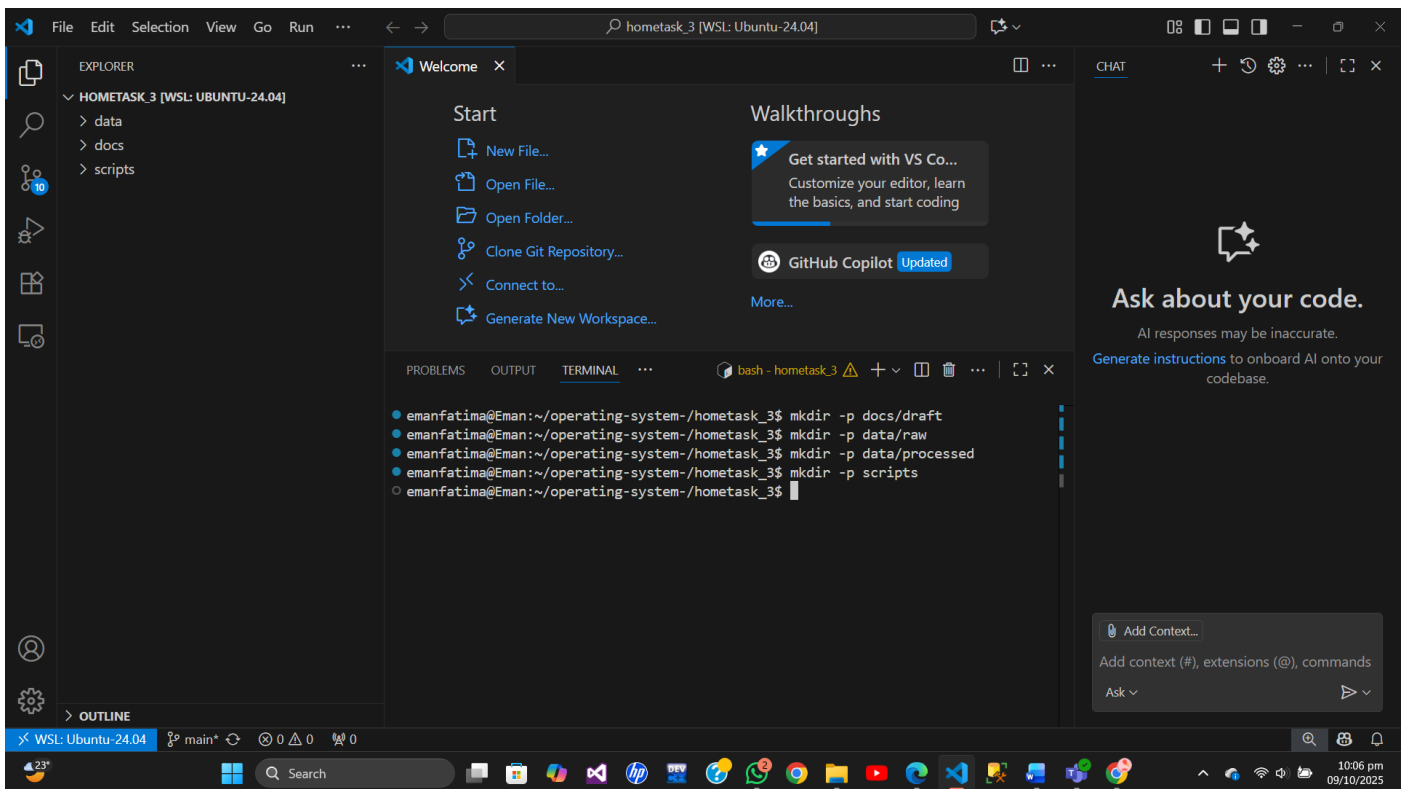
Home task 3:

Task 1:

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

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

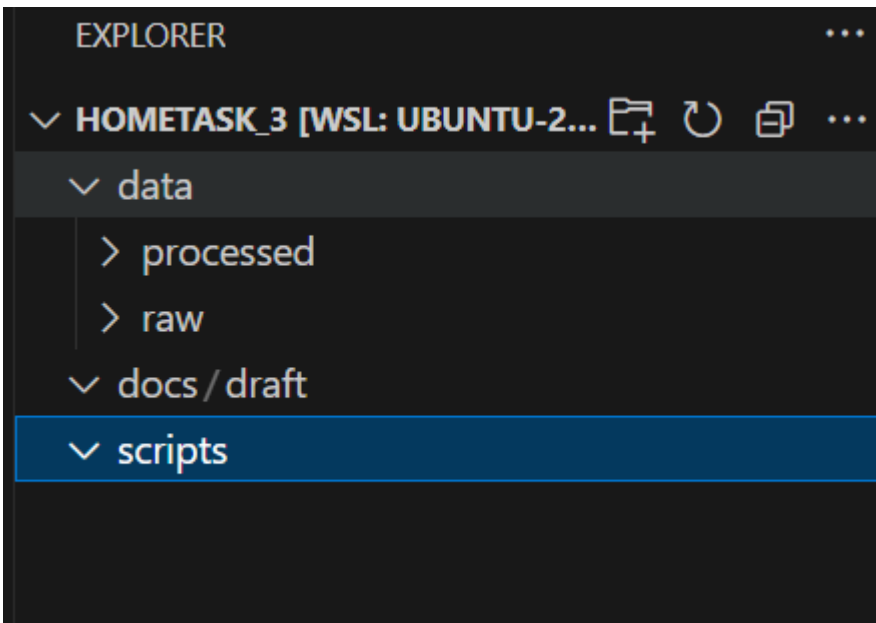
Answer :



The screenshot shows the Visual Studio Code interface with a terminal window open. The terminal displays the following commands and their output:

```
emanfatima@Eman:~/operating-system-/hometask_3$ mkdir -p docs/draft  
emanfatima@Eman:~/operating-system-/hometask_3$ mkdir -p data/raw  
emanfatima@Eman:~/operating-system-/hometask_3$ mkdir -p data/processed  
emanfatima@Eman:~/operating-system-/hometask_3$ mkdir -p scripts  
emanfatima@Eman:~/operating-system-/hometask_3$
```

The Explorer panel on the left shows the directory structure: `HOMETASK_3 [WSL: UBUNTU-24.04]` with subdirectories `data`, `docs`, and `scripts`. The Chat panel on the right is also visible.



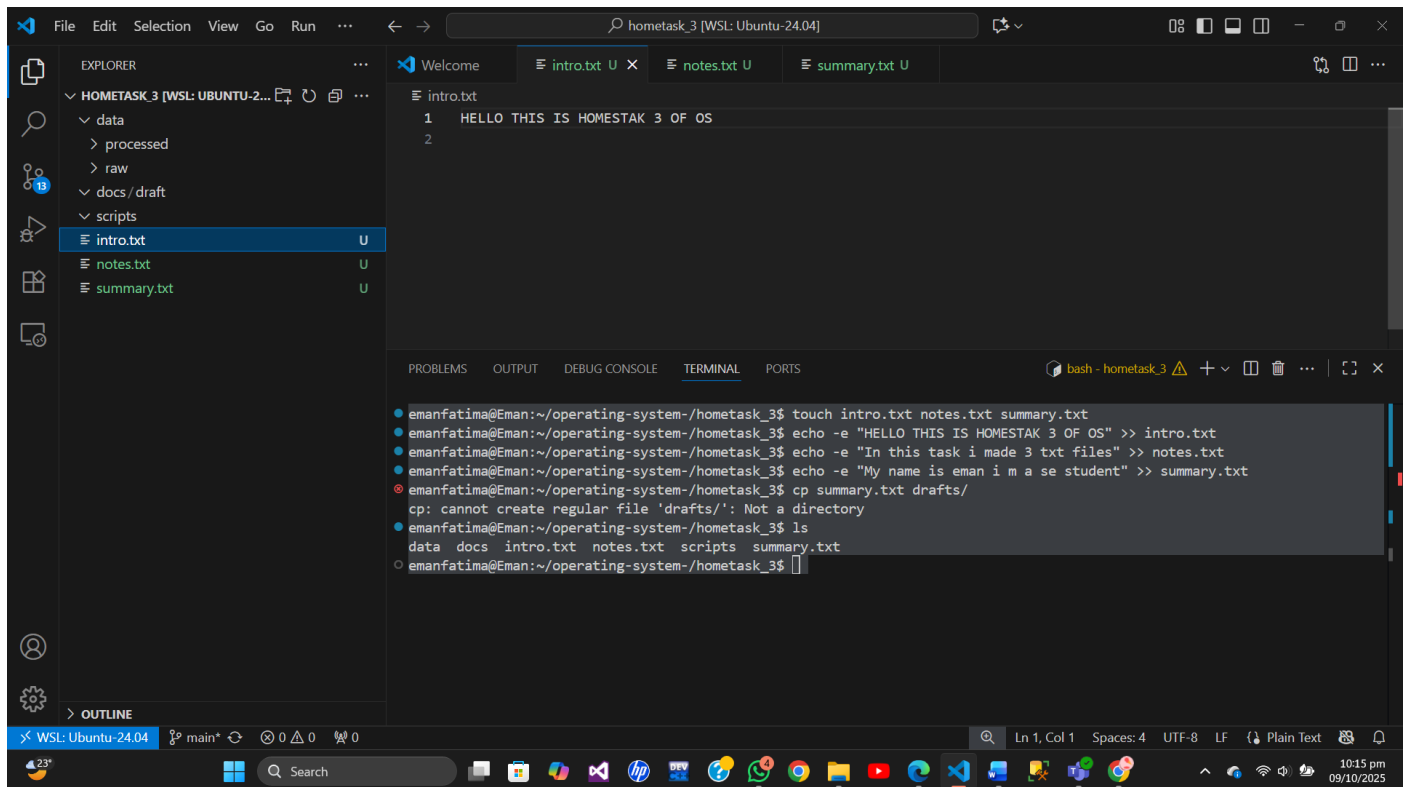
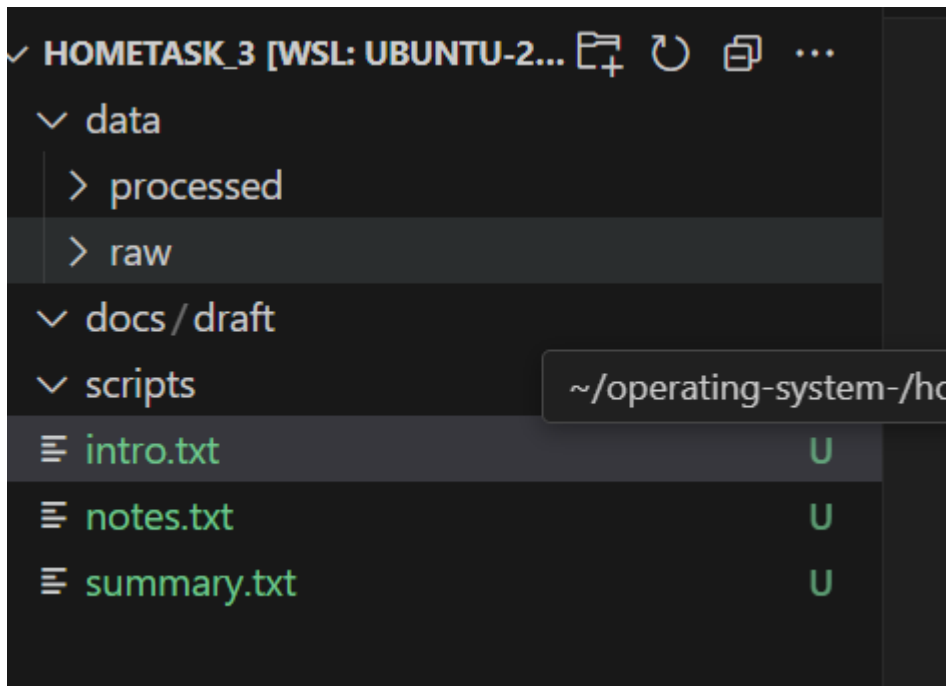
Task 2:

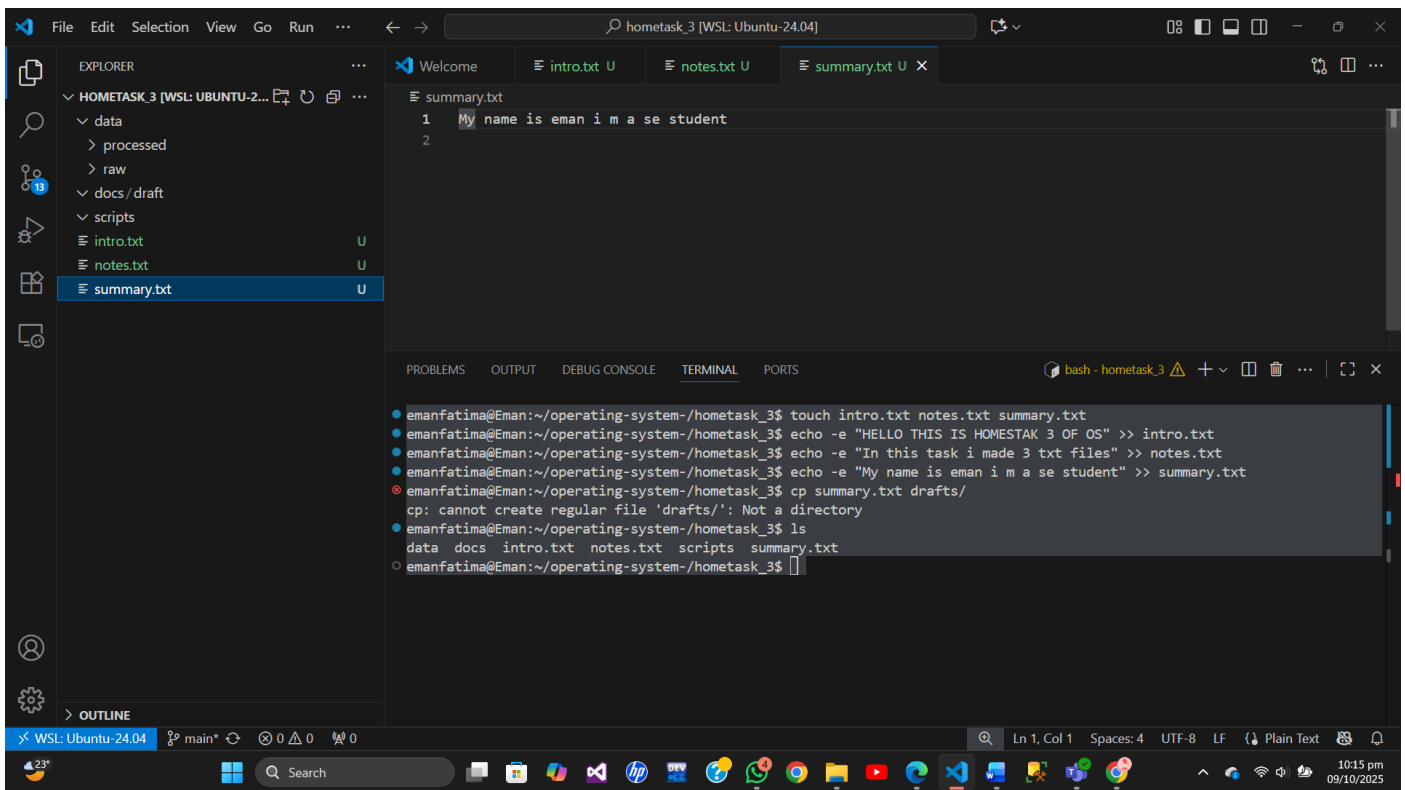
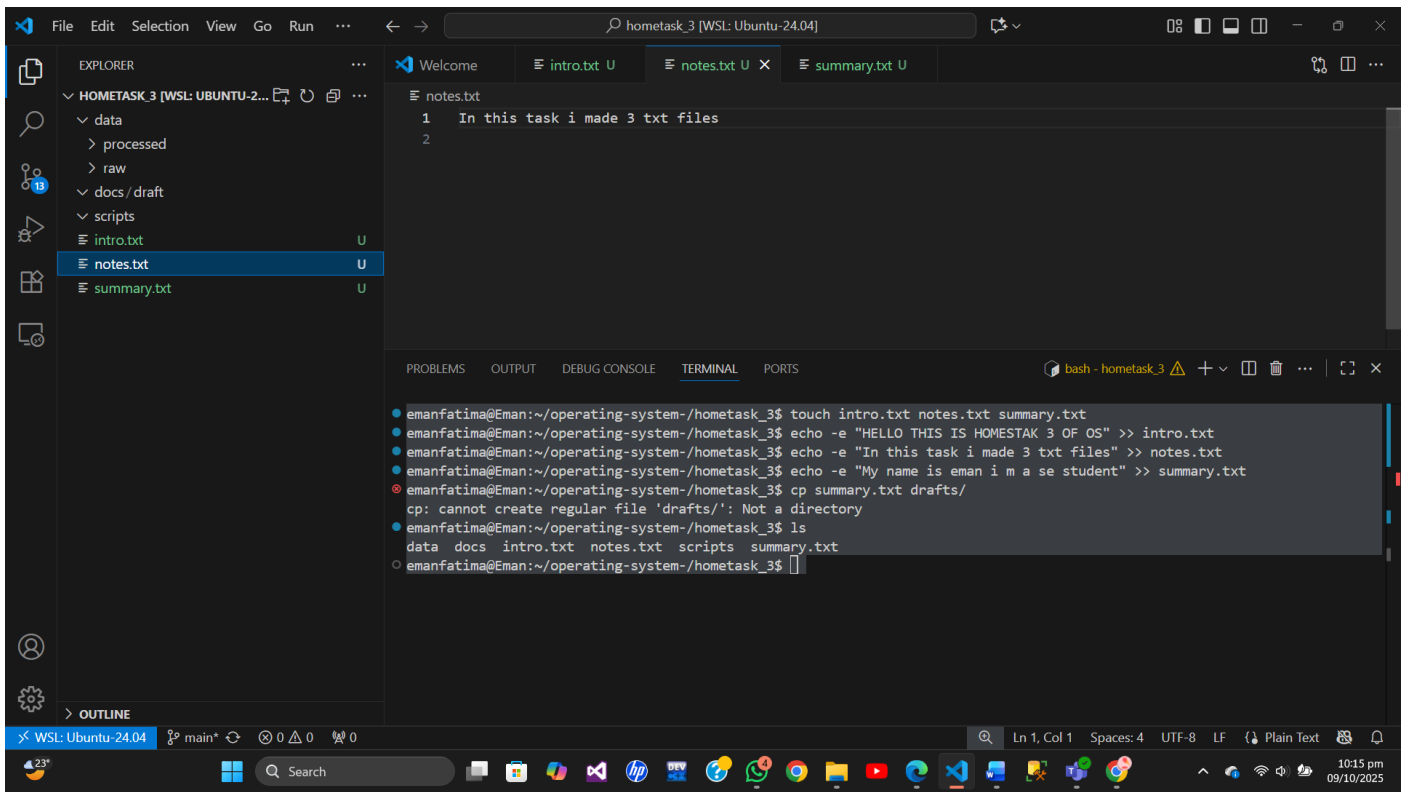
2. Inside docs/ :

- 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.

