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Department of Computer Science

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Course	Operating system
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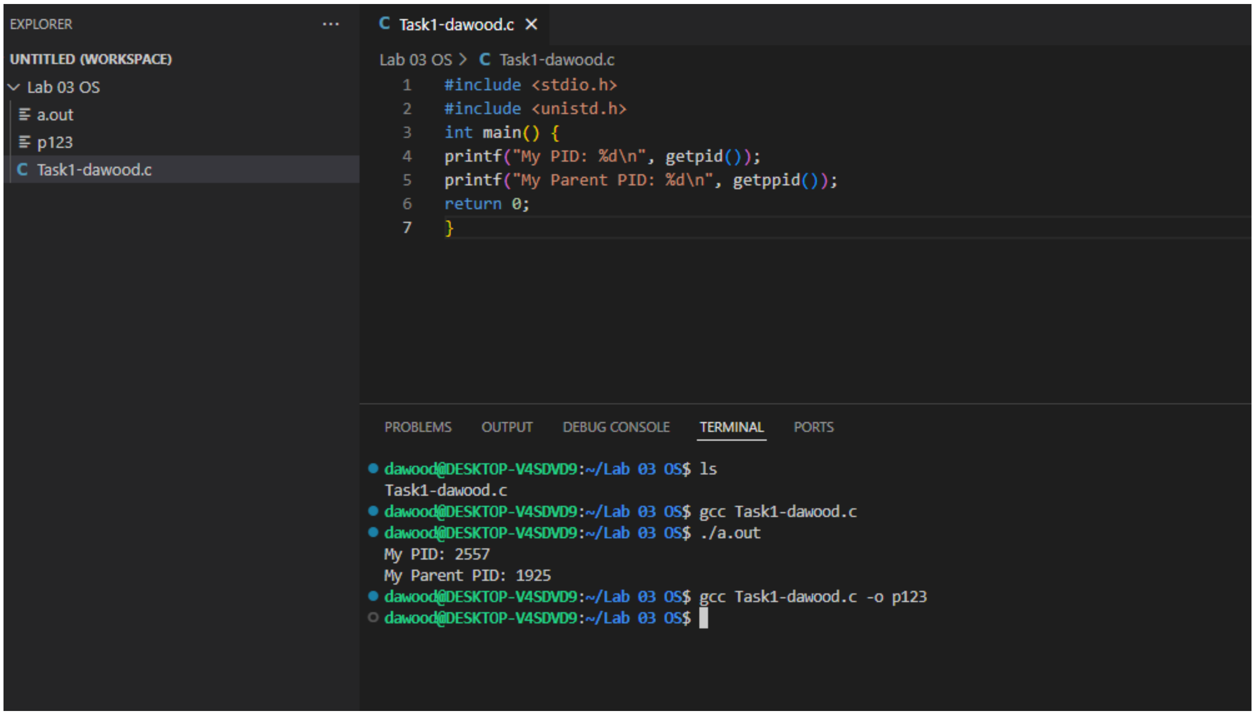
Lab No.	3 class work

Lab No. 3 Operating system:

Task1: ON Vs code using .c language

in this file we just run and compiled the code using command line. In this we created three files

