National Textile University

Department of Computer Science

Subject: Operating System

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Reg number:23-NTU-CS-1201

Section: BS SE A

Semester: 5th

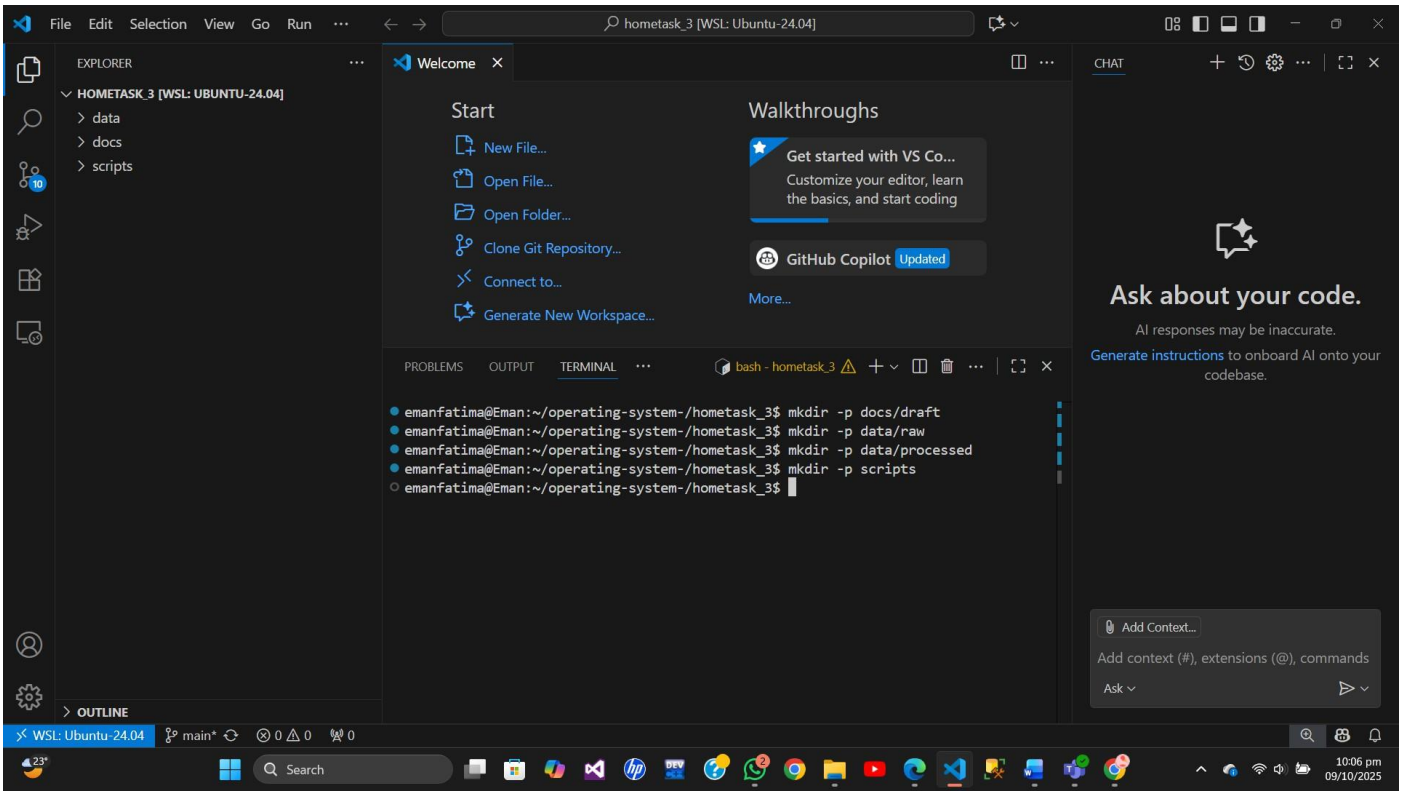
Home task 3:

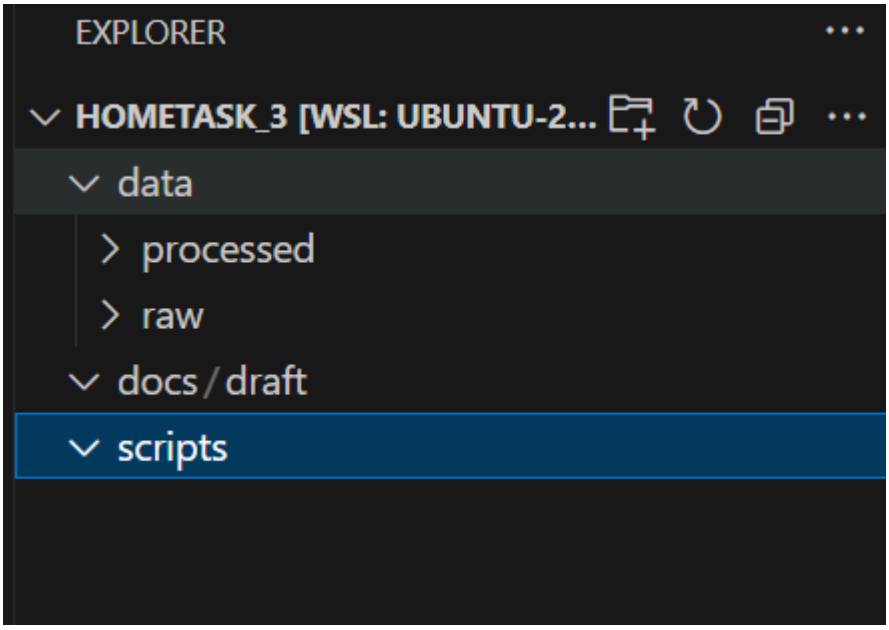
Task 1:

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

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

Answer :

