

Assignment-2

CS-220 Operating System

Fork System Call

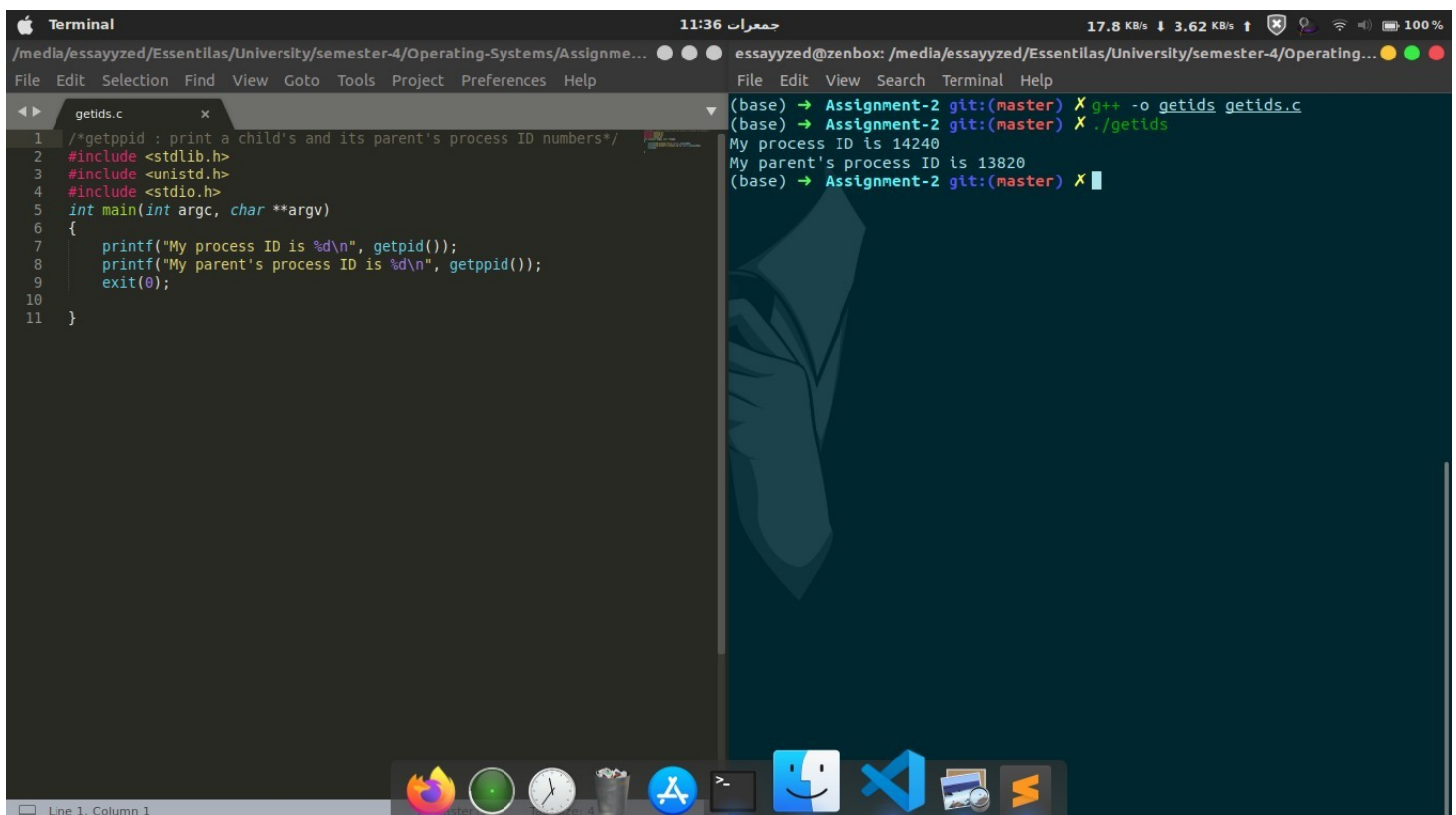
Syed Asad Zaman

p18-0034

Section B

7.