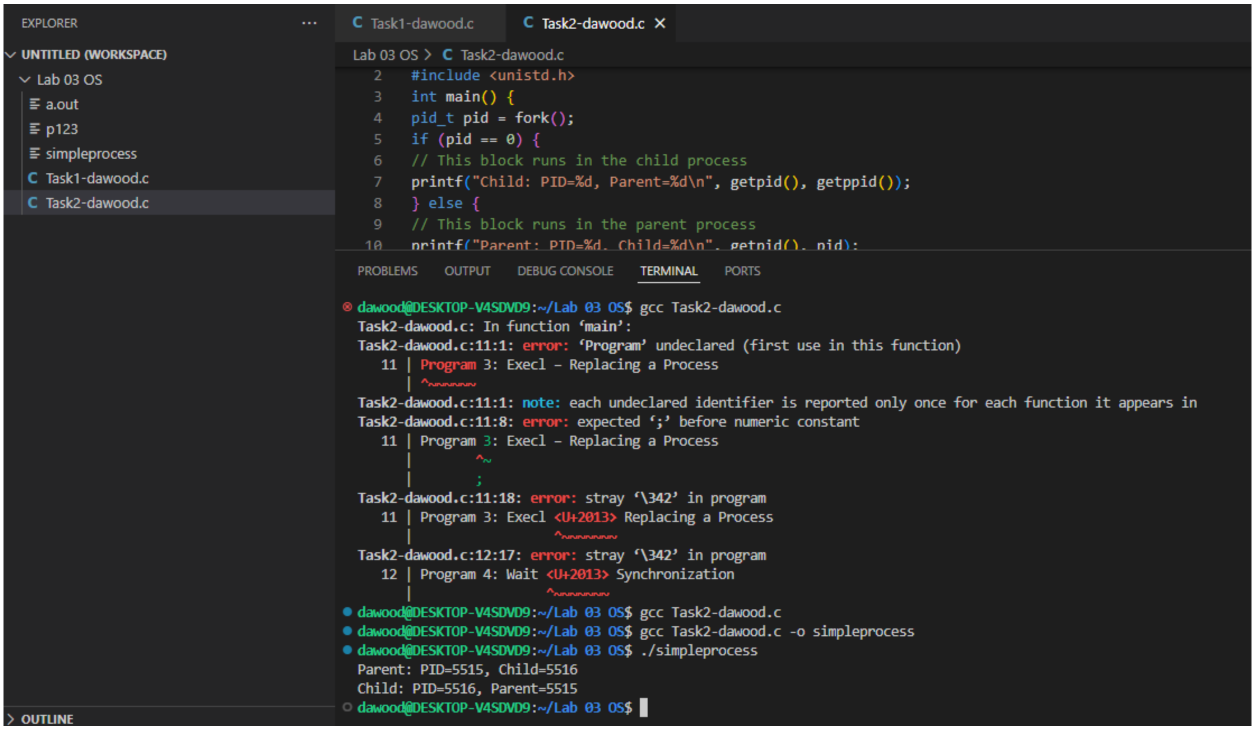


```c
#include <stdio.h>
#include <unistd.h>
int main() {
printf("My PID: %d\n", getpid());
printf("My Parent PID: %d\n", getppid());
return 0;
}
```

```
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ ls
Task1-dawood.c
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task1-dawood.c
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ ./a.out
My PID: 2557
My Parent PID: 1925
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task1-dawood.c -o p123
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$
```

Task 2:

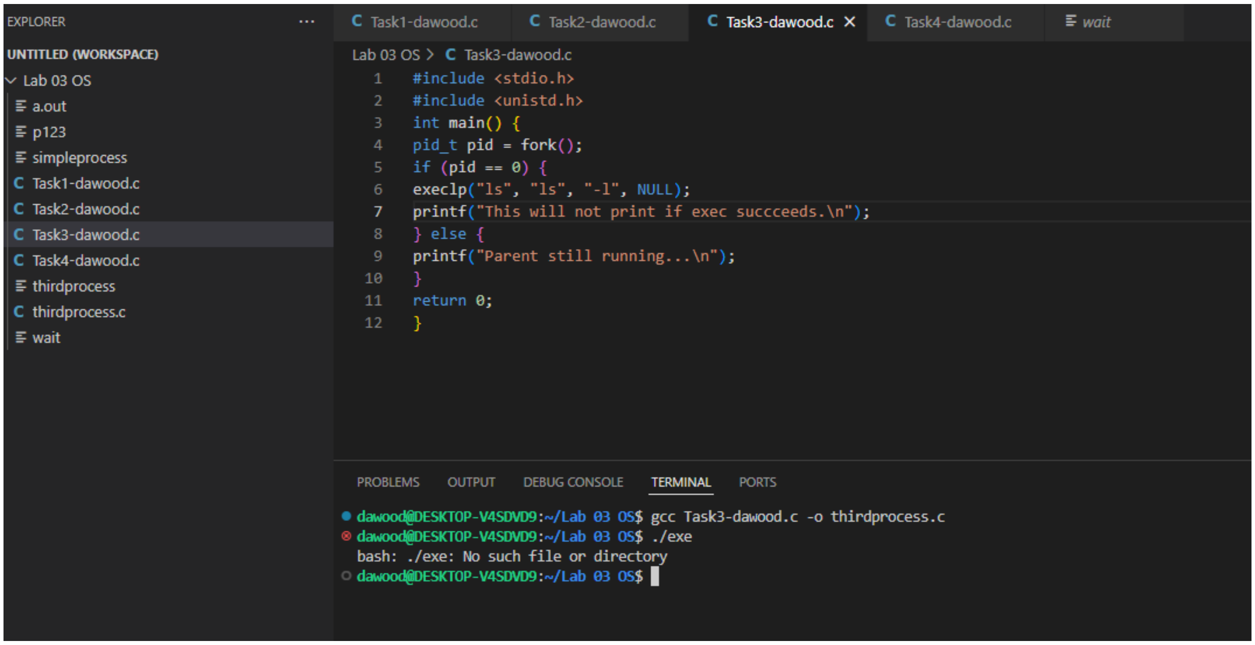
(similarly as task1 it will create child and run parent before child running:



```c
#include <unistd.h>
int main() {
pid_t pid = fork();
if (pid == 0) {
// This block runs in the child process
printf("Child: PID=%d, Parent=%d\n", getpid(), getppid());
} else {
// This block runs in the parent process
printf("Parent: PID=%d, Child=%d\n", getpid(), pid);
```

```
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task2-dawood.c
Task2-dawood.c: In function ‘main’:
Task2-dawood.c:11:1: error: ‘Program’ undeclared (first use in this function)
   11 | Program 3: Execl – Replacing a Process
      | ^~~~~~~
Task2-dawood.c:11:1: note: each undeclared identifier is reported only once for each function it appears in
Task2-dawood.c:11:8: error: expected ‘;’ before numeric constant
   11 | Program 3: Execl – Replacing a Process
      |        ^~
      |        ;
Task2-dawood.c:11:18: error: stray ‘\342’ in program
   11 | Program 3: Execl <U+2013> Replacing a Process
      |                  ^~~~~~~~
Task2-dawood.c:12:17: error: stray ‘\342’ in program
   12 | Program 4: Wait <U+2013> Synchronization
      |                 ^~~~~~~~
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task2-dawood.c
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task2-dawood.c -o simpleprocess
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ ./simpleprocess
Parent: PID=5515, Child=5516
Child: PID=5516, Parent=5515
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ 
```