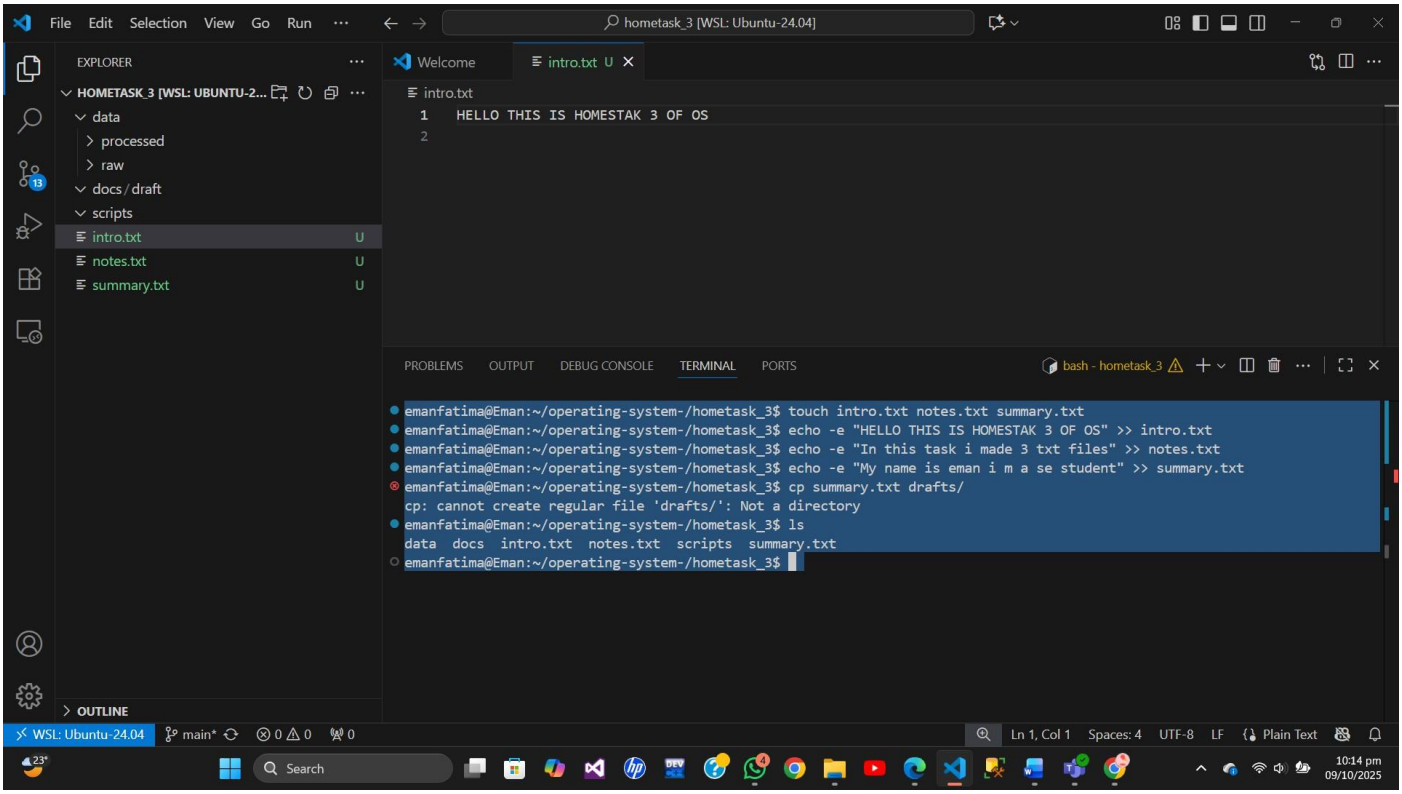


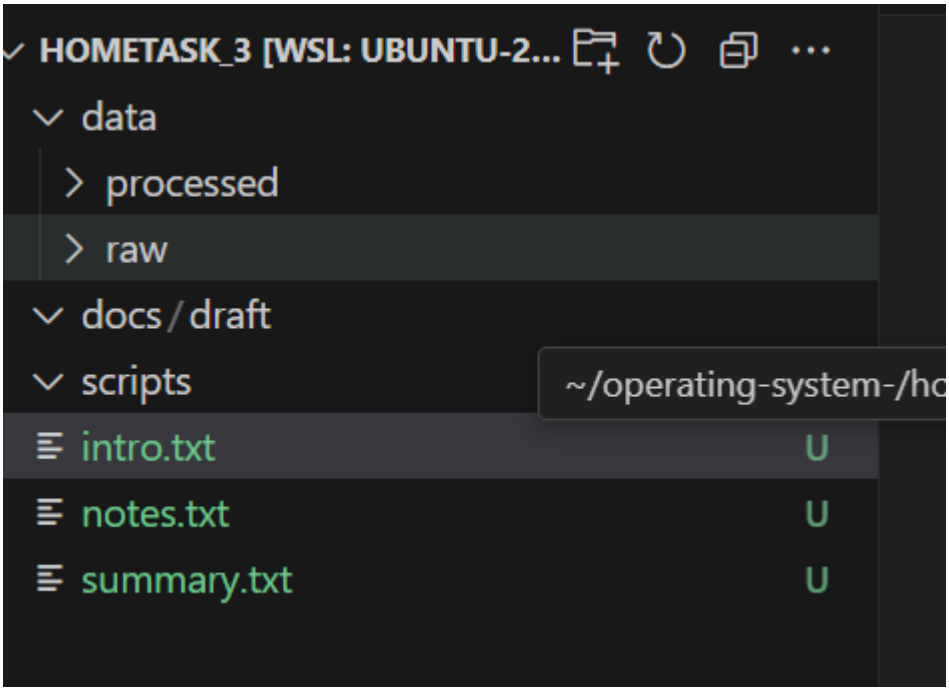


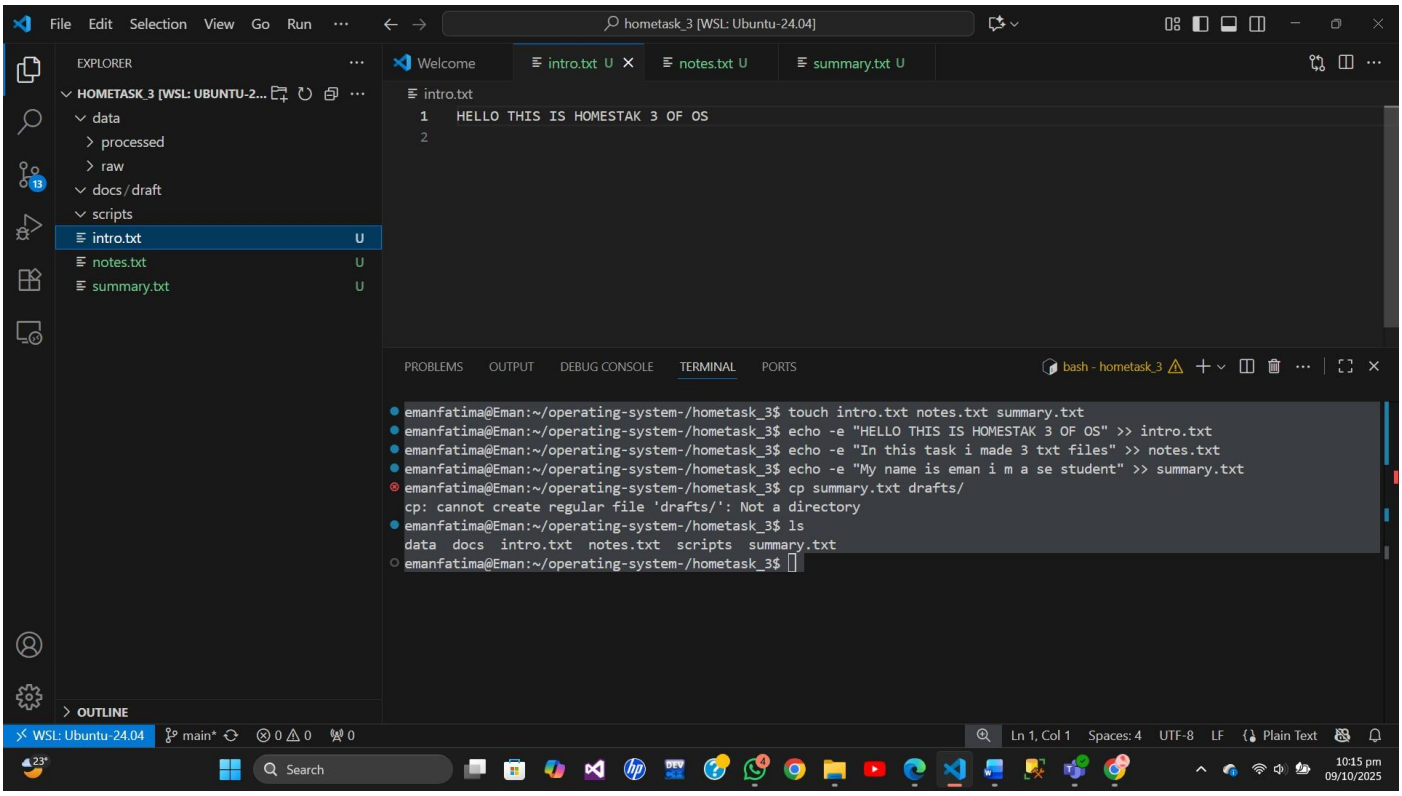
Task 2:

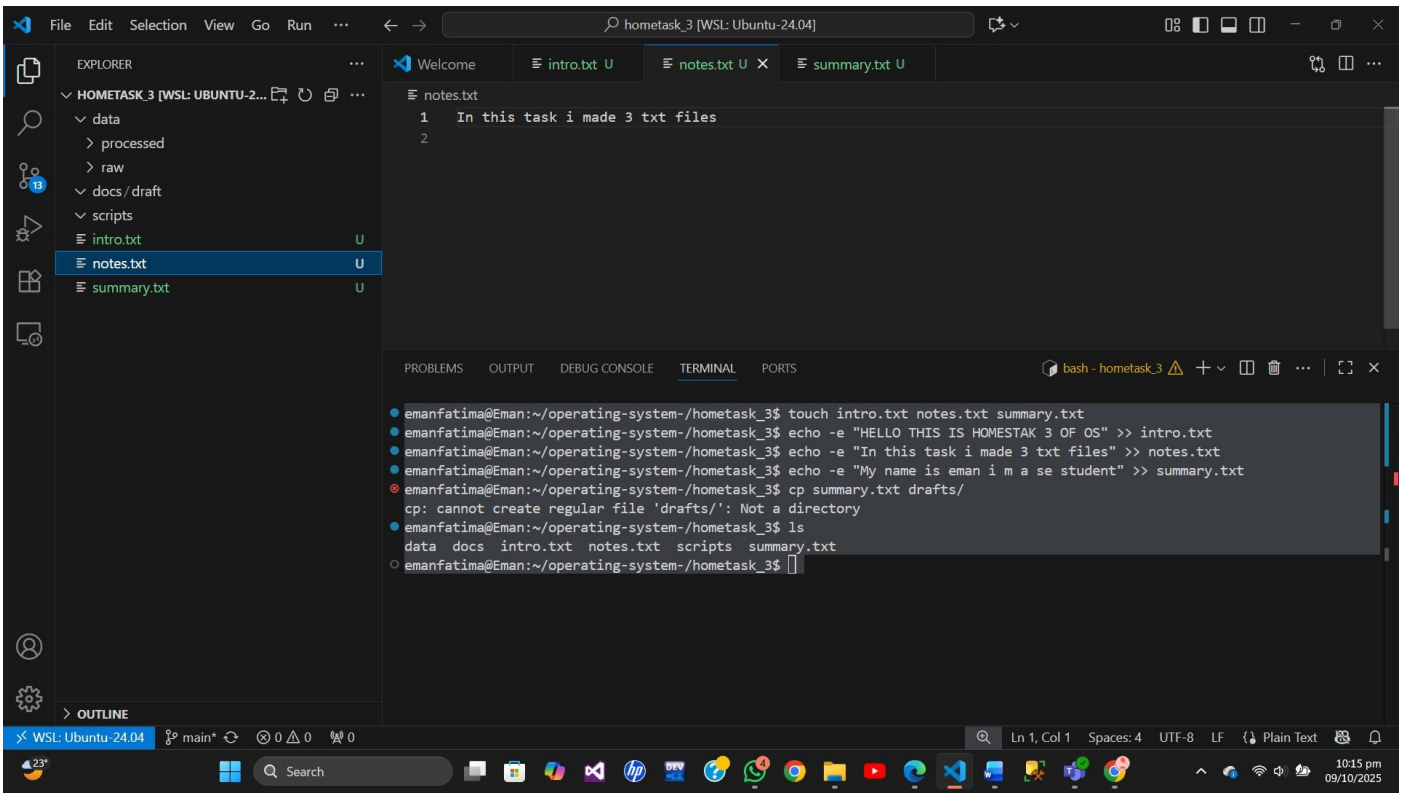
2. Inside `docs/`:
   - Create three files: `intro.txt`, `notes.txt`, `summary.txt`.
   - Add at least **two lines of text** into each using `echo >>`.
   - Copy `summary.txt` into the `drafts/` folder using `cp` command.

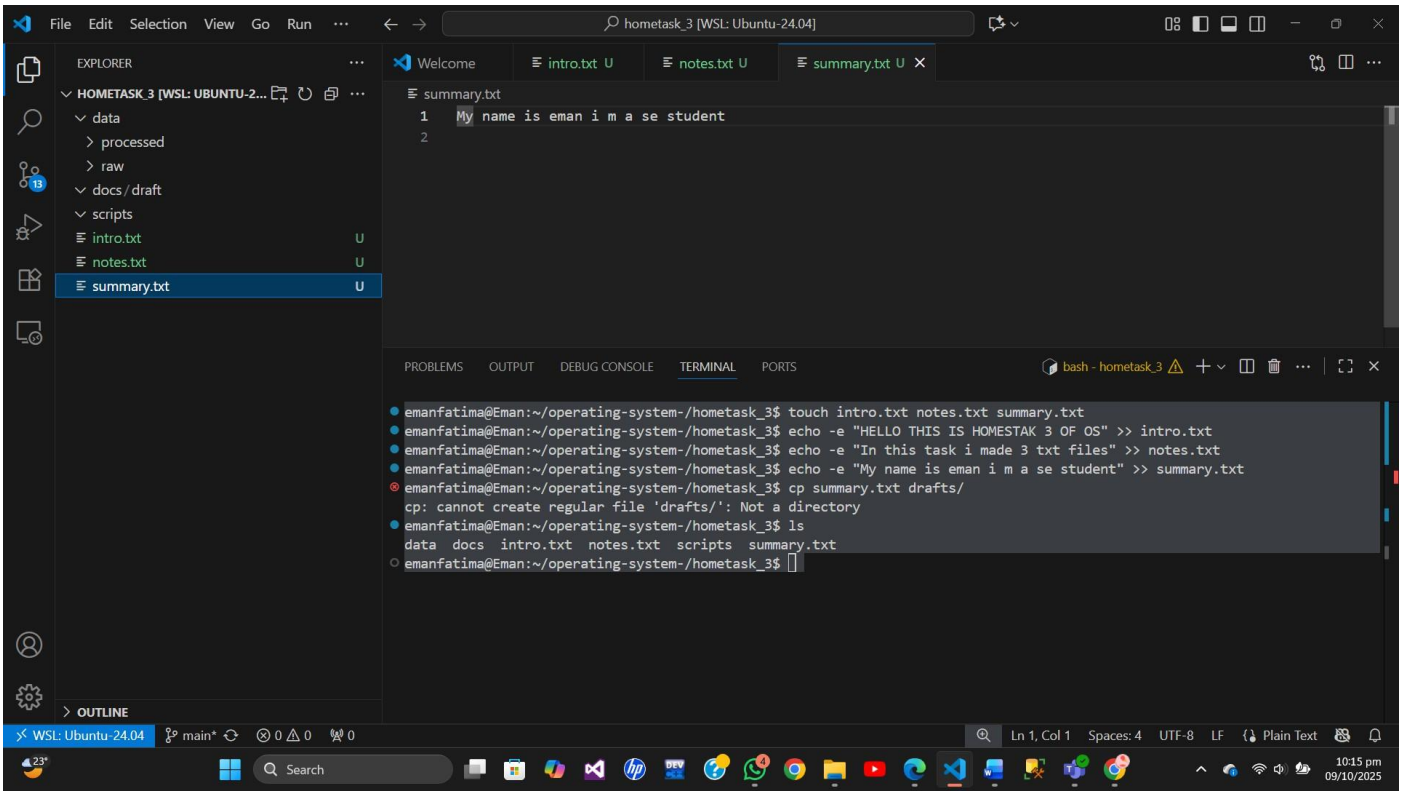
Answer :




HOMETASK_3 [WSL: UBUNTU-2...
data
processed
raw
docs / draft
scripts
~/operating-system-/ho
intro.txt U
notes.txt U
summary.txt U


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 U
notes.txt U
summary.txt U
Welcome
intro.txt U
notes.txt U
summary.txt U
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$
OUTLINE
WSL: Ubuntu-24.04
main*
Ln 1, Col 1
Spaces: 4
UTF-8
LF
Plain Text
Search
10:15 pm
09/10/2025


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 U
notes.txt U
summary.txt U
Welcome
intro.txt U
notes.txt U
summary.txt U
notes.txt
1 In this task i made 3 txt files
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$
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:15 pm
09/10/2025

