

Operating System