Task 3: (on Vs code)

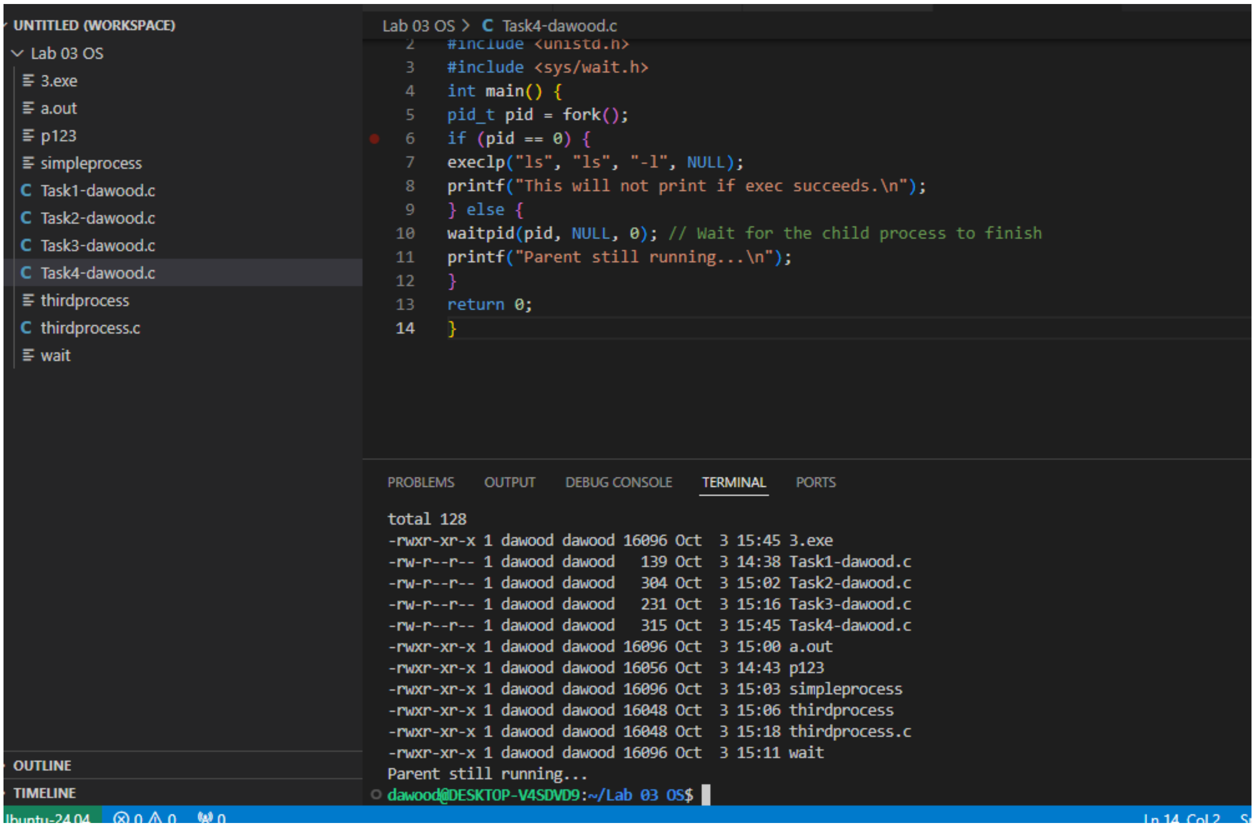


```c
#include <stdio.h>
#include <unistd.h>
int main() {
pid_t pid = fork();
if (pid == 0) {
execlp("ls", "ls", "-l", NULL);
printf("This will not print if exec succceeds.\n");
} else {
printf("Parent still running...\n");
}
return 0;
}
```

```
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ gcc Task3-dawood.c -o thirdprocess.c
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ ./exe
bash: ./exe: No such file or directory
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$ 
```