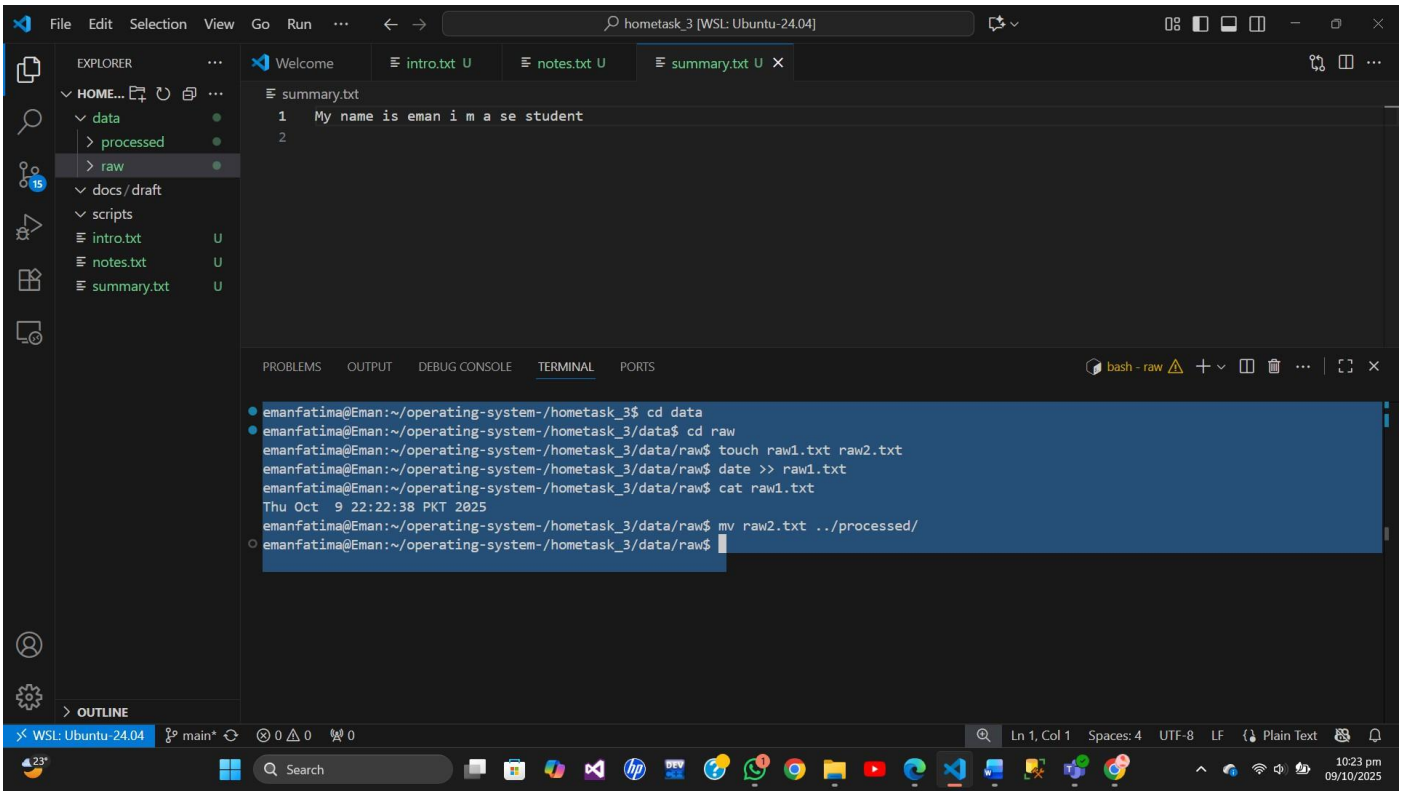

File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOMETASK_3 [WSL: UBUNTU-2...
data
processed
raw
docs / draft
scripts
intro.txt U
notes.txt U
summary.txt U
Welcome
intro.txt U
notes.txt U
summary.txt U
summary.txt
1 My name is eman i m a se student
2
PROBLEMS OUTPUT DEBUG CONSOLE 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$
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:15 pm
09/10/2025

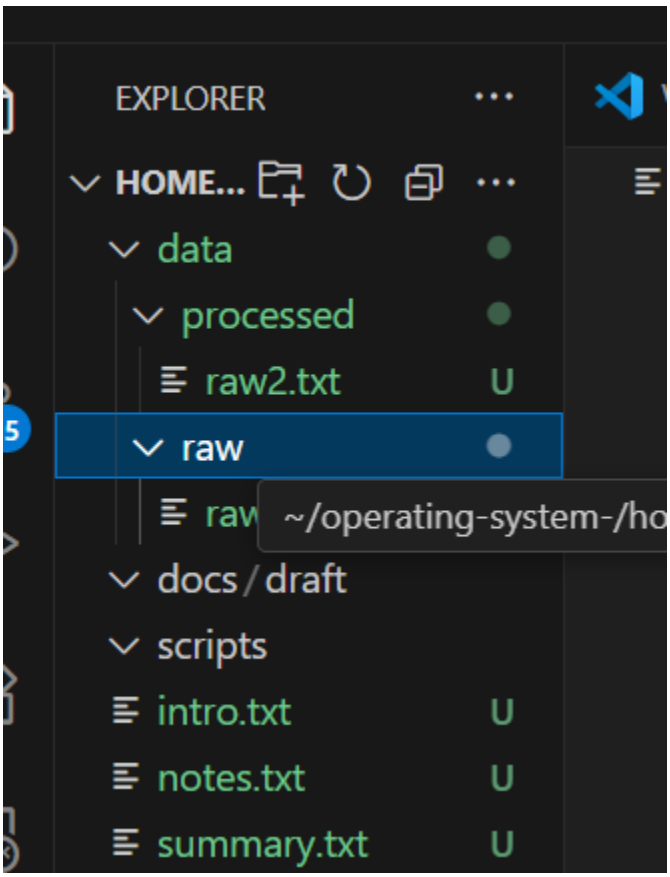
Task 3:

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 :



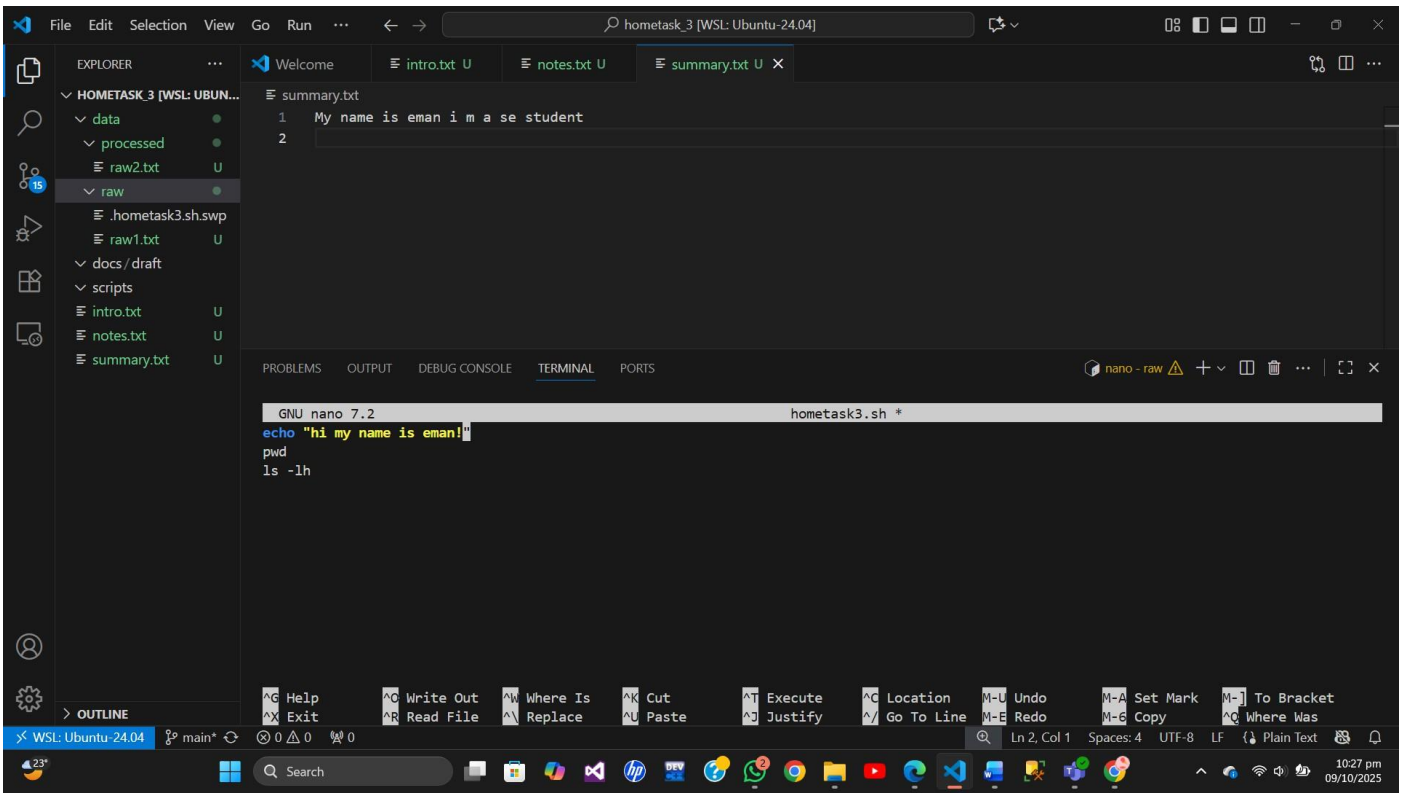


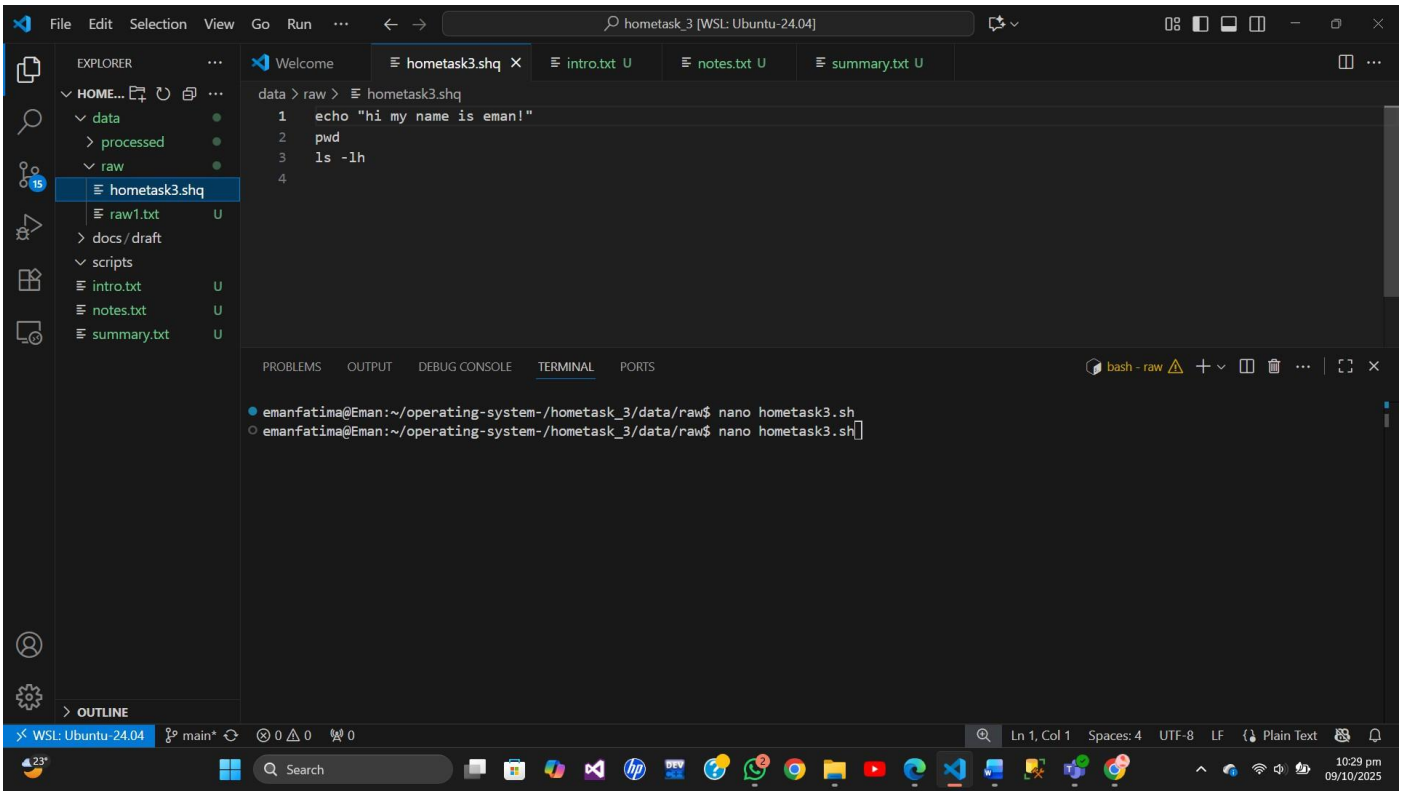
Task 4:

4. Inside `scripts/` :
   - Create a script named `hello.sh` with the following content:

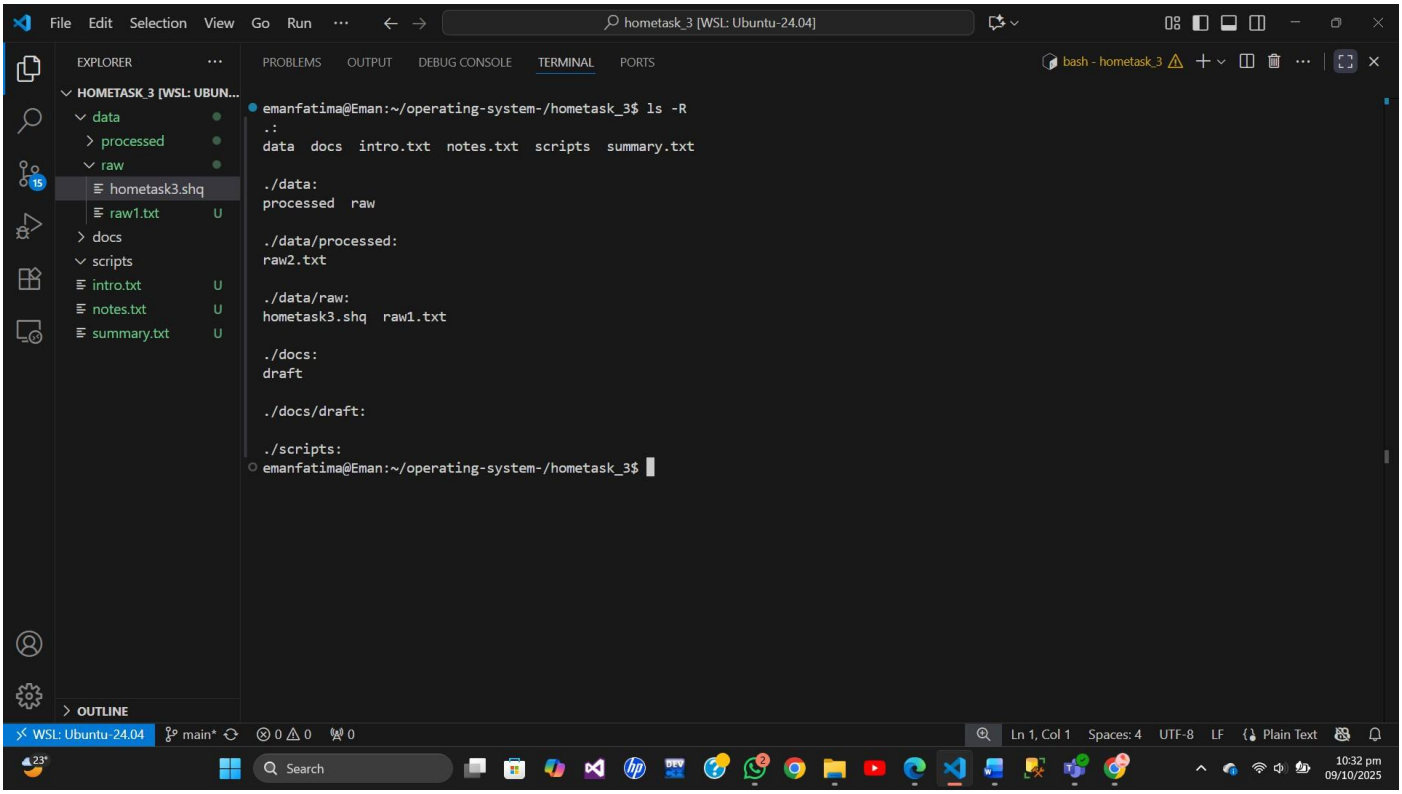
```
echo "Hello World"
pwd
ls -lh
```

Answer :

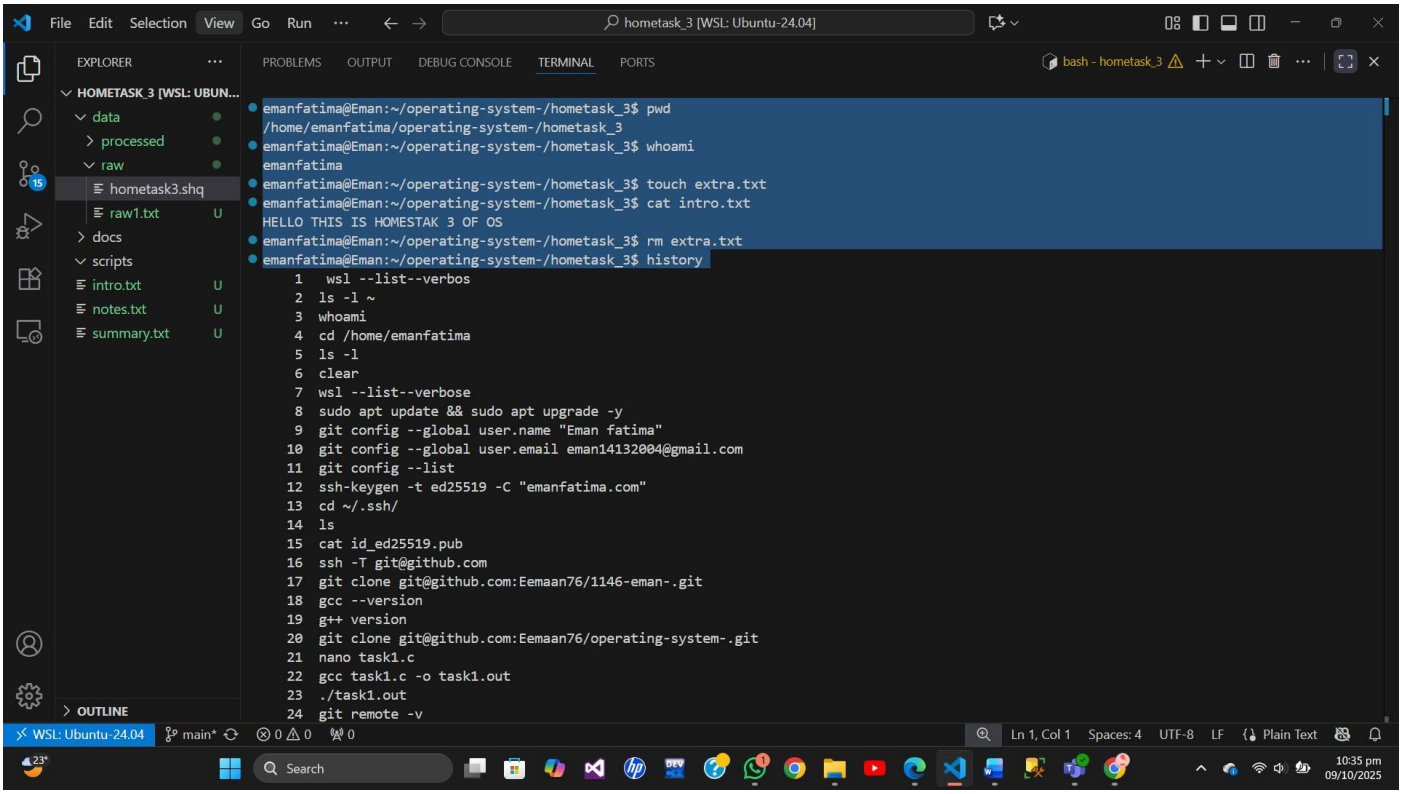

File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOMETASK_3 [WSL: UBUN...
data
processed
raw2.txt U
raw
.hometask3.sh.swp
raw1.txt U
docs / draft
scripts
intro.txt U
notes.txt U
summary.txt U
Welcome
intro.txt U
notes.txt U
summary.txt U
summary.txt
1 My name is eman i m a se student
2
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
nano - raw
GNU nano 7.2 hometask3.sh *
echo "hi my name is eman!"
pwd
ls -lh
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo M-A Set Mark M-] To Bracket
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo M-6 Copy ^Q Where Was
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 2, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:27 pm
09/10/2025

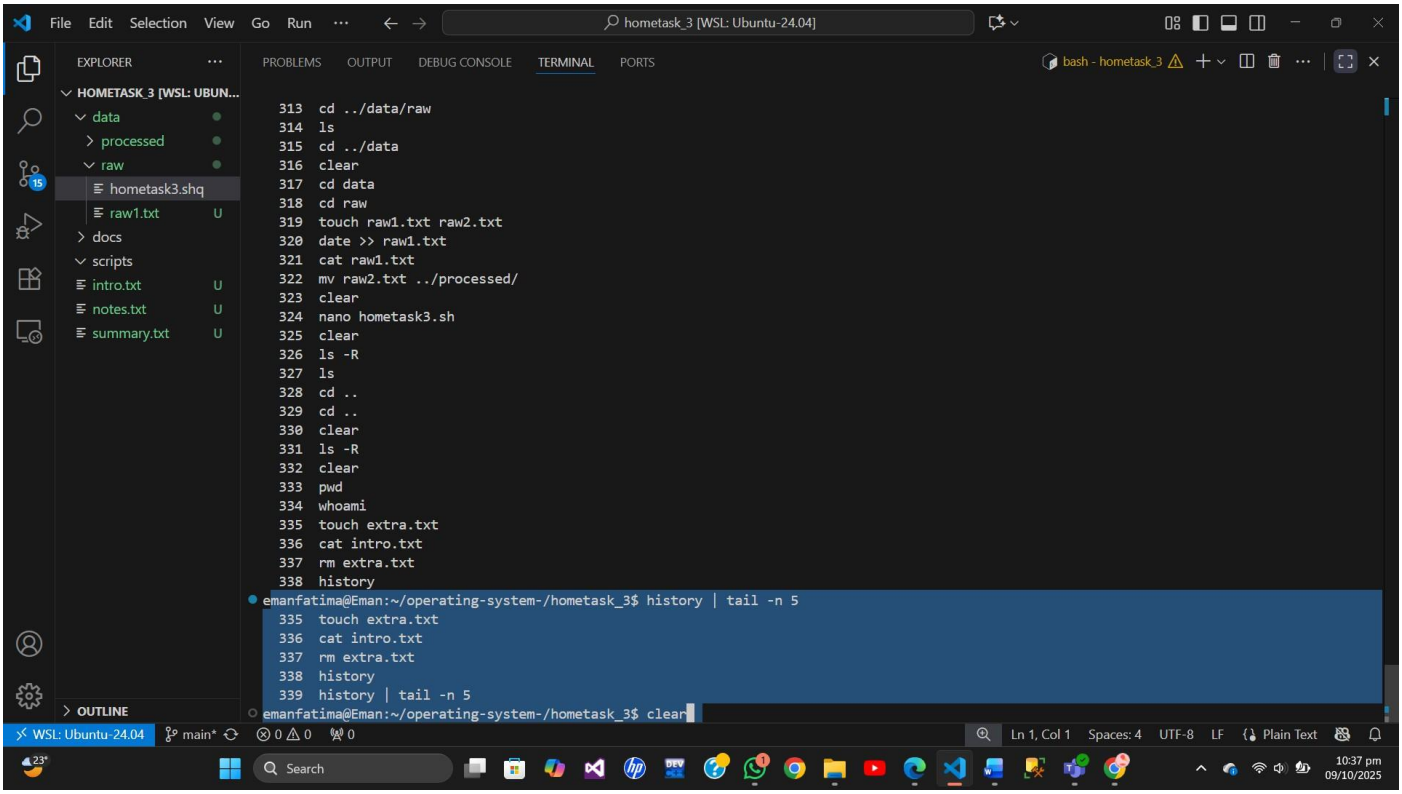

File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOME...
data
processed
raw
hometask3.shq
raw1.txt U
docs / draft
scripts
intro.txt U
notes.txt U
summary.txt U
Welcome
hometask3.shq
intro.txt U
notes.txt U
summary.txt U
data > raw > hometask3.shq
1 echo "hi my name is eman!"
2 pwd
3 ls -lh
4
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - raw
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ nano hometask3.sh
emanfatima@Eman:~/operating-system-/hometask_3/data/raw$ nano hometask3.sh
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:29 pm
09/10/2025