Getting PIDs(Process & Parent)



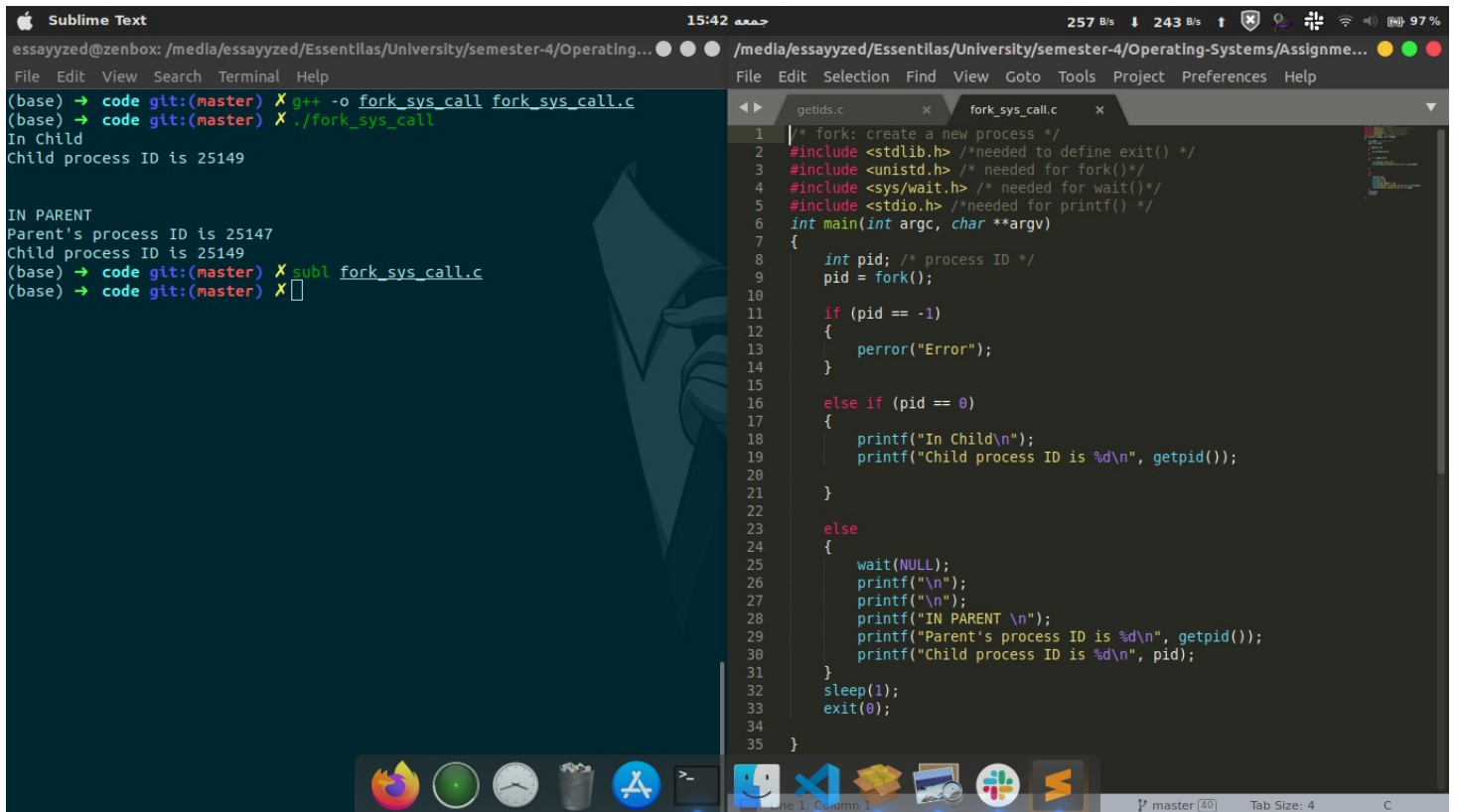
```
Terminal
/media/essayzed/Essentilas/University/semester-4/Operating-Systems/Assignme... essayzed@zenbox: /media/essayzed/Essentilas/University/semester-4/Operating...
File Edit Selection Find View Goto Tools Project Preferences Help

getids.c x
1 /*getppid : print a child's and its parent's process ID numbers*/
2 #include <stdlib.h>
3 #include <unistd.h>
4 #include <stdio.h>
5 int main(int argc, char **argv)
6 {
7     printf("My process ID is %d\n", getpid());
8     printf("My parent's process ID is %d\n", getppid());
9     exit(0);
10 }
11 }

(base) → Assignment-2 git:(master) X g++ -o getids getids.c
(base) → Assignment-2 git:(master) X ./getids
My process ID is 14240
My parent's process ID is 13820
(base) → Assignment-2 git:(master) X
```