Task4:

In this task we created exe.c and it show us wait.c things



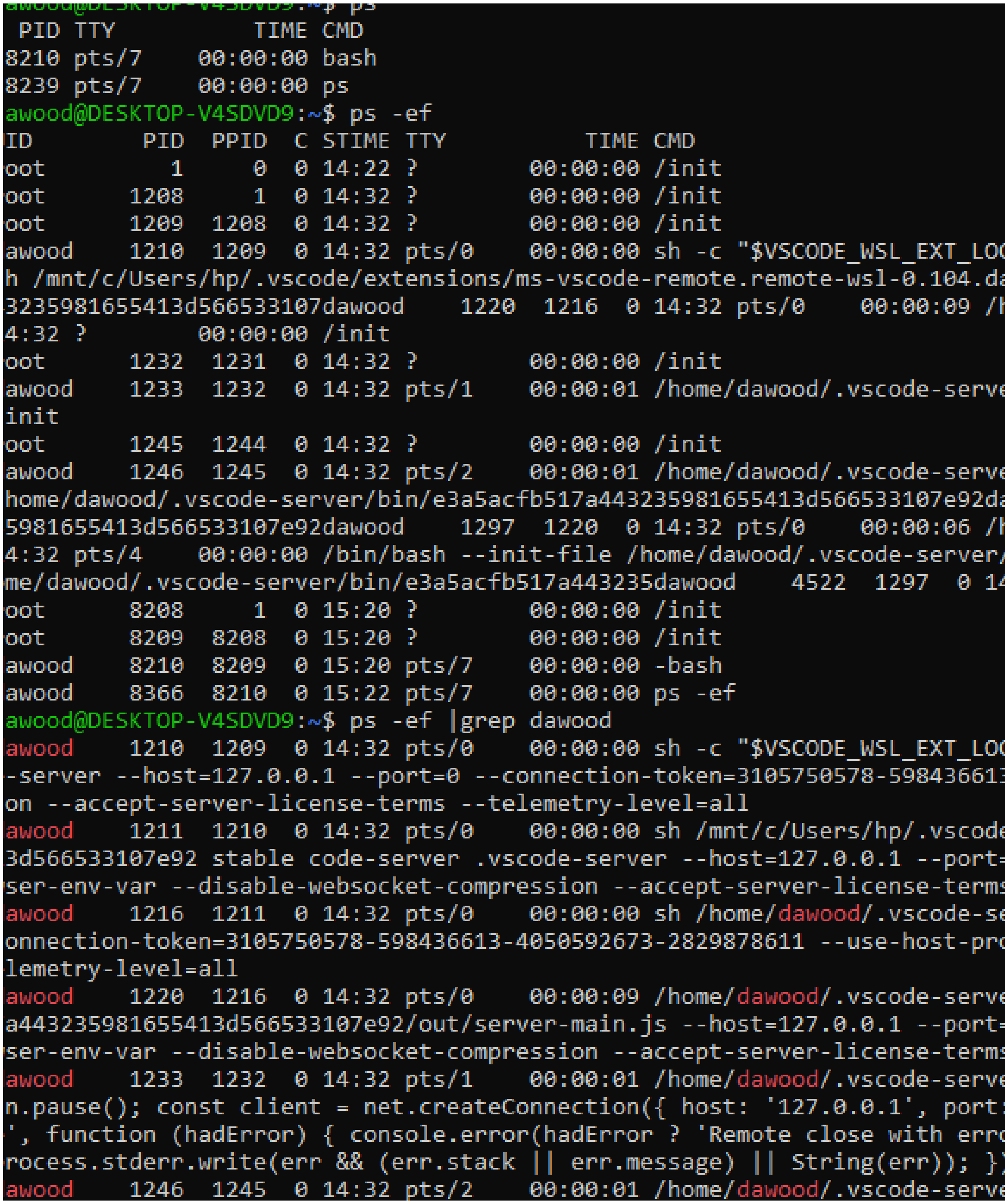
```c
#include <unistd.h>
#include <sys/wait.h>
int main() {
pid_t pid = fork();
if (pid == 0) {
execlp("ls", "ls", "-l", NULL);
printf("This will not print if exec succeeds.\n");
} else {
waitpid(pid, NULL, 0); // Wait for the child process to finish
printf("Parent still running...\n");
}
return 0;
}
```

```
total 128
-rwxr-xr-x 1 dawood dawood 16096 Oct  3 15:45 3.exe
-rw-r--r-- 1 dawood dawood   139 Oct  3 14:38 Task1-dawood.c
-rw-r--r-- 1 dawood dawood   304 Oct  3 15:02 Task2-dawood.c
-rw-r--r-- 1 dawood dawood   231 Oct  3 15:16 Task3-dawood.c
-rw-r--r-- 1 dawood dawood   315 Oct  3 15:45 Task4-dawood.c
-rwxr-xr-x 1 dawood dawood 16096 Oct  3 15:00 a.out
-rwxr-xr-x 1 dawood dawood 16056 Oct  3 14:43 p123
-rwxr-xr-x 1 dawood dawood 16096 Oct  3 15:03 simpleprocess
-rwxr-xr-x 1 dawood dawood 16048 Oct  3 15:06 thirdprocess
-rwxr-xr-x 1 dawood dawood 16048 Oct  3 15:18 thirdprocess.c
-rwxr-xr-x 1 dawood dawood 16096 Oct  3 15:11 wait
Parent still running...
dawood@DESKTOP-V4SDVD9:~/Lab 03 OS$
```