Task 5:


File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOMETASK_3 [WSL: UBUN...
data
processed
raw
hometask3.shq
raw1.txt
docs
scripts
intro.txt
notes.txt
summary.txt
OUTLINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - hometask_3
emanfatima@Eman:~/operating-system-/hometask_3$ ls -R
.:
data docs intro.txt notes.txt scripts summary.txt
./data:
processed raw
./data/processed:
raw2.txt
./data/raw:
hometask3.shq raw1.txt
./docs:
draft
./docs/draft:
./scripts:
emanfatima@Eman:~/operating-system-/hometask_3$
WSL: Ubuntu-24.04 main* 0 0 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:32 pm
09/10/2025

Task 6:

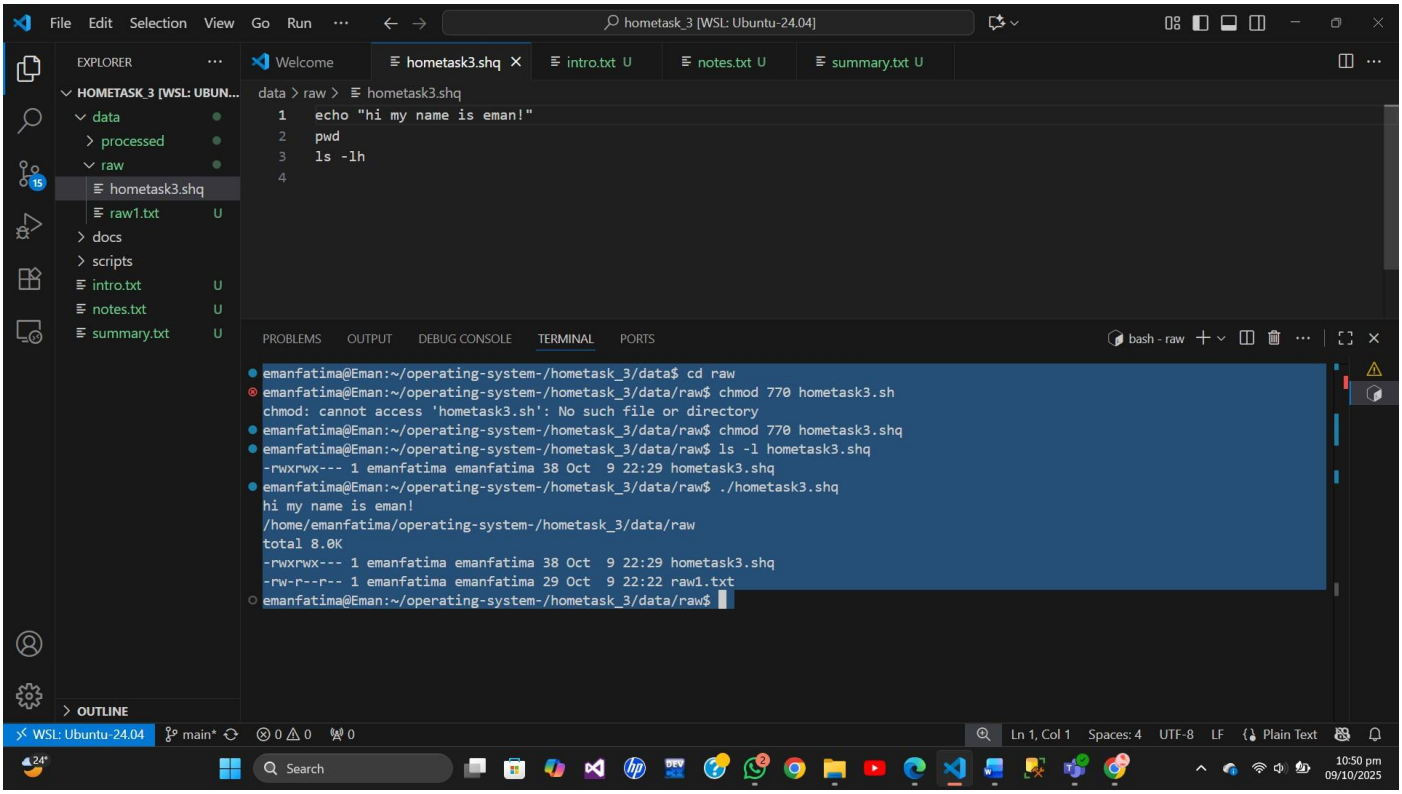

File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOMETASK_3 [WSL: UBUN...
data
processed
raw
hometask3.shq
raw1.txt
docs
scripts
intro.txt
notes.txt
summary.txt
OUTLINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - hometask_3
emanfatima@Eman:~/operating-system-/hometask_3$ pwd
/home/emanfatima/operating-system-/hometask_3
emanfatima@Eman:~/operating-system-/hometask_3$ whoami
emanfatima
emanfatima@Eman:~/operating-system-/hometask_3$ touch extra.txt
emanfatima@Eman:~/operating-system-/hometask_3$ cat intro.txt
HELLO THIS IS HOMESTAK 3 OF OS
emanfatima@Eman:~/operating-system-/hometask_3$ rm extra.txt
emanfatima@Eman:~/operating-system-/hometask_3$ history
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:Eemaan76/1146-eman-.git
18 gcc --version
19 g++ version
20 git clone git@github.com:Eemaan76/operating-system-.git
21 nano task1.c
22 gcc task1.c -o task1.out
23 ./task1.out
24 git remote -v
WSL: Ubuntu-24.04 main* 0 0 0
Ln 1, Col 1 Spaces: 4 UTF-8 LF Plain Text
Search
10:35 pm
09/10/2025



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:

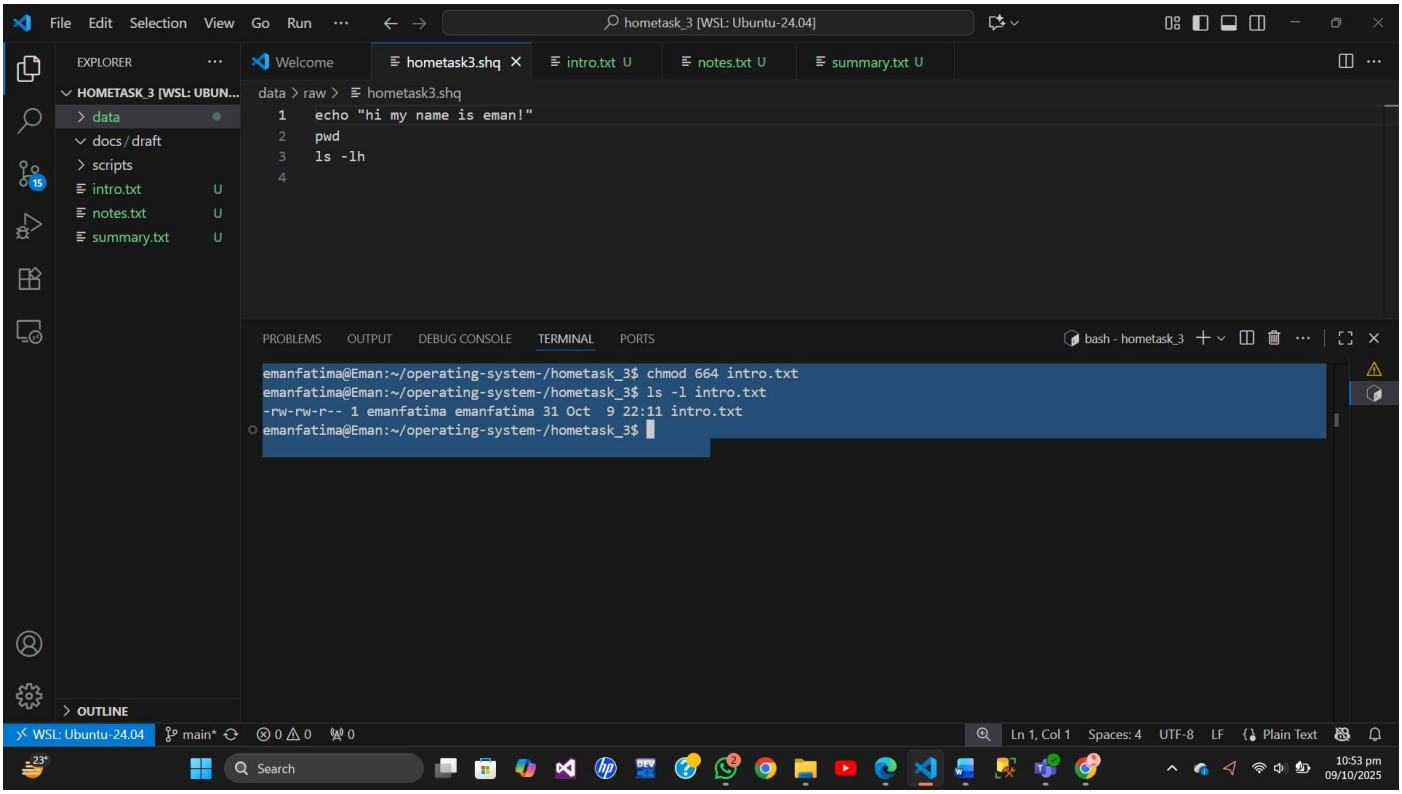
```
./hello.sh
```



Task 8 :

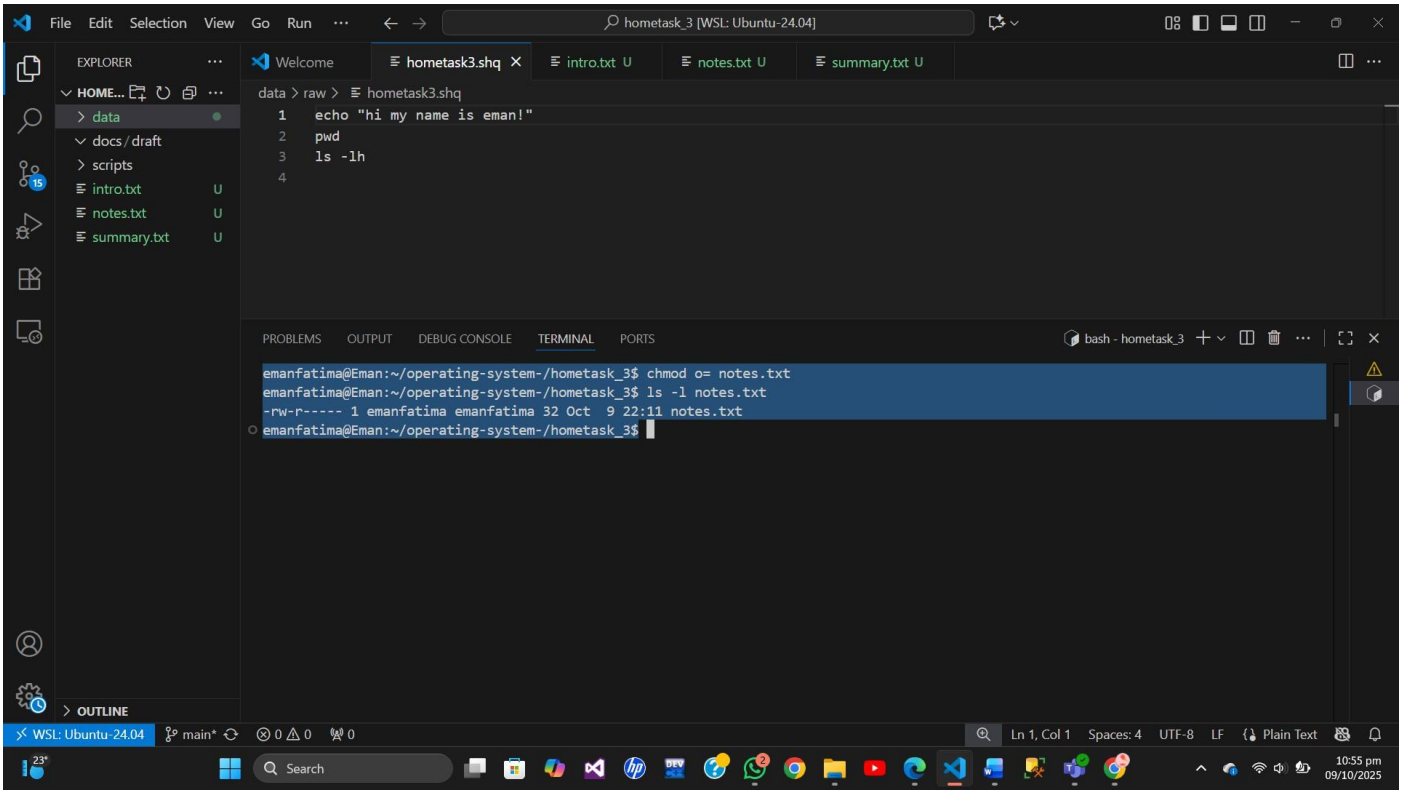
take a screenshot of its output.