Answer :

```
File Edit Selection View Go Run ... hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
  HOMETASK_3 [WSL: UBUNTU-2...
    data
      processed
      raw
    docs/draft
    scripts
    intro.txt
    notes.txt
    summary.txt
  intro.txt
  1 HELLO THIS IS HOMESTAK 3 OF OS
  2
  PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
  bash - hometask_3
  emanfatima@Eman:~/operating-system-/hometask_3$ touch intro.txt notes.txt summary.txt
  emanfatima@Eman:~/operating-system-/hometask_3$ echo -e "HELLO THIS IS HOMESTAK 3 OF OS" >> intro.txt
  emanfatima@Eman:~/operating-system-/hometask_3$ echo -e "In this task i made 3 txt files" >> notes.txt
  emanfatima@Eman:~/operating-system-/hometask_3$ echo -e "My name is eman i m a se student" >> summary.txt
  emanfatima@Eman:~/operating-system-/hometask_3$ cp summary.txt drafts/
  cp: cannot create regular file 'drafts/': Not a directory
  emanfatima@Eman:~/operating-system-/hometask_3$ ls
  data docs intro.txt notes.txt scripts summary.txt
  emanfatima@Eman:~/operating-system-/hometask_3$
```





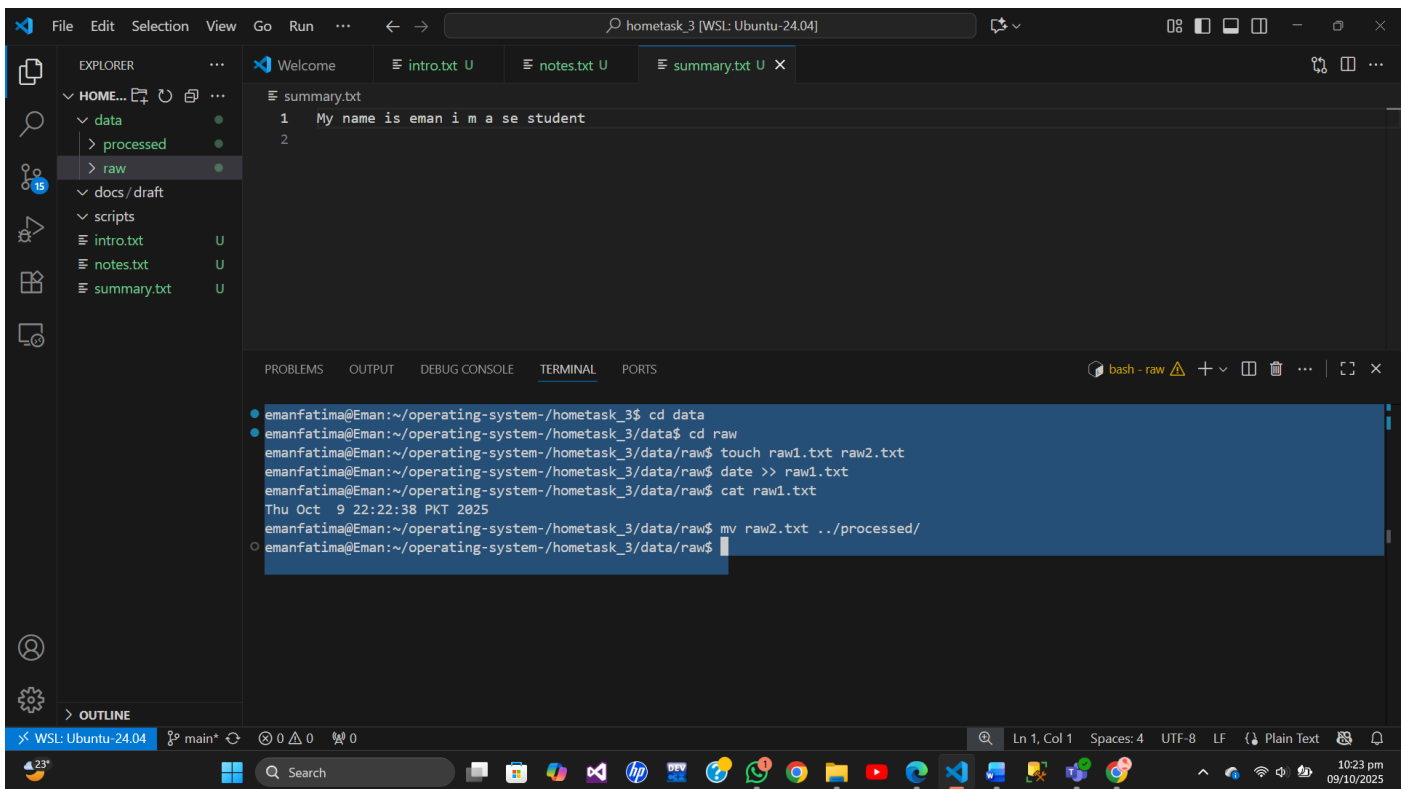
Task 3:

3. Inside `data/raw/` :

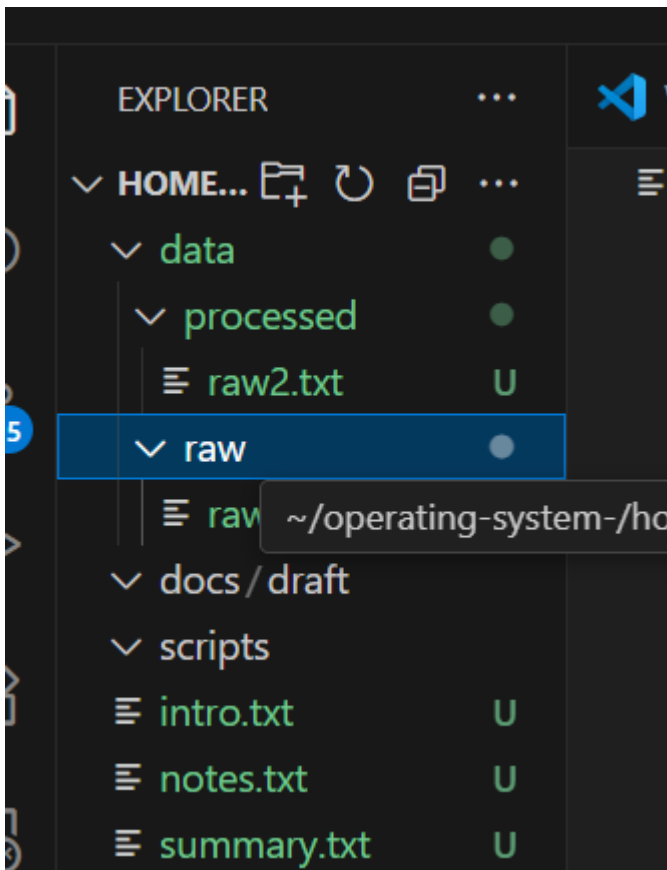
- Create two files: `raw1.txt` , `raw2.txt` .
- Append the **current date** into `raw1.txt` using the `date` command.
- Move `raw2.txt` into `processed/` using `mv` . The syntax is:

```
mv source destination
```

Answer :



```
emanfatima@Eman:~/operating-system-/hometask_3$ cd data
emanfatima@Eman:~/operating-system-/hometask_3/data$ cd raw
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ touch raw1.txt raw2.txt
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ date >> raw1.txt
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ cat raw1.txt
Thu Oct 9 22:22:38 PKT 2025
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ mv raw2.txt ../processed/
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$
```



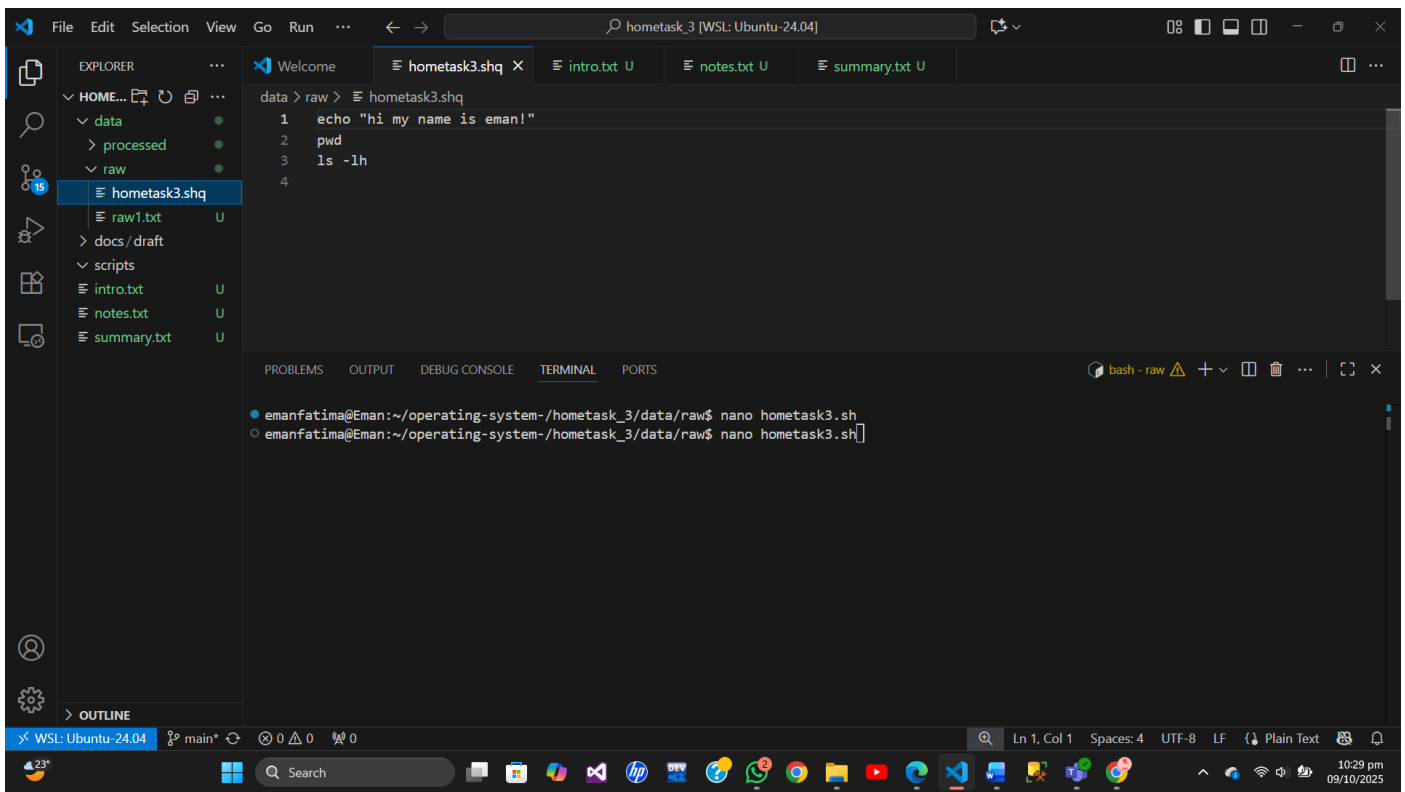
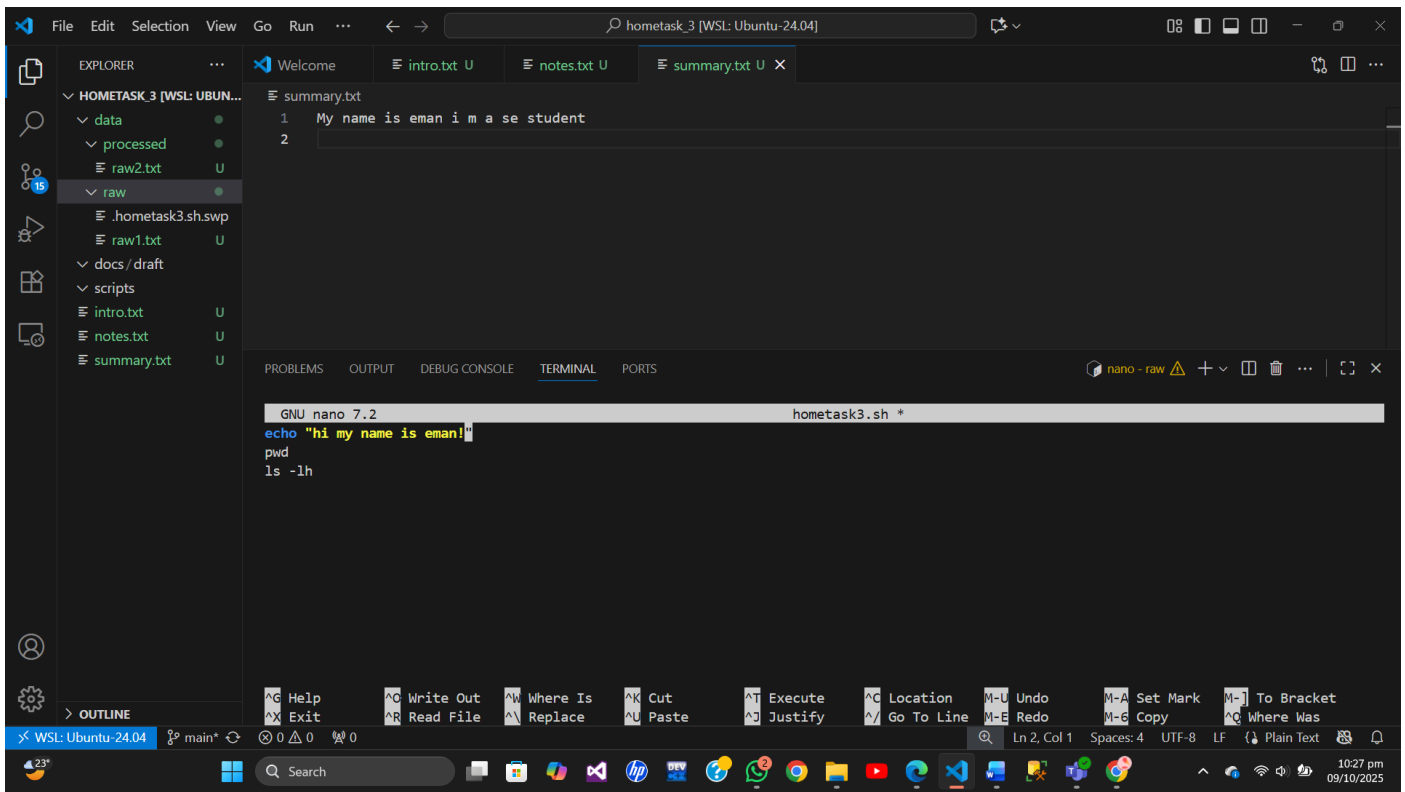
Task 4:

4. Inside `scripts/` :

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

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

Answer :

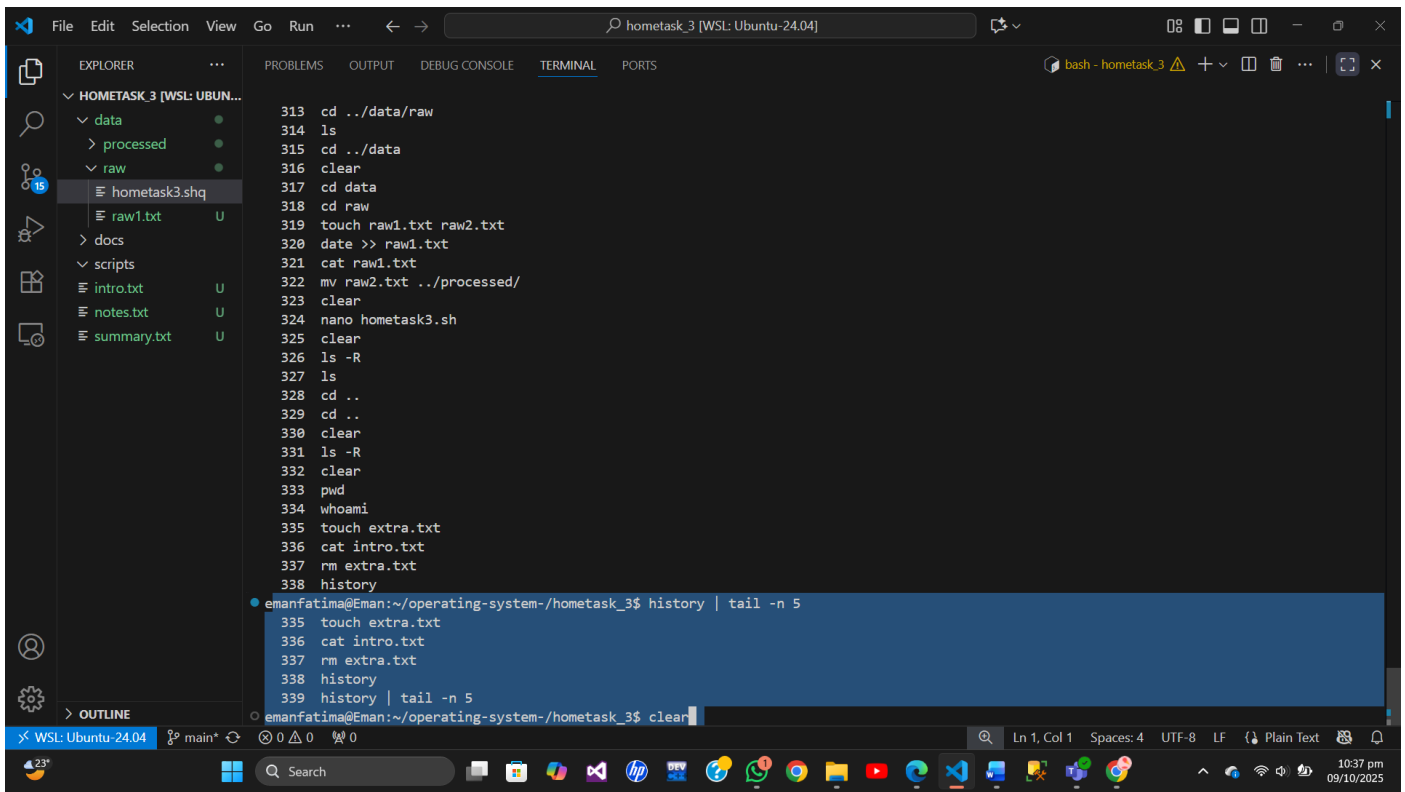


Task 5:

The image shows a Windows 11 desktop environment. The primary application is Visual Studio Code, which is open to a project named 'hometask_3' located within a WSL (Windows Subsystem for Linux) Ubuntu 24.04 environment. The interface is divided into several panes: the Explorer pane on the left shows a file tree with folders 'data', 'docs', and 'scripts', and files 'intro.txt', 'notes.txt', and 'summary.txt'. The main editor area displays the output of a terminal command 'ls -R' executed in a bash shell. The command lists the contents of the current directory and its subdirectories recursively. The output shows a directory structure with 'data', 'docs', and 'scripts' as subdirectories, and 'raw1.txt' as a file. The status bar at the bottom of the editor indicates the current file is 'main*' and provides information about the workspace (0 errors, 0 warnings, 0 hints). The Windows taskbar at the very bottom shows the Start button, a search bar, and several pinned applications including File Explorer, Microsoft Edge, and various utility tools. The system clock in the bottom right corner shows the time as 10:32 pm on 09/10/2023.

Task 6:

The image shows a screenshot of a Visual Studio Code (VS Code) editor interface. The top bar displays the menu (File, Edit, Selection, View, Go, Run, ...) and the search bar with the text 'hometask_3 [WSL: Ubuntu-24.04]'. The Explorer panel on the left shows a file tree for 'HOMETASK 3 [WSL: UBUN...]' with folders 'data', 'processed', 'raw', and 'docs', and files 'hometask3.shq', 'raw1.txt', 'intro.txt', 'notes.txt', and 'summary.txt'. The terminal window on the right shows a series of commands and their outputs. The commands are: 1. pwd, 2. whoami, 3. touch extra.txt, 4. cat intro.txt, 5. rm extra.txt, 6. history. The outputs are: 1. /home/emanfatima/operating-system-/hometask_3, 2. emanfatima, 3. (no output), 4. HELLO THIS IS HOMESTAK 3 OF OS, 5. (no output), 6. 1 wsl --list--verbos, 2 ls -l ~, 3 whoami, 4 cd /home/emanfatima, 5 ls -l, 6 clear, 7 wsl --list--verbose, 8 sudo apt update && sudo apt upgrade -y, 9 git config --global user.name "Eman fatima", 10 git config --global user.email eman14132004@gmail.com, 11 git config --list, 12 ssh-keygen -t ed25519 -C "emanfatima.com", 13 cd ~/.ssh/, 14 ls, 15 cat id_ed25519.pub, 16 ssh -T git@github.com, 17 git clone git@github.com:Emaan76/1146-eman-.git, 18 gcc --version, 19 g++ version, 20 git clone git@github.com:Emaan76/operating-system-.git, 21 nano task1.c, 22 gcc task1.c -o task1.out, 23 ./task1.out, 24 git remote -v. The status bar at the bottom shows 'WSL: Ubuntu-24.04', 'main*', '0 0 0', 'Ln 1, Col 1', 'Spaces: 4', 'UTF-8', 'LF', and 'Plain Text'.