Second Work by Sir Ahmad:

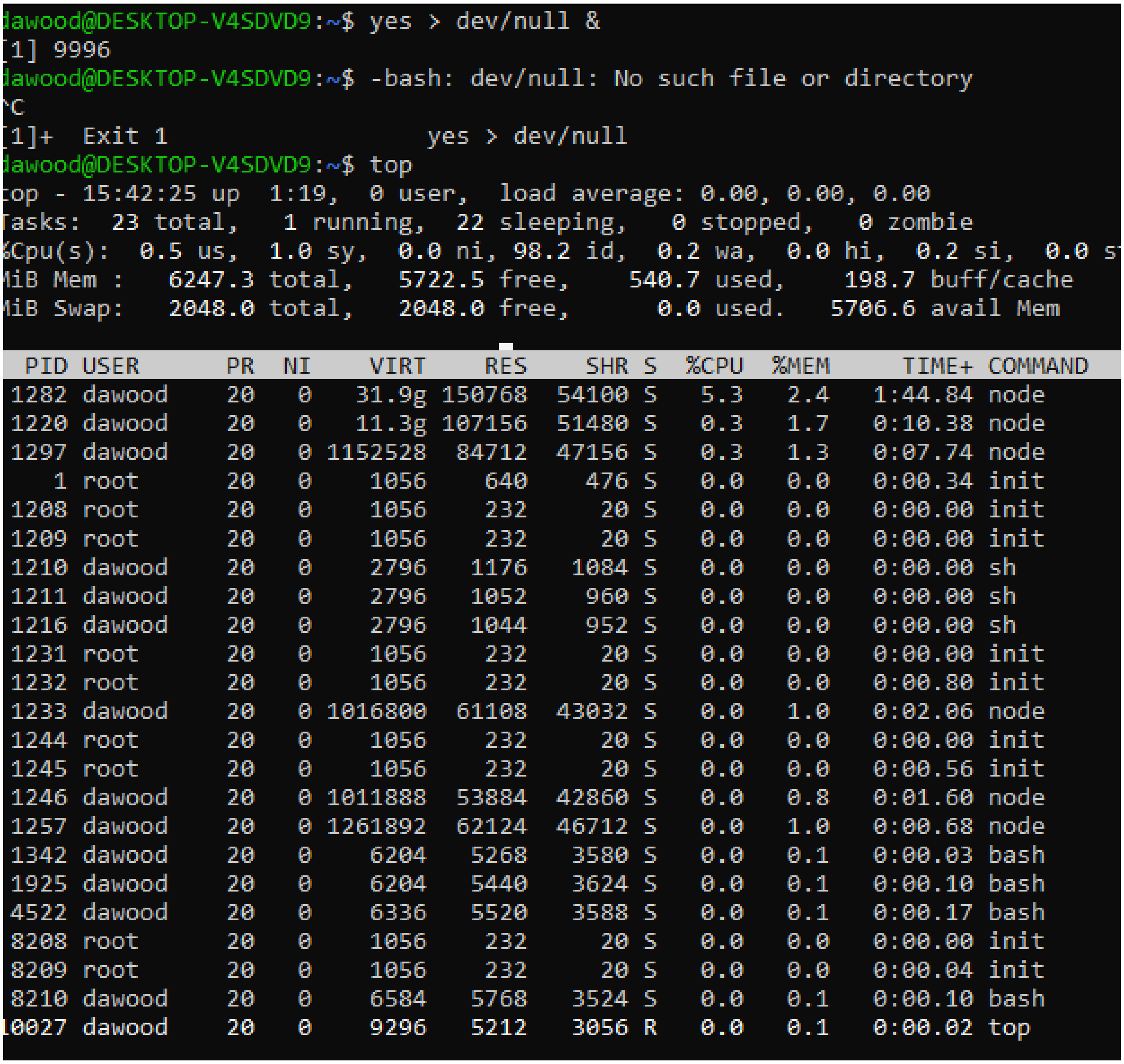
- In this we practiced some of the important commands on ubuntu Like Job, kill, ps command with some flags (-ef)

- |pipe operator and its uses, yes command
- Bash command, top command
- Sleep 30 / sleep 30& (in background) etc



```
awood@DESKTOP-V4SDVD9:~$ ps
 PID TTY          TIME CMD
8210 pts/7    00:00:00 bash
8239 pts/7    00:00:00 ps
awood@DESKTOP-V4SDVD9:~$ ps -ef
ID         PID  PPID  C STIME TTY          TIME CMD
oot          1     0  0 14:22 ?        00:00:00 /init
oot       1208     1  0 14:32 ?        00:00:00 /init
oot       1209  1208  0 14:32 ?        00:00:00 /init
awood     1210  1209  0 14:32 pts/0    00:00:00 sh -c "$VSCODE_WSL_EXT_LOC
h /mnt/c/Users/hp/.vscode/extensions/ms-vscode-remote.remote-wsl-0.104.da
3235981655413d566533107dawood    1220  1216  0 14:32 pts/0    00:00:09 /h
4:32 ?        00:00:00 /init
oot       1232  1231  0 14:32 ?        00:00:00 /init
awood     1233  1232  0 14:32 pts/1    00:00:01 /home/dawood/.vscode-serve
init
oot       1245  1244  0 14:32 ?        00:00:00 /init
awood     1246  1245  0 14:32 pts/2    00:00:01 /home/dawood/.vscode-serve
home/dawood/.vscode-server/bin/e3a5acfb517a443235981655413d566533107e92da
5981655413d566533107e92dawood    1297  1220  0 14:32 pts/0    00:00:06 /h
4:32 pts/4    00:00:00 /bin/bash --init-file /home/dawood/.vscode-server/
me/dawood/.vscode-server/bin/e3a5acfb517a443235dawood    4522  1297  0 14