2. Change the permissions of `intro.txt` using **numeric notation** so that:
   - Owner → Read & Write
   - Group → Read & Write
   - Others → Read only



Task 9:

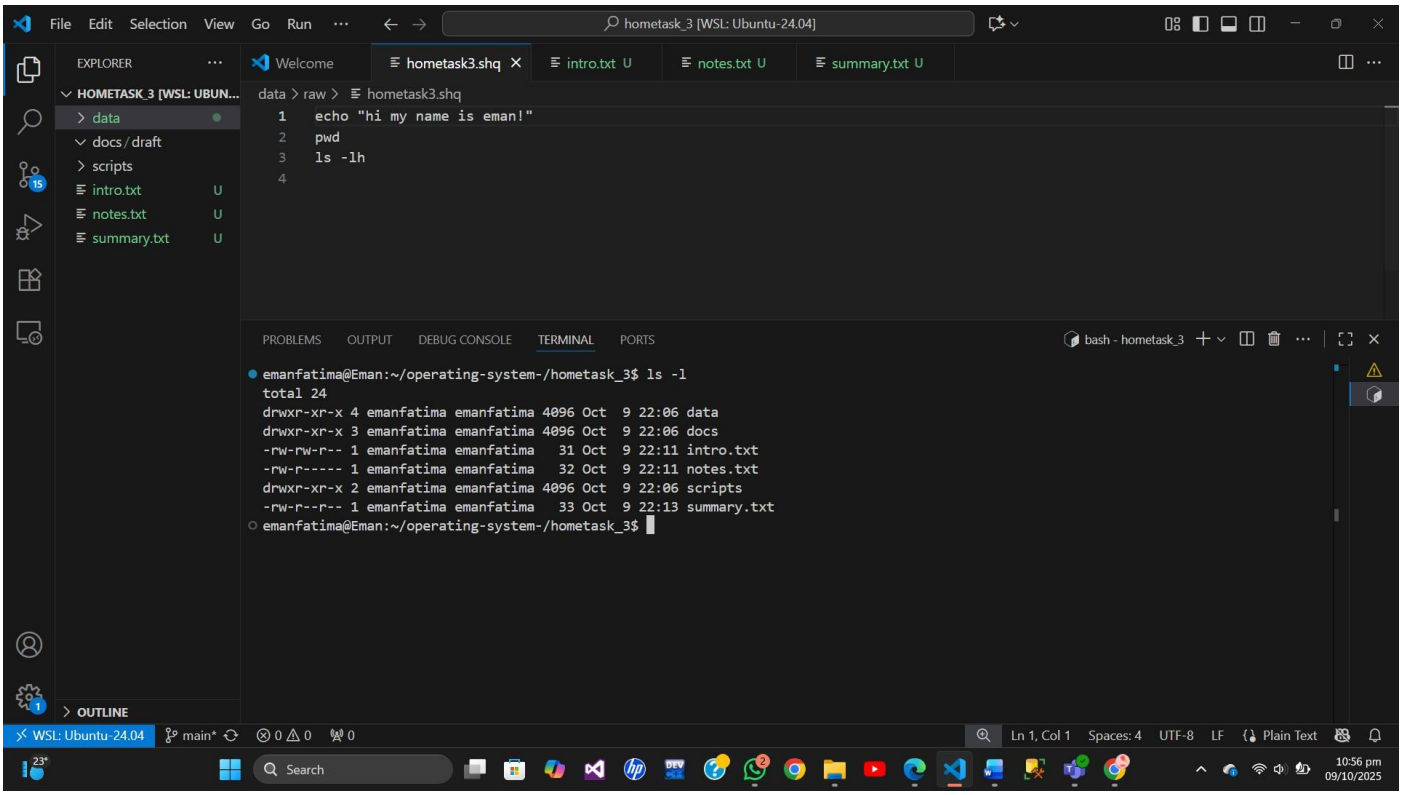
3. Change the permissions of `notes.txt` using **symbolic notation** so that `others` don't have any permission on it.



Task 10:

4. Verify all changes with:

```
ls -l
```



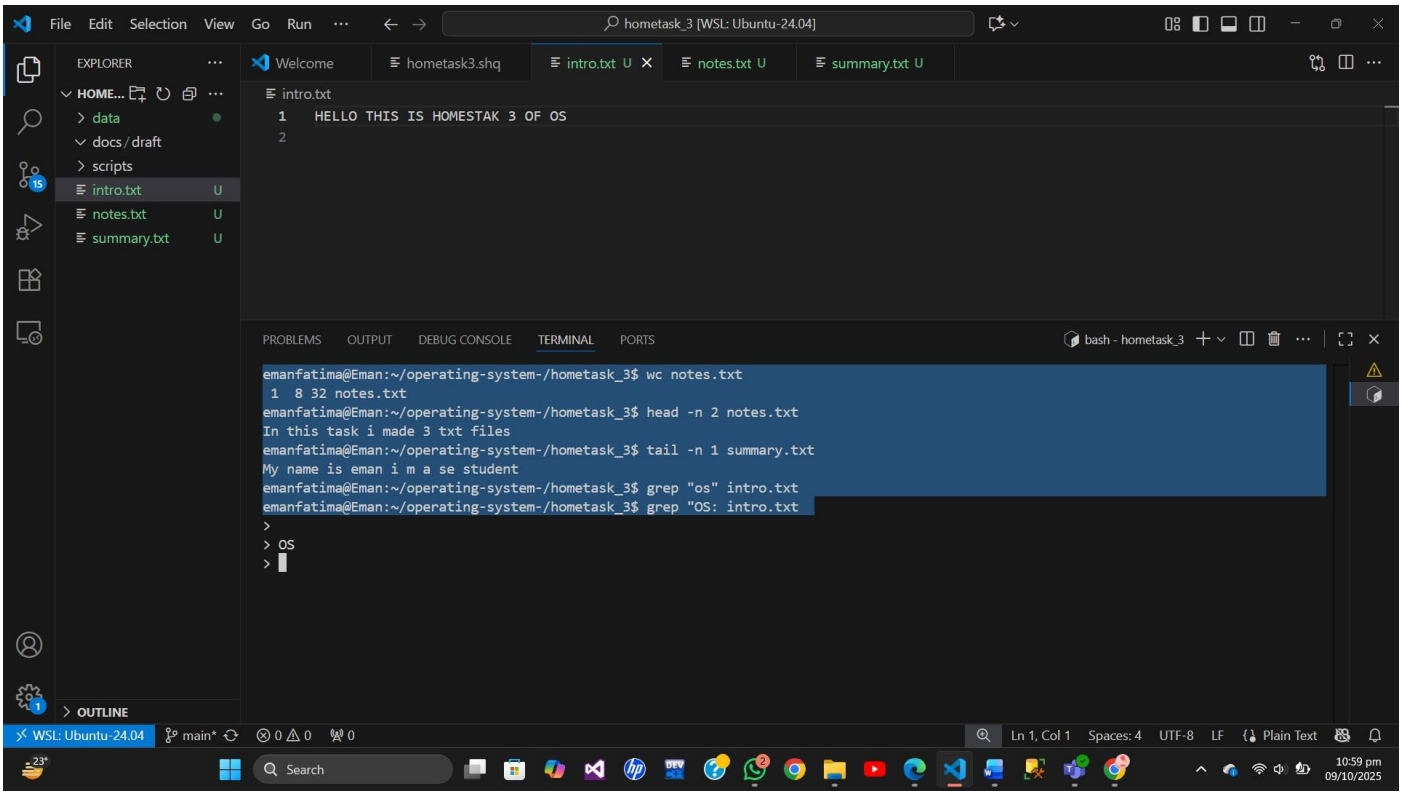
Task 11:

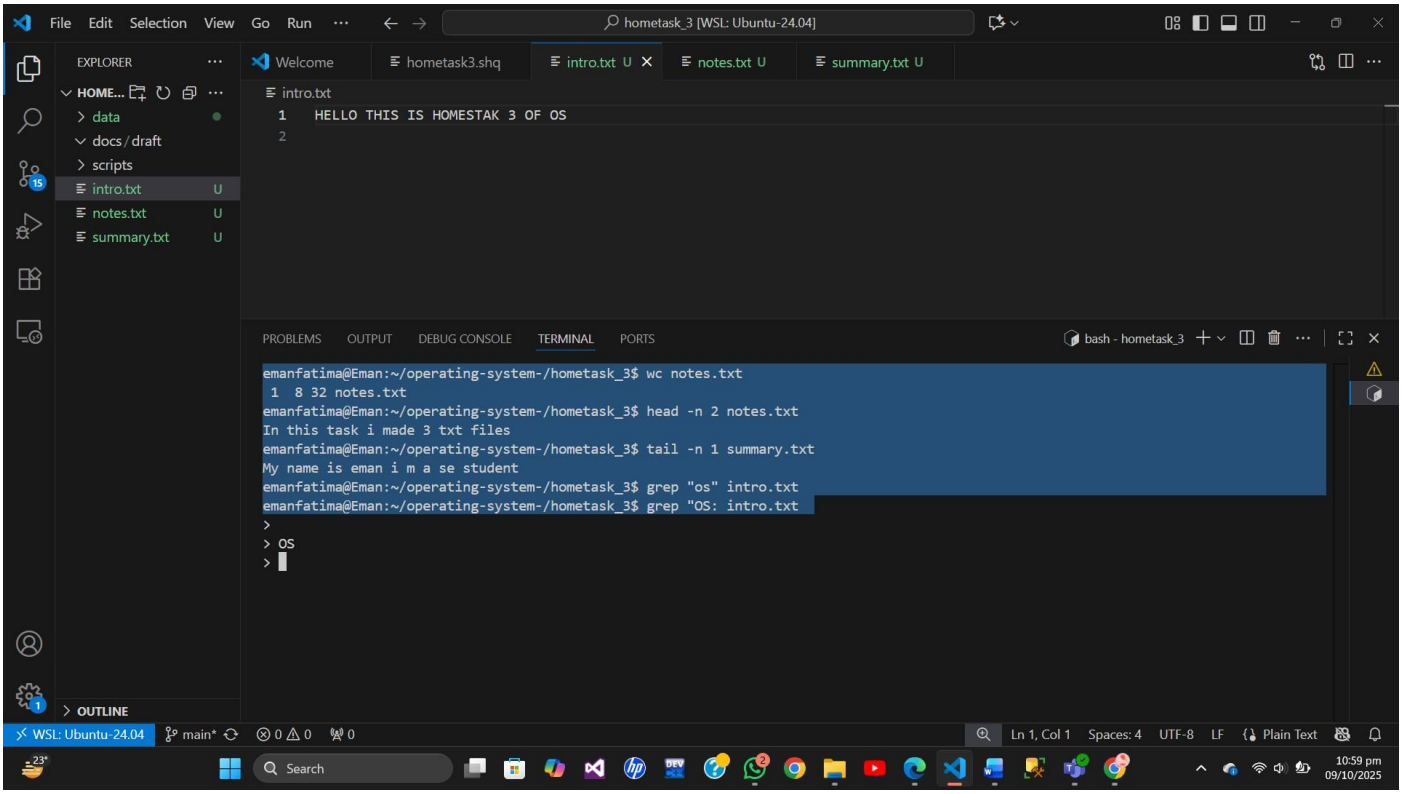
1. Count the number of lines, words, and characters in `notes.txt` using `wc`.
2. Show only the **first 2 lines** of `summary.txt` using `head -n 2`.