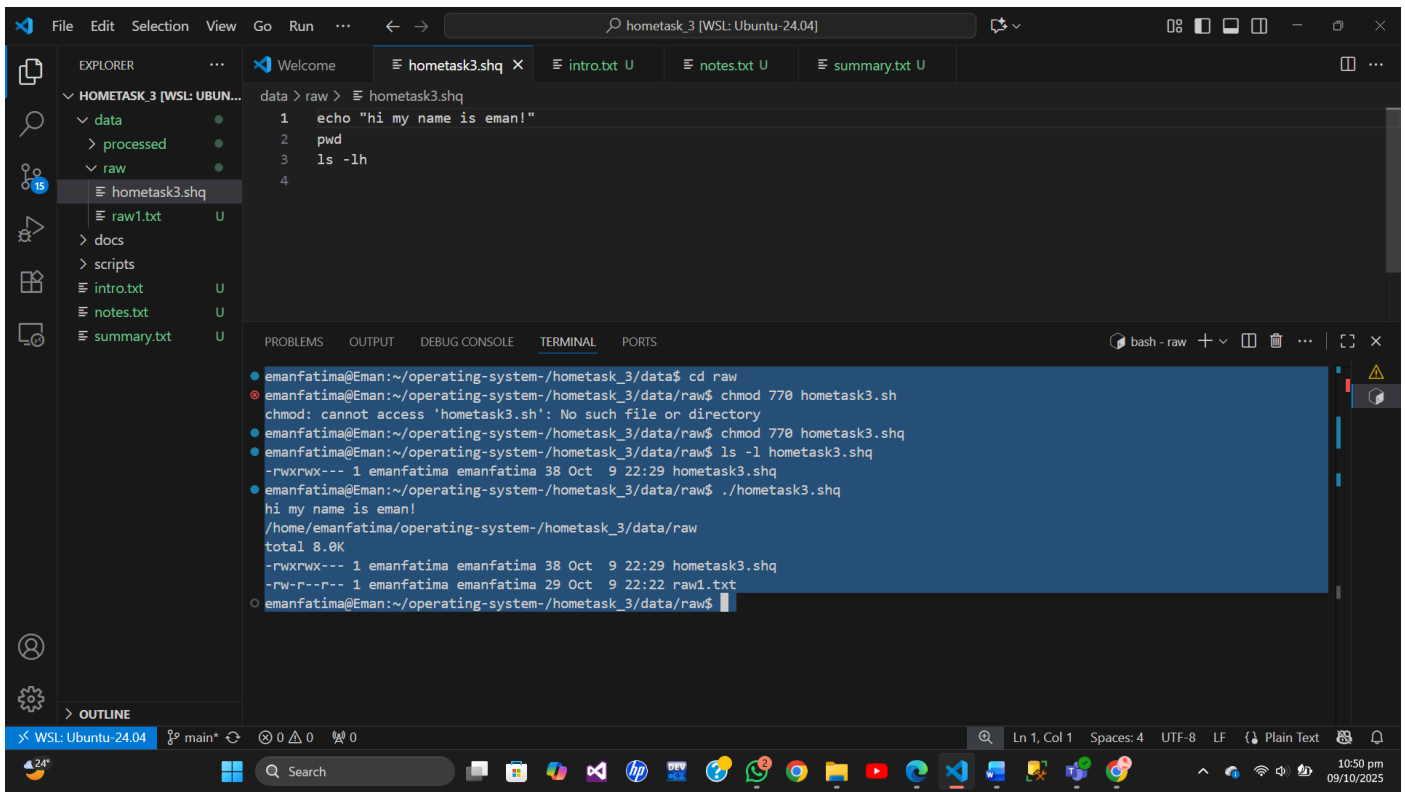


Task 7:

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
```

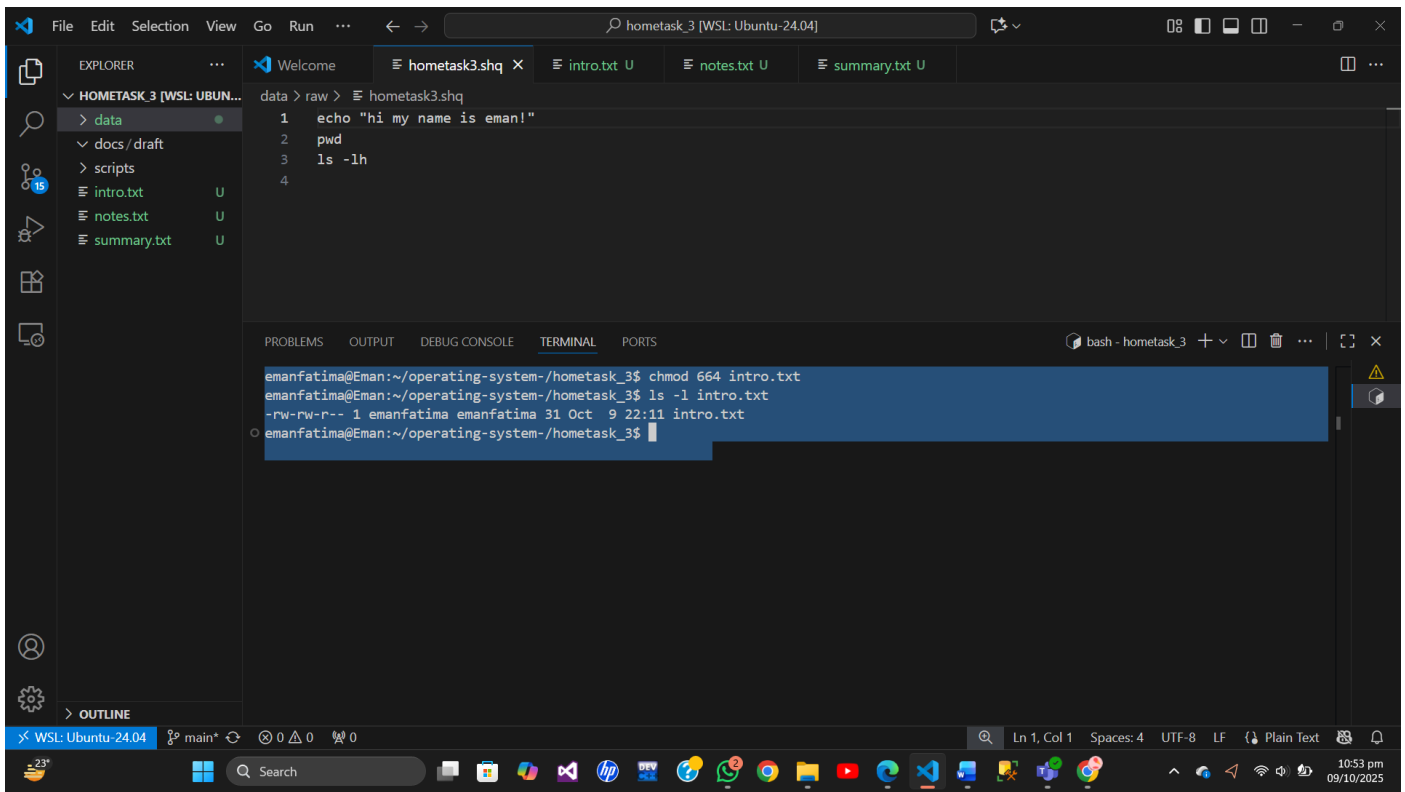


Task 8 :

Take a screenshot of its output.

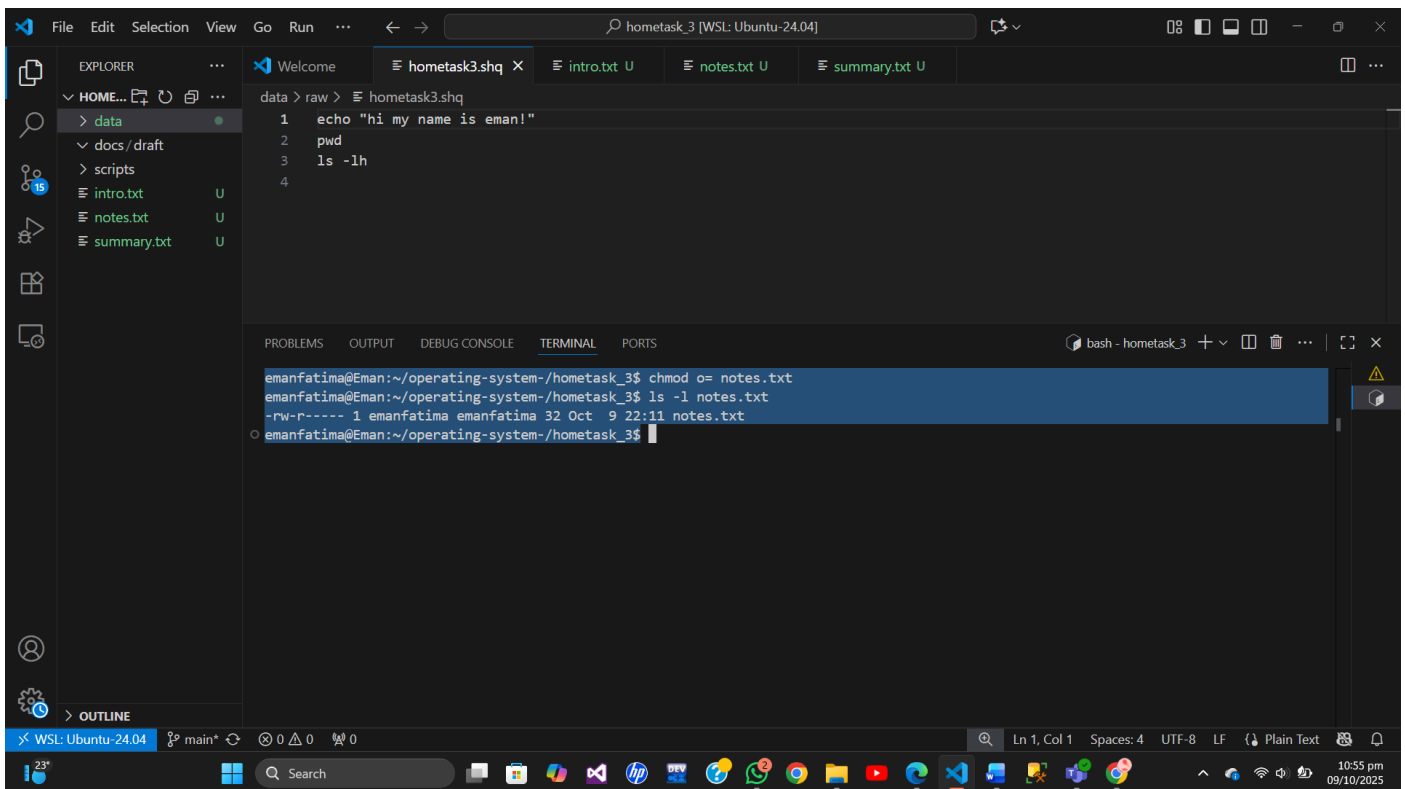
2. Change the permissions of `intro.txt` using **numeric notation** so that:

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



Task 9:

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



Task 10:

4. Verify all changes with:

```
ls -l
```

The screenshot shows the Visual Studio Code interface with a file explorer on the left, a code editor in the center, and a terminal at the bottom. The file explorer shows a project named 'HOMETASK_3 [WSL: UBUN...]' with a 'data' directory containing 'intro.txt', 'notes.txt', and 'summary.txt'. The code editor shows a file named 'hometask3.shq' with the following content:

```
1 echo "hi my name is eman!"
2 pwd
3 ls -lh
4
```

The terminal shows the output of the script execution:

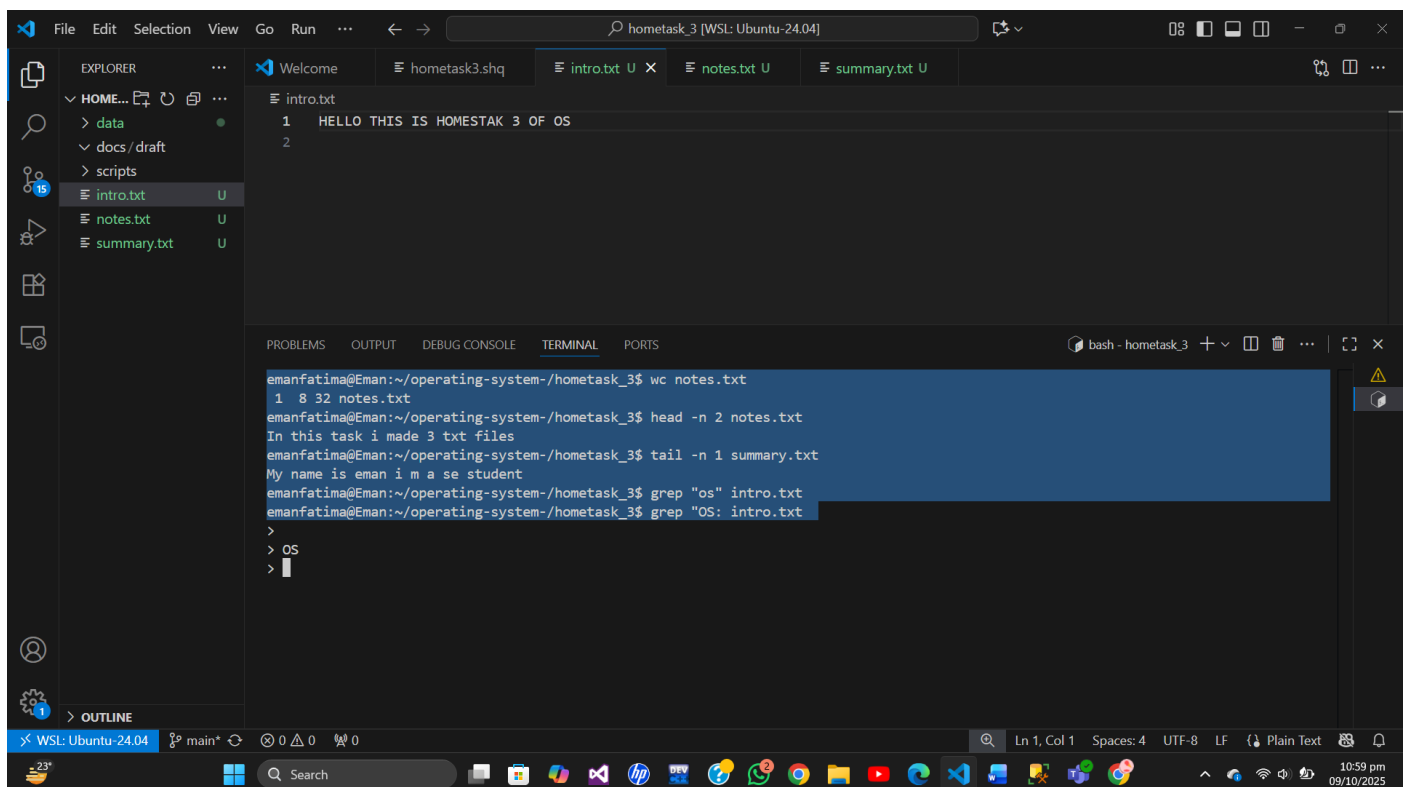
```
emanfatima@Eman:~/operating-system-/hometask_3$ ls -l
total 24
drwxr-xr-x 4 emanfatima emanfatima 4096 Oct 9 22:06 data
drwxr-xr-x 3 emanfatima emanfatima 4096 Oct 9 22:06 docs
-rw-rw-r-- 1 emanfatima emanfatima 31 Oct 9 22:11 intro.txt
-rw-r----- 1 emanfatima emanfatima 32 Oct 9 22:11 notes.txt
drwxr-xr-x 2 emanfatima emanfatima 4096 Oct 9 22:06 scripts
-rw-r--r-- 1 emanfatima emanfatima 33 Oct 9 22:13 summary.txt
```

Task 11:

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`.

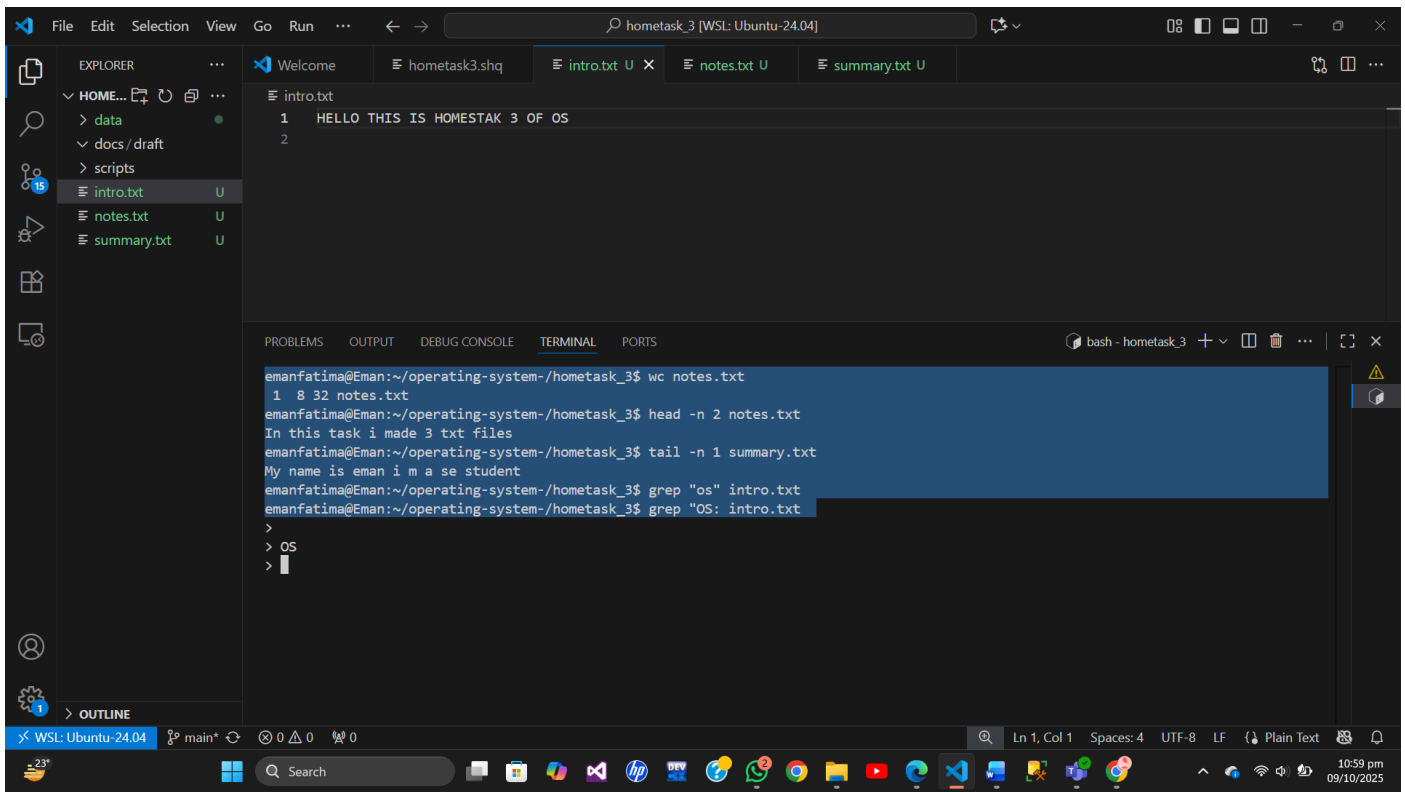
Take screenshots.



The screenshot shows a Visual Studio Code editor window with a terminal at the bottom. The terminal displays the following commands and their outputs:

```
emanfatima@Eman:~/operating-system-/hometask_3$ wc notes.txt
1  8 32 notes.txt
emanfatima@Eman:~/operating-system-/hometask_3$ head -n 2 notes.txt
In this task i made 3 txt files
emanfatima@Eman:~/operating-system-/hometask_3$ tail -n 1 summary.txt
My name is eman i m a se student
emanfatima@Eman:~/operating-system-/hometask_3$ grep "os" intro.txt
emanfatima@Eman:~/operating-system-/hometask_3$ grep "OS: intro.txt
>
> OS
> |
```

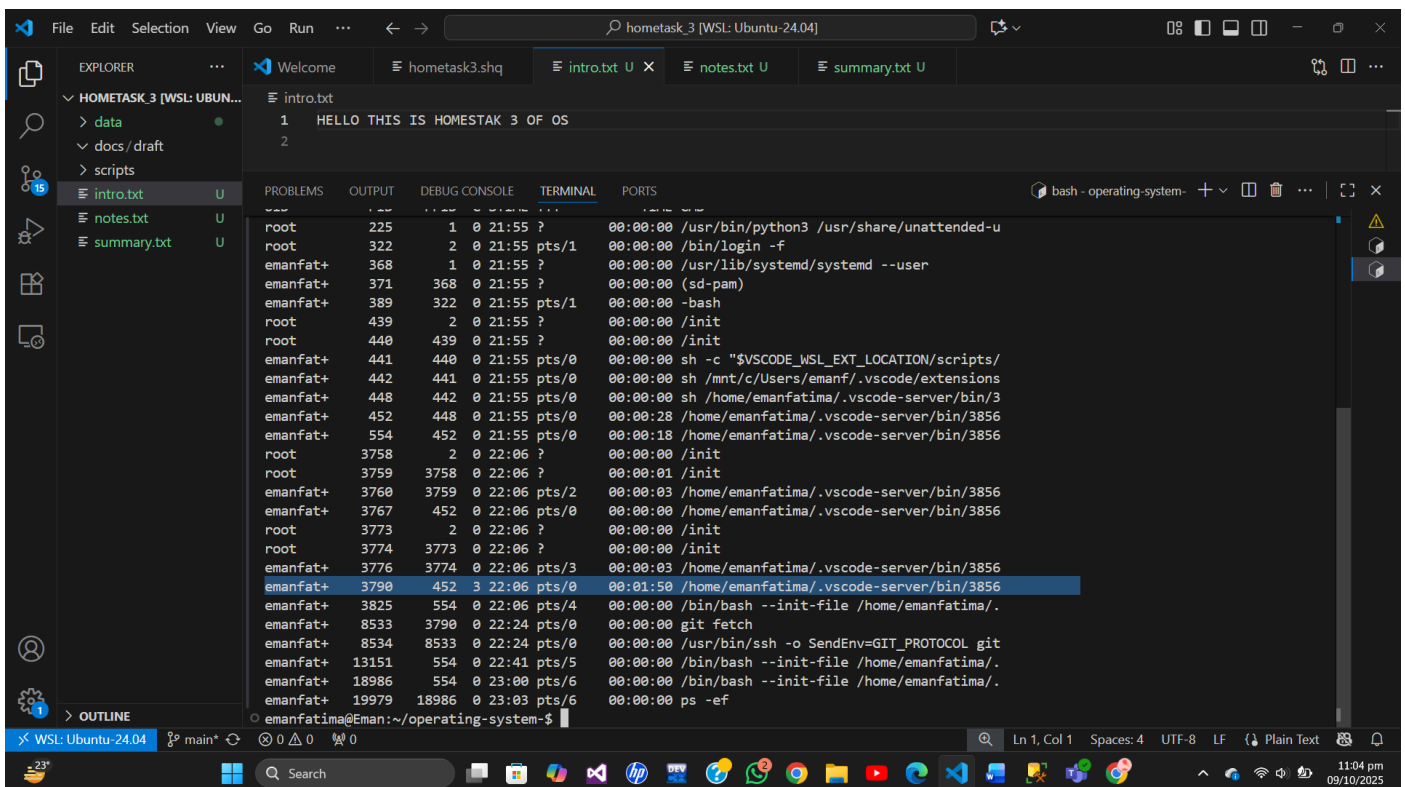
The Explorer panel on the left shows the file structure with `intro.txt`, `notes.txt`, and `summary.txt` listed. The terminal output is highlighted in blue.



Task 12:

1. Exploring Processes

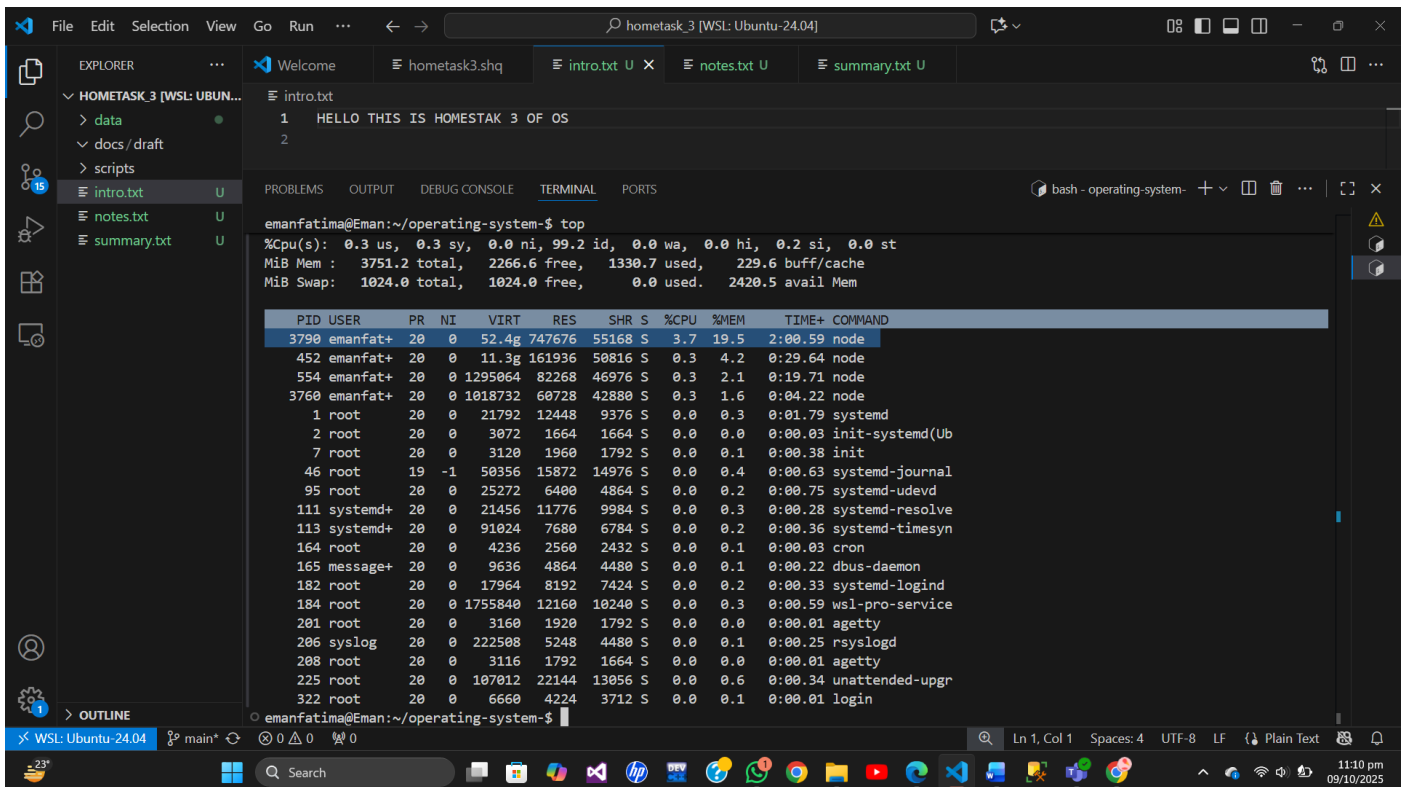
- Use `ps -ef` and identify **3 processes** running on your system. Note their **PID**, **PPID**, and **command**.



PID: 3790 is consuming cpu more .

Task 13:

- Run `top` for 20–30 seconds. Write down:
 - Which process is consuming the most CPU.
 - Which process is consuming the most memory.



```
emanfatima@Eman:~/operating-system-$ top
%Cpu(s):  0.3 us,  0.3 sy,  0.0 ni, 99.2 id,  0.0 wa,  0.0 hi,  0.2 si,  0.0 st
MiB Mem : 3751.2 total, 2266.6 free, 1330.7 used, 229.6 buff/cache
MiB Swap: 1024.0 total, 1024.0 free,  0.0 used, 2420.5 avail Mem