oot       8208     1  0 15:20 ?        00:00:00 /init
oot       8209  8208  0 15:20 ?        00:00:00 /init
awood     8210  8209  0 15:20 pts/7    00:00:00 -bash
awood     8366  8210  0 15:22 pts/7    00:00:00 ps -ef
awood@DESKTOP-V4SDVD9:~$ ps -ef |grep dawood
awood     1210  1209  0 14:32 pts/0    00:00:00 sh -c "$VSCODE_WSL_EXT_LOC
-server --host=127.0.0.1 --port=0 --connection-token=3105750578-59843661
on --accept-server-license-terms --telemetry-level=all
awood     1211  1210  0 14:32 pts/0    00:00:00 sh /mnt/c/Users/hp/.vscode
3d566533107e92 stable code-server .vscode-server --host=127.0.0.1 --port=
ser-env-var --disable-websocket-compression --accept-server-license-terms
awood     1216  1211  0 14:32 pts/0    00:00:00 sh /home/dawood/.vscode-se
onnection-token=3105750578-598436613-4050592673-2829878611 --use-host-pro
lemetry-level=all
awood     1220  1216  0 14:32 pts/0    00:00:09 /home/dawood/.vscode-serve
a443235981655413d566533107e92/out/server-main.js --host=127.0.0.1 --port=
ser-env-var --disable-websocket-compression --accept-server-license-terms
awood     1233  1232  0 14:32 pts/1    00:00:01 /home/dawood/.vscode-serve
n.pause(); const client = net.createConnection({ host: '127.0.0.1', port:
', function (hadError) { console.error(hadError ? 'Remote close with erro
rocess.stderr.write(err && (err.stack || err.message) || String(err)); })
awood     1246  1245  0 14:32 pts/2    00:00:01 /home/dawood/.vscode-serve
```