2.

Fork System Call



The screenshot shows a Sublime Text editor with two tabs: `getids.c` and `fork_sys_call.c`. The `fork_sys_call.c` tab is active, displaying the following C code:

```
1  /* fork: create a new process */
2  #include <stdlib.h> /*needed to define exit() */
3  #include <unistd.h> /* needed for fork()*/
4  #include <sys/wait.h> /* needed for wait()*/
5  #include <stdio.h> /*needed for printf() */
6  int main(int argc, char **argv)
7  {
8      int pid; /* process ID */
9      pid = fork();
10
11     if (pid == -1)
12     {
13         perror("Error");
14     }
15
16     else if (pid == 0)
17     {
18         printf("In Child\n");
19         printf("Child process ID is %d\n", getpid());
20     }
21
22     else
23     {
24         wait(NULL);
25         printf("\n");
26         printf("\n");
27         printf("IN PARENT \n");
28         printf("Parent's process ID is %d\n", getpid());
29         printf("Child process ID is %d\n", pid);
30     }
31     sleep(1);
32     exit(0);
33 }
```

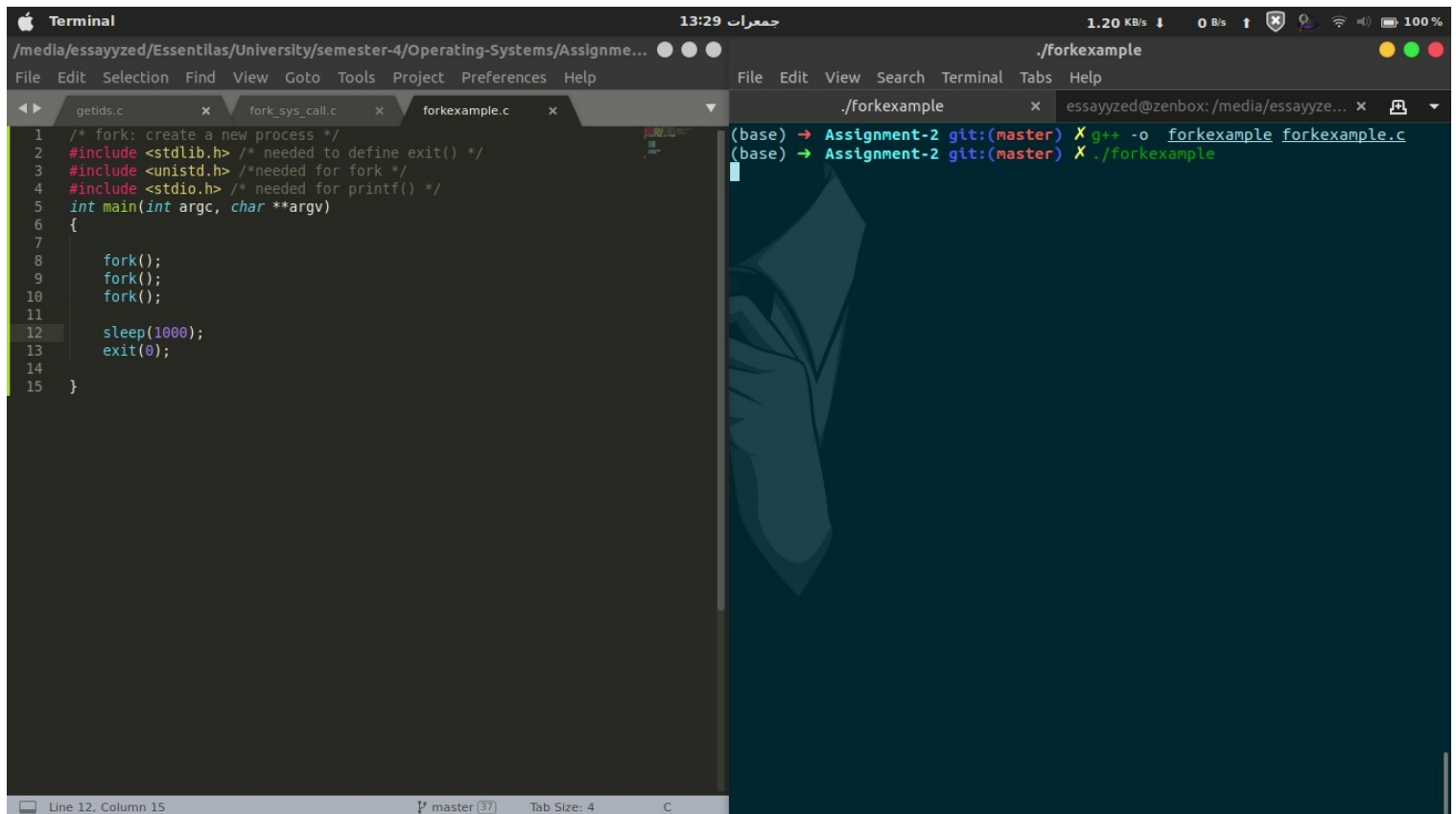
The terminal window on the left shows the execution of the program:

```
(base) → code git:(master) X g++ -o fork_sys_call fork_sys_call.c
(base) → code git:(master) X ./fork_sys_call
In Child
Child process ID is 25149

IN PARENT
Parent's process ID is 25147
Child process ID is 25149
(base) → code git:(master) X subl fork_sys_call.c
(base) → code git:(master) X
```