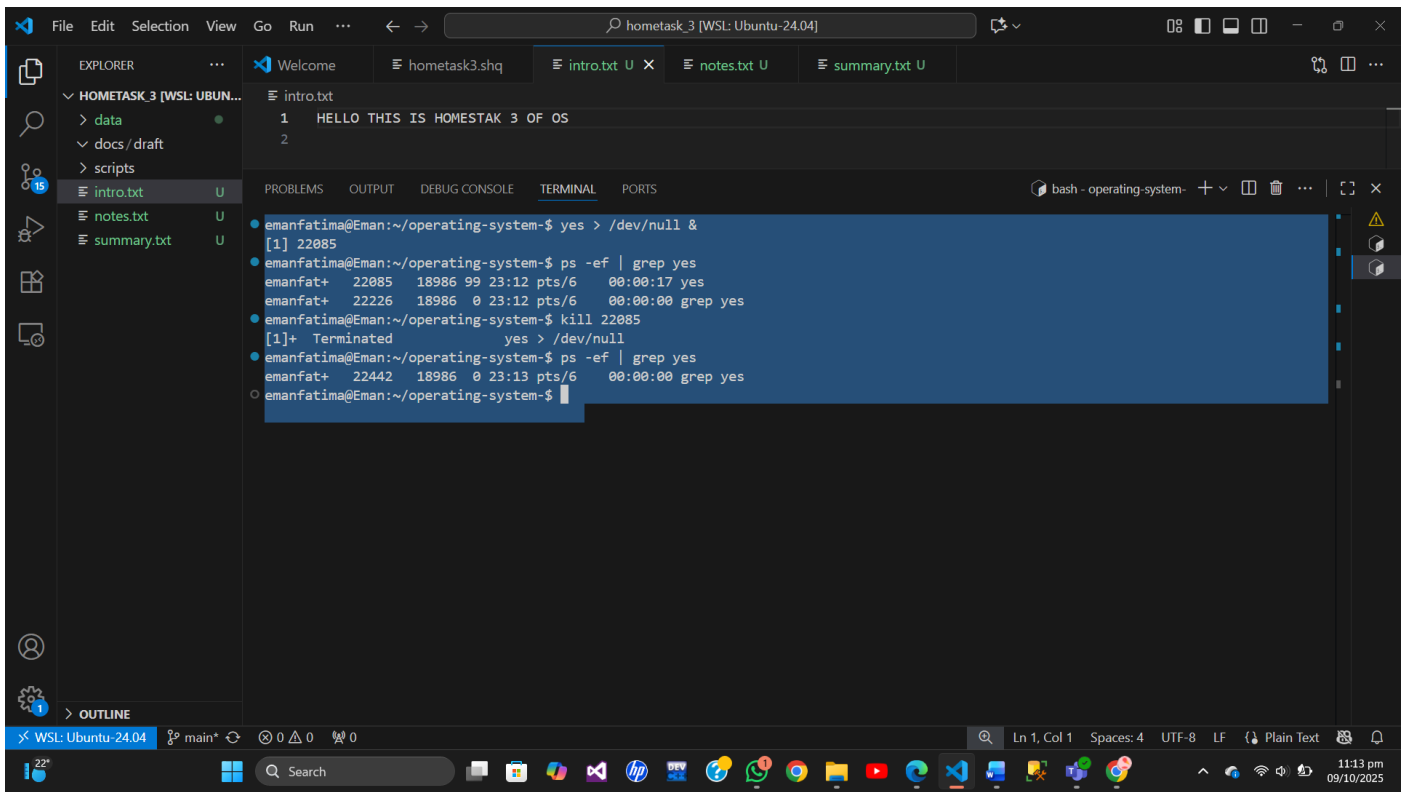
  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 3790 emanfat+ 20   0 52.4g 747676 55168 S   3.7  19.5   2:00.59 node
 452 emanfat+ 20   0 11.3g 161936 50816 S   0.3   4.2   0:29.64 node
 554 emanfat+ 20   0 1295064 82268 46976 S   0.3   2.1   0:19.71 node
 3760 emanfat+ 20   0 1018732 60728 42880 S   0.3   1.6   0:04.22 node
    1 root      20   0 21792 12448 9376 S   0.0   0.3   0:01.79 systemd
    2 root      20   0 3072 1664 1664 S   0.0   0.0   0:00.03 init-systemd(Ub
    7 root      20   0 3120 1960 1792 S   0.0   0.1   0:00.38 init
   46 root      19  -1 50356 15872 14976 S   0.0   0.4   0:00.63 systemd-journal
   95 root      20   0 25272 6400 4864 S   0.0   0.2   0:00.75 systemd-udev
  111 systemd+  20   0 21456 11776 9984 S   0.0   0.3   0:00.28 systemd-resolve
  113 systemd+  20   0 91024 7680 6784 S   0.0   0.2   0:00.36 systemd-timesyn
  164 root      20   0 4236 2560 2432 S   0.0   0.1   0:00.03 cron
  165 message+  20   0 9636 4864 4480 S   0.0   0.1   0:00.22 dbus-daemon
  182 root      20   0 17964 8192 7424 S   0.0   0.2   0:00.33 systemd-logind
  184 root      20   0 1755840 12160 10240 S   0.0   0.3   0:00.59 wsl-pro-service
  201 root      20   0 3160 1920 1792 S   0.0   0.0   0:00.01agetty
  206 syslog    20   0 222508 5248 4480 S   0.0   0.1   0:00.25 rsyslogd
  208 root      20   0 3116 1792 1664 S   0.0   0.0   0:00.01agetty
  225 root      20   0 107012 22144 13056 S   0.0   0.6   0:00.34 unattended-upgr
  322 root      20   0 6660 4224 3712 S   0.0   0.1   0:00.01 login
```

Task 14:

2. Practice with Infinite Process

- Start:

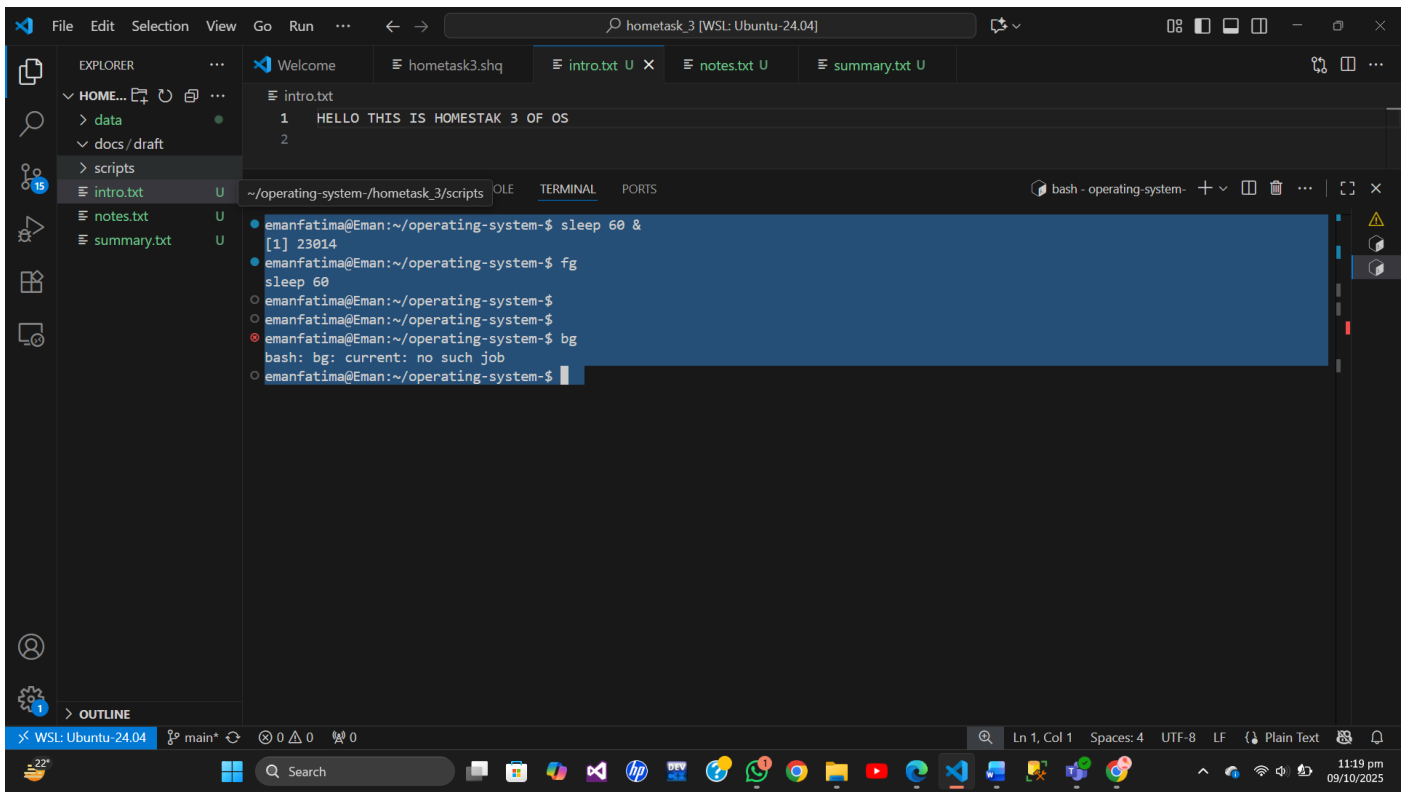
```
yes > /dev/null &
```
- Locate its PID using `ps -ef | grep yes`.
- Kill it using `kill <PID>` and verify using `ps`.



Task 15 :

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`.
-



Task 16 :

Code :

```
#include <unistd.h>
```

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
int main() {
```

```
    pid_t pid = fork();
```

```
    if (pid == -1) {
```

```
        perror("fork failed");
```

```
        exit(1);
```

```
    }
```

```
    else if (pid == 0) {
```

```
        // Child process: create a new session and execute 'top'
```

```
        if (setsid() == -1) {
```

```
            perror("setsid failed");
```

```
        exit(1);
    }

    execl("/usr/bin/top", "top", NULL);

    // If execl fails, this line will execute
    perror("execl failed");
    exit(1);
}

else {
    // Parent process
    printf("Child PID: %d\n", pid);
}

return 0;
}
```

File Edit Selection View Go Run ... hometask_3 [WSL: Ubuntu-24.04]

EXPLORED

- HOMETASK_3 [WSL: UBUN...
- data
- docs / draft
- scripts
- ans
- intro.txt U
- notes.txt U
- summary.txt U
- task15.c

task15.c

```
1 #include <unistd.h>
2 #include <stdio.h>
3 #include <stdlib.h>
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

bash - hometask_3

```
emanfatima@Eman:~/operating-system-/hometask_3$ ./ans
Child PID: 26981
emanfatima@Eman:~/operating-system-/hometask_3$
top - 23:31:08 up 1:36, 1 user, load average: 0.05, 0.09, 0.08
Tasks: 41 total, 1 running, 40 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 0.4 sy, 0.0 ni, 99.1 id, 0.1 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 3751.2 total, 2257.3 free, 1340.2 used, 229.6 buff/cache
MiB Swap: 1024.0 total, 1024.0 free, 0.0 used, 2411.1 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3790	emanfat+	20	0	52.4g	748316	55168	S	3.3	19.5	2:34.62	node
113	systemd+	20	0	91024	7680	6784	S	0.7	0.2	0:00.42	systemd-timesyn
452	emanfat+	20	0	11.3g	162064	50816	S	0.7	4.2	0:33.86	node
46	root	19	-1	50356	15872	14976	S	0.3	0.4	0:00.71	systemd-journal
554	emanfat+	20	0	1297624	85596	46976	S	0.3	2.2	0:26.26	node
3759	root	20	0	3096	1160	1024	S	0.3	0.0	0:01.77	Relay(3760)
3760	emanfat+	20	0	1018732	60728	42880	S	0.3	1.6	0:05.62	node
26981	emanfat+	20	0	9264	5376	3328	R	0.3	0.1	0:00.02	top
1	root	20	0	21792	12448	9376	S	0.0	0.3	0:01.82	systemd
2	root	20	0	3072	1664	1664	S	0.0	0.0	0:00.03	init-systemd(Ub
7	root	20	0	3120	1960	1792	S	0.0	0.1	0:00.38	init
95	root	20	0	25272	6400	4864	S	0.0	0.2	0:00.85	systemd-udev
111	systemd+	20	0	21456	11776	9984	S	0.0	0.3	0:00.29	systemd-resolve
164	root	20	0	4236	2560	2432	S	0.0	0.1	0:00.05	cron
165	message+	20	0	9636	4864	4480	S	0.0	0.1	0:00.25	dbus-daemon
182	root	20	0	17964	8192	7424	S	0.0	0.2	0:00.34	systemd-logind
184	root	20	0	1755840	12160	10240	S	0.0	0.3	0:00.67	ws1-pro-service

WSL: Ubuntu-24.04 main* 0 0 0 0 Ln 32, Col 1 Spaces: 4 UTF-8 LF {} C 11:31 pm 09/10/2025

File Edit Selection View Go Run ... hometask_3 [WSL: Ubuntu-24.04]

EXPLORED

- HOMETASK_3 [WSL: UBUN...
- data
- docs / draft
- scripts
- ans
- intro.txt U
- notes.txt U
- summary.txt U
- task15.c

task15.c

```
1 #include <unistd.h>
2 #include <stdio.h>
3 #include <stdlib.h>
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

bash - hometask_3

```
emanfatima@Eman:~/operating-system-/hometask_3$ ps -ef | grep top
emanfat+ 28213 26350 0 23:34 pts/7 00:00:00 grep top
emanfatima@Eman:~/operating-system-/hometask_3$ kill -9 28213
bash: kill: (28213) - No such process
emanfatima@Eman:~/operating-system-/hometask_3$
```

WSL: Ubuntu-24.04 main* 0 0 0 0 Ln 32, Col 1 Spaces: 4 UTF-8 LF {} C 11:36 pm 09/10/2025