grep



```
dawood@DESKTOP-V4SDVD9:~$ yes > dev/null &
[1] 9996
dawood@DESKTOP-V4SDVD9:~$ -bash: dev/null: No such file or directory
^C
[1]+  Exit 1                  yes > dev/null
dawood@DESKTOP-V4SDVD9:~$ top
top - 15:42:25 up  1:19,  0 user,  load average: 0.00, 0.00, 0.00
Tasks:  23 total,   1 running,  22 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.5 us,  1.0 sy,  0.0 ni, 98.2 id,  0.2 wa,  0.0 hi,  0.2 si,  0.0 s
MiB Mem :   6247.3 total,   5722.5 free,    540.7 used,    198.7 buff/cache
MiB Swap:   2048.0 total,   2048.0 free,      0.0 used.   5706.6 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
 1282 dawood    20   0   31.9g 150768  54100 S   5.3   2.4   1:44.84 node
 1220 dawood    20   0   11.3g 107156  51480 S   0.3   1.7   0:10.38 node
 1297 dawood    20   0 1152528  84712  47156 S   0.3   1.3   0:07.74 node
    1 root      20   0    1056    640    476 S   0.0   0.0   0:00.34 init
 1208 root      20   0    1056    232     20 S   0.0   0.0   0:00.00 init
 1209 root      20   0    1056    232     20 S   0.0   0.0   0:00.00 init
 1210 dawood    20   0    2796   1176   1084 S   0.0   0.0   0:00.00 sh
 1211 dawood    20   0    2796   1052    960 S   0.0   0.0   0:00.00 sh
 1216 dawood    20   0    2796   1044    952 S   0.0   0.0   0:00.00 sh
 1231 root      20   0    1056    232     20 S   0.0   0.0   0:00.00 init
 1232 root      20   0    1056    232     20 S   0.0   0.0   0:00.80 init
 1233 dawood    20   0 1016800  61108  43032 S   0.0   1.0   0:02.06 node
 1244 root      20   0    1056    232     20 S   0.0   0.0   0:00.00 init
 1245 root      20   0    1056    232     20 S   0.0   0.0   0:00.56 init
 1246 dawood    20   0 1011888  53884  42860 S   0.0   0.8   0:01.60 node
 1257 dawood    20   0 1261892  62124  46712 S   0.0   1.0   0:00.68 node
 1342 dawood    20   0    6204   5268   3580 S   0.0   0.1   0:00.03 bash
 1925 dawood    20   0    6204   5440   3624 S   0.0   0.1   0:00.10 bash
 4522 dawood    20   0    6336   5520   3588 S   0.0   0.1   0:00.17 bash
 8208 root      20   0    1056    232     20 S   0.0   0.0   0:00.00 init
 8209 root      20   0    1056    232     20 S   0.0   0.0   0:00.04 init
 8210 dawood    20   0    6584   5768   3524 S   0.0   0.1   0:00.10 bash
10027 dawood    20   0    9296   5212   3056 R   0.0   0.1   0:00.02 top
```

top kill jobs pid yes and backend data