The terminal output confirms that the fork system call successfully created a child process with a different PID (25149) than the parent (25147). The parent process prints its own PID and the child's PID, while the child prints its own PID.

3. Fork Processes Count

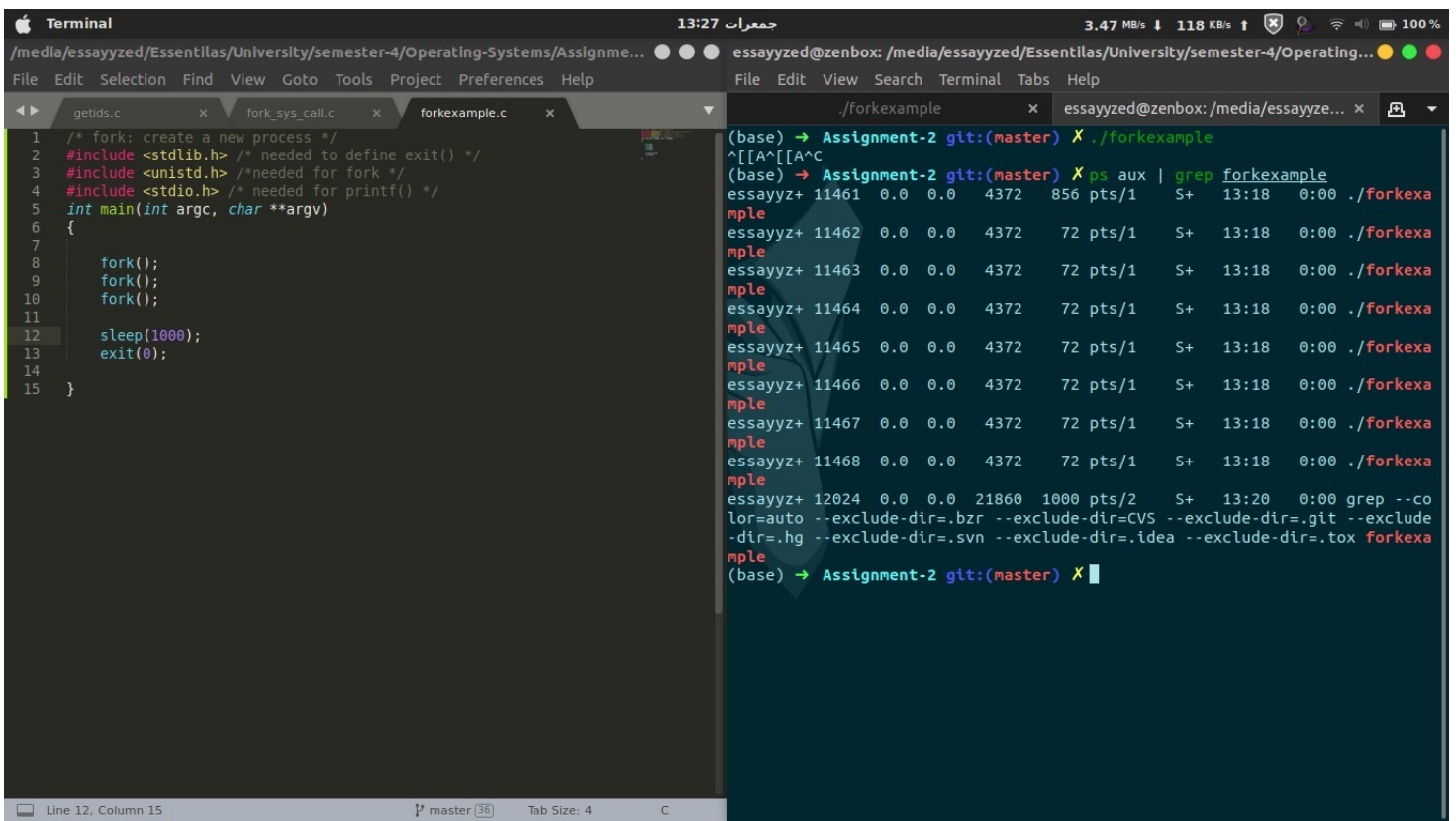


```
Terminal
/media/essayyzed/Essentilas/University/semester-4/Operating-Systems/Assignme...
File Edit Selection Find View Goto Tools Project Preferences Help
getids.c x fork_sys_call.c x forkexample.c x
1 /* fork: create a new process */
2 #include <stdlib.h> /* needed to define exit() */
3 #include <unistd.h> /* needed for fork */
4 #include <stdio.h> /* needed for printf() */
5 int main(int argc, char **argv)
6 {
7
8     fork();
9     fork();
10    fork();
11
12    sleep(1000);
13    exit(0);
14
15 }
```

Terminal output:

```
(base) → Assignment-2 git:(master) X g++ -o forkexample forkexample.c
(base) → Assignment-2 git:(master) X ./forkexample
```

Processes : 8



```
Terminal
/media/essayyzed/Essentilas/University/semester-4/Operating-Systems/Assignme...
File Edit Selection Find View Goto Tools Project Preferences Help
getids.c x fork_sys_call.c x forkexample.c x
1 /* fork: create a new process */
2 #include <stdlib.h> /* needed to define exit() */
3 #include <unistd.h> /* needed for fork */
4 #include <stdio.h> /* needed for printf() */
5 int main(int argc, char **argv)
6 {
7
8     fork();
9     fork();
10    fork();
11
12    sleep(1000);
13    exit(0);
14
15 }
```

Terminal output:

```
(base) → Assignment-2 git:(master) X ./forkexample
^[[A^[[A^C
(base) → Assignment-2 git:(master) X ps aux | grep forkexample
essayyz+ 11461 0.0 0.0 4372 856 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11462 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11463 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11464 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11465 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11466 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11467 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 11468 0.0 0.0 4372 72 pts/1 S+ 13:18 0:00 ./forkexa
mple
essayyz+ 12024 0.0 0.0 21860 1000 pts/2 S+ 13:20 0:00 grep --co
lor=auto --exclude-dir=.bzip --exclude-dir=CVS --exclude-dir=.git --excl
ude-dir=.hg --exclude-dir=.svn --exclude-dir=.idea --exclude-dir=.tox forkexa
mple
(base) → Assignment-2 git:(master) X
```