---

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`.

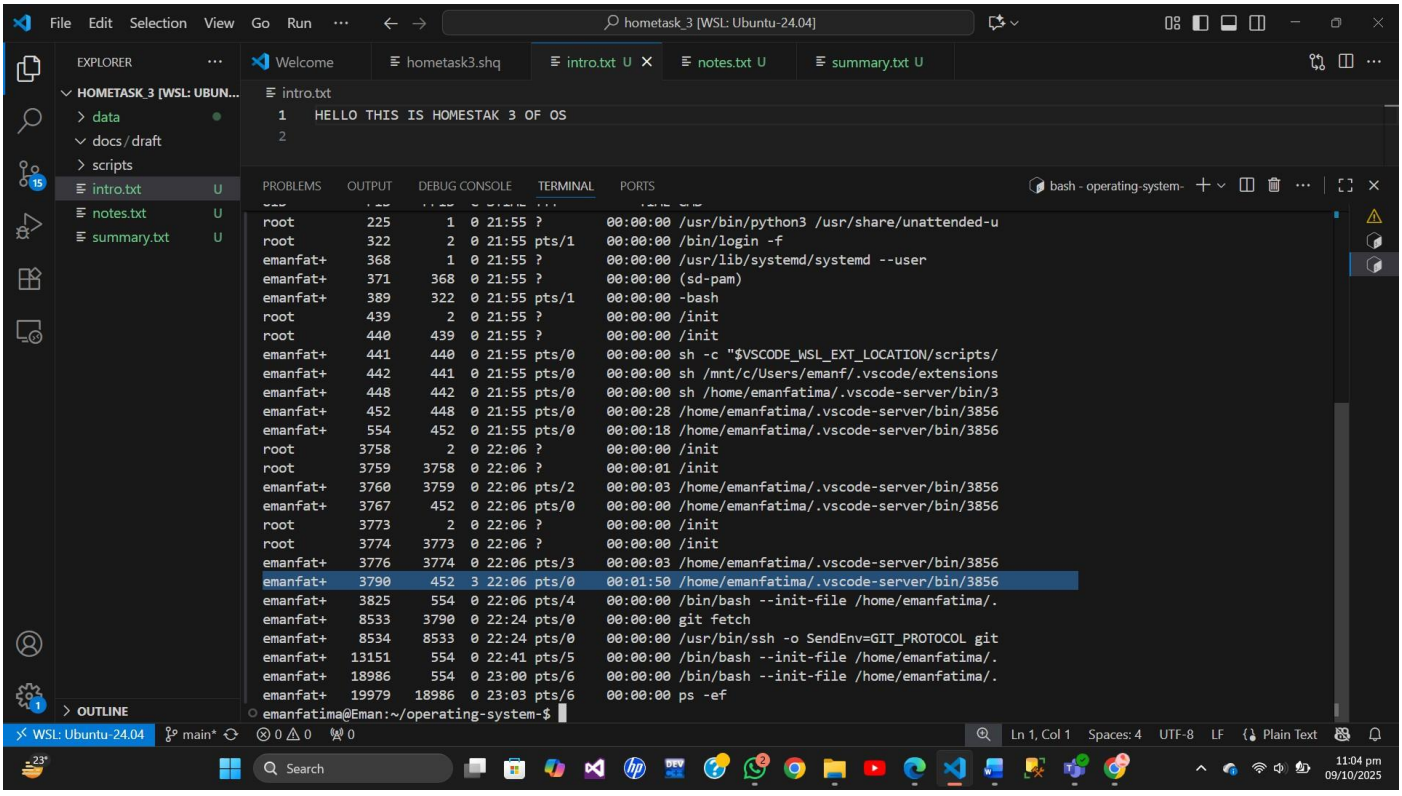
Take screenshots.





Task 12:

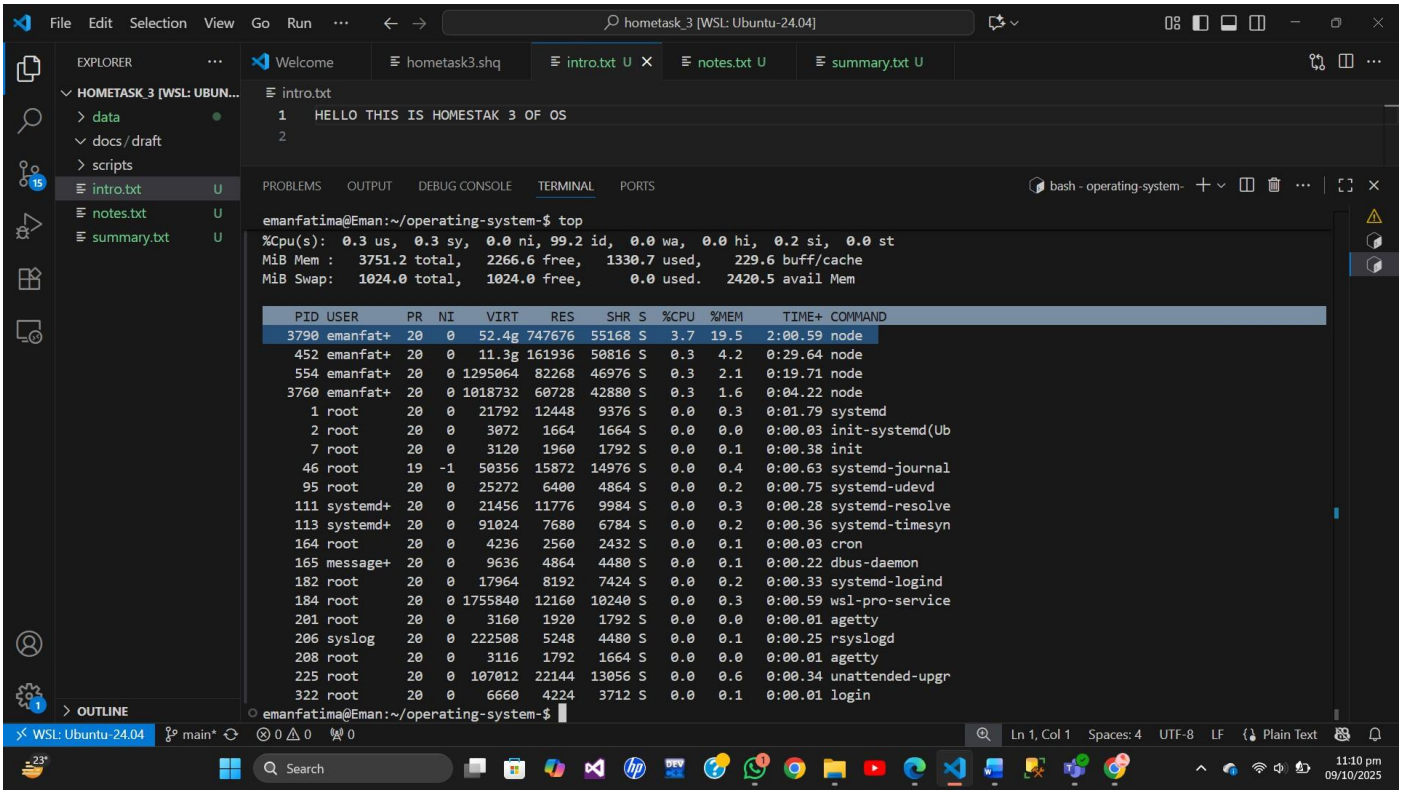
1. **Exploring Processes**
   - Use `ps -ef` and identify **3 processes** running on your system. Note their **PID, PPID, and command.**



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.

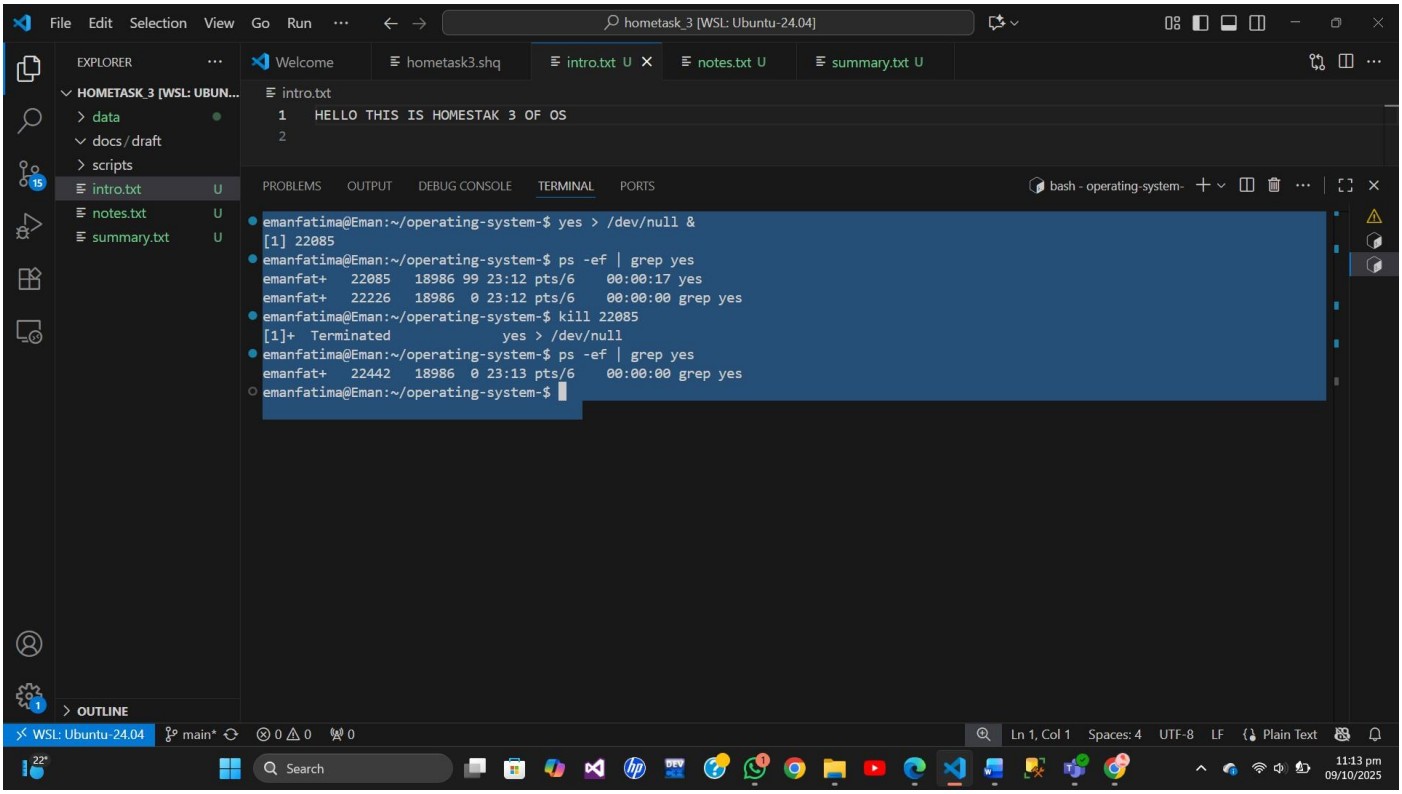


Task 14:

2. **Practice with Infinite Process**
   - Start:

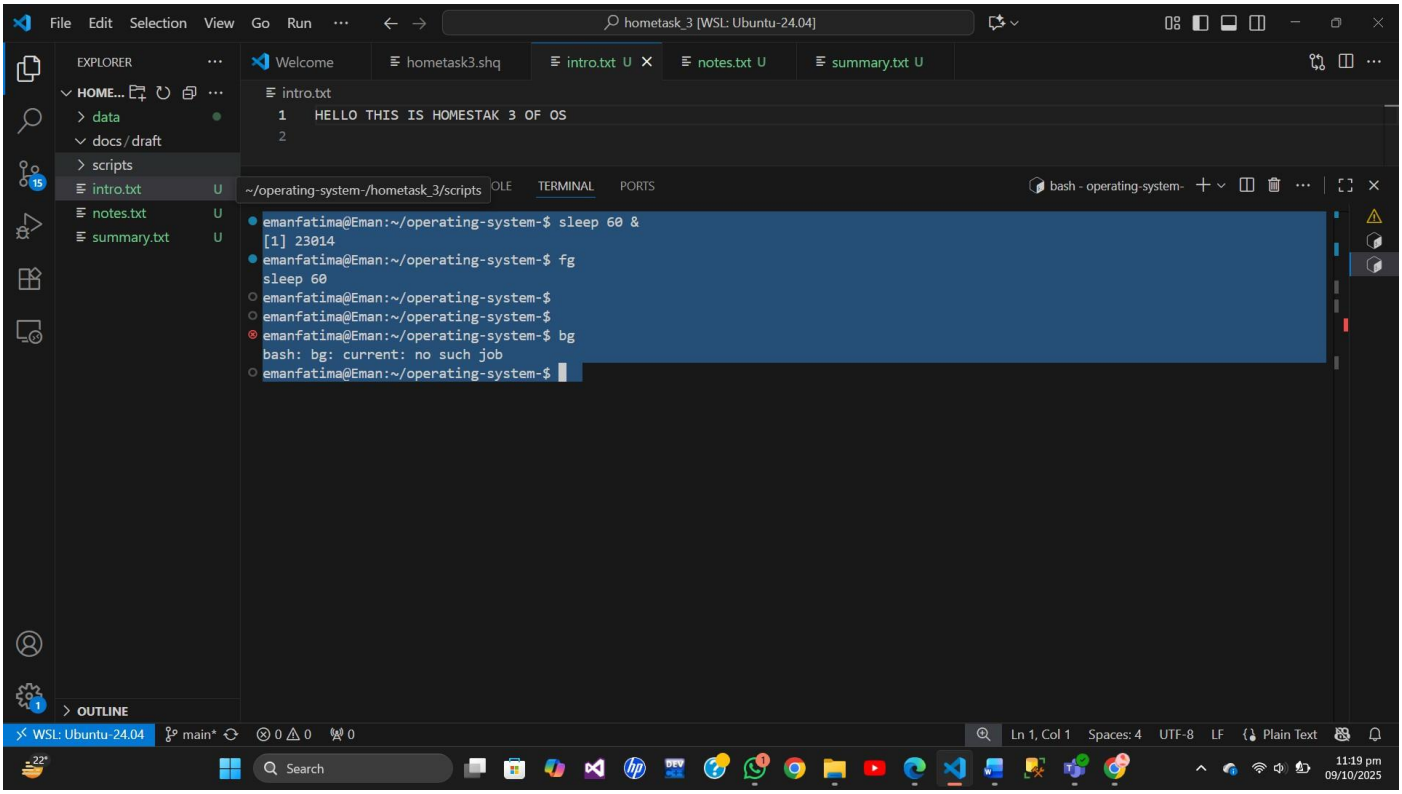
```
yes > /dev/null &
```

   - 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`.

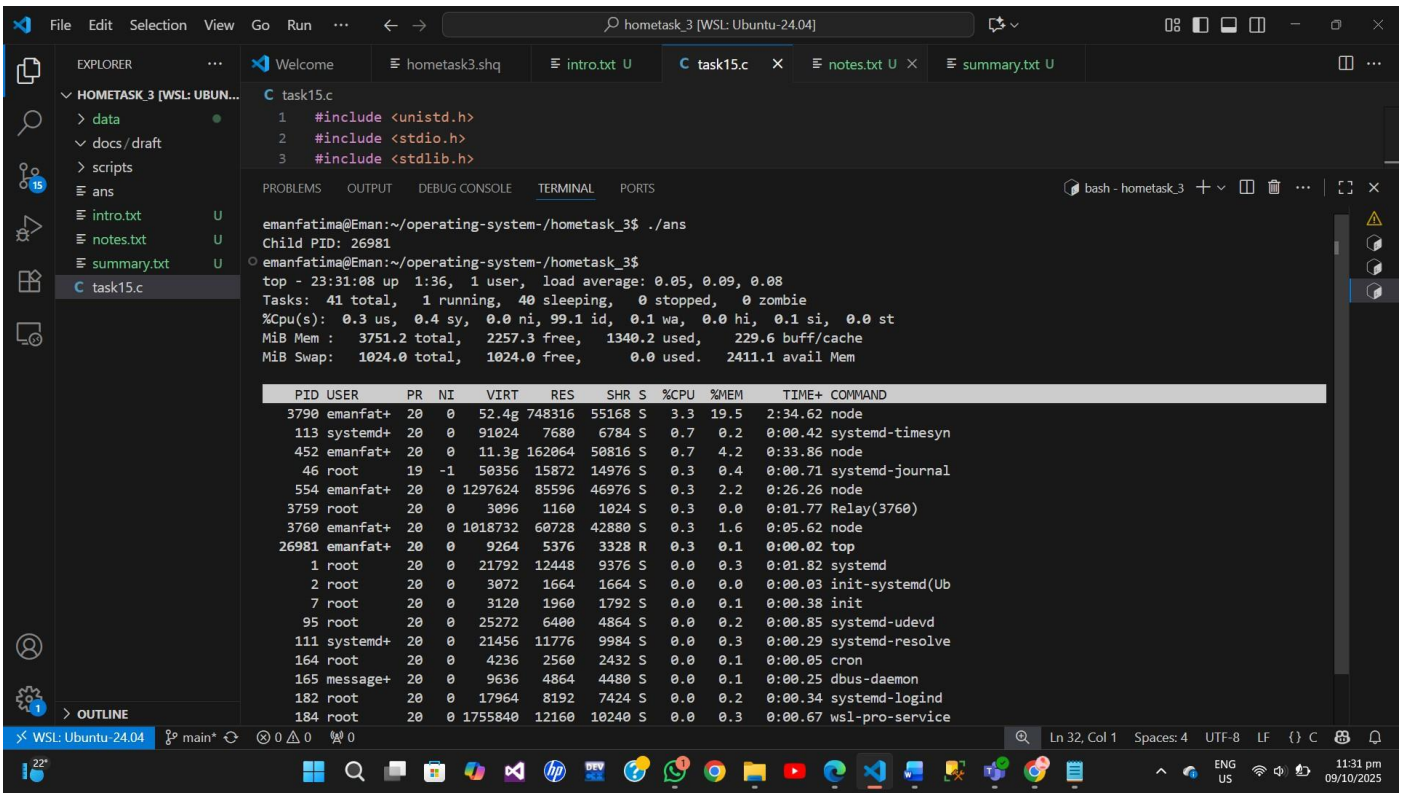


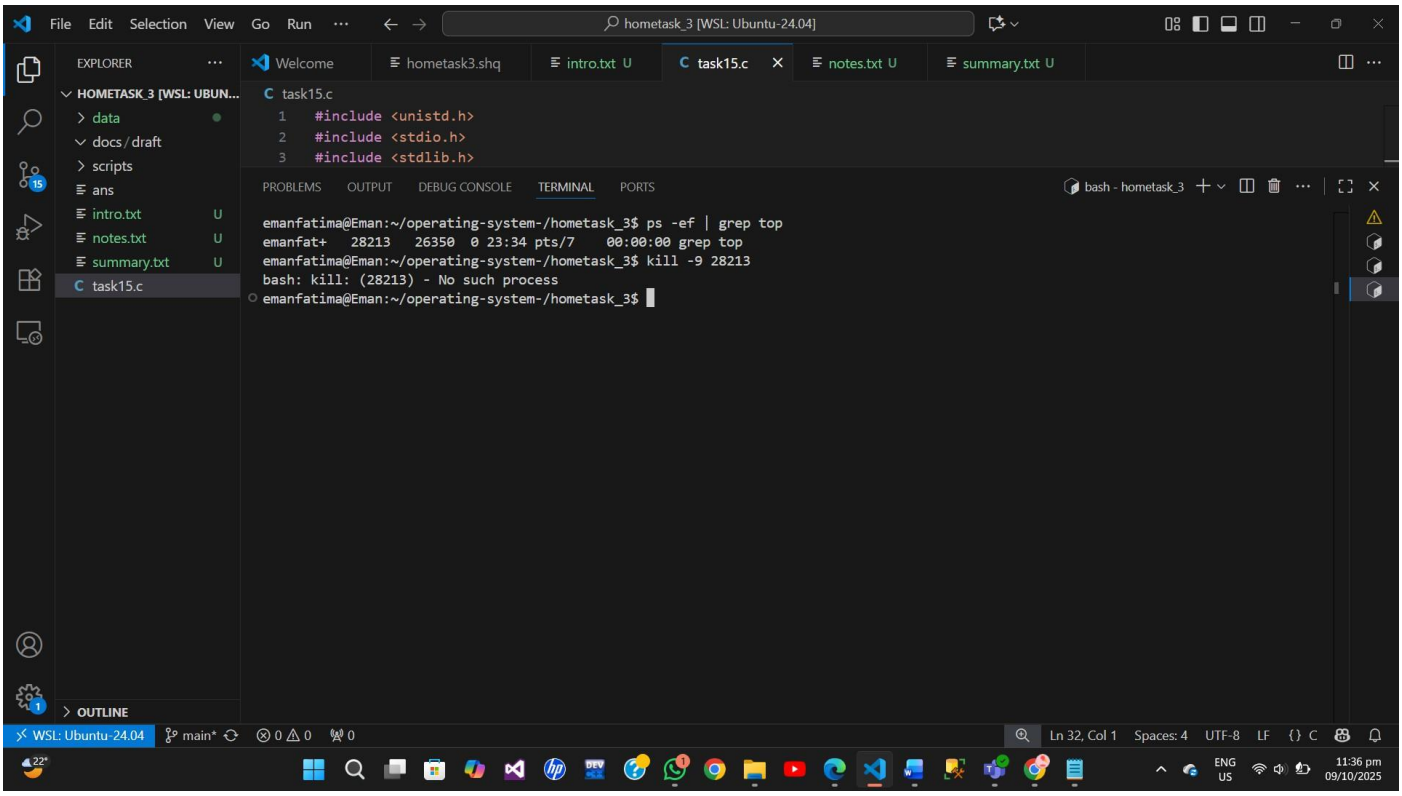
Task 16 :

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]
EXPLORER
HOMETASK_3 [WSL: UBUN...
data
docs / draft
scripts
ans
intro.txt U
notes.txt U
summary.txt U
task15.c
Welcome
hometask3.shq
intro.txt U
task15.c
notes.txt U
summary.txt U
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-udevd
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 wsl-pro-service
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 32, Col 1 Spaces: 4 UTF-8 LF { } C
ENG US
11:31 pm 09/10/2025


File Edit Selection View Go Run
hometask_3 [WSL: Ubuntu-24.04]
EXPLORER
HOMETASK_3 [WSL: UBUN...
data
docs / draft
scripts
ans
intro.txt U
notes.txt U
summary.txt U
task15.c
Welcome
hometask3.shq
intro.txt U
task15.c
notes.txt U
summary.txt U
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$
OUTLINE
WSL: Ubuntu-24.04 main* 0 0 0
Ln 32, Col 1 Spaces: 4 UTF-8 LF { } C
ENG US
11:36 pm 09/10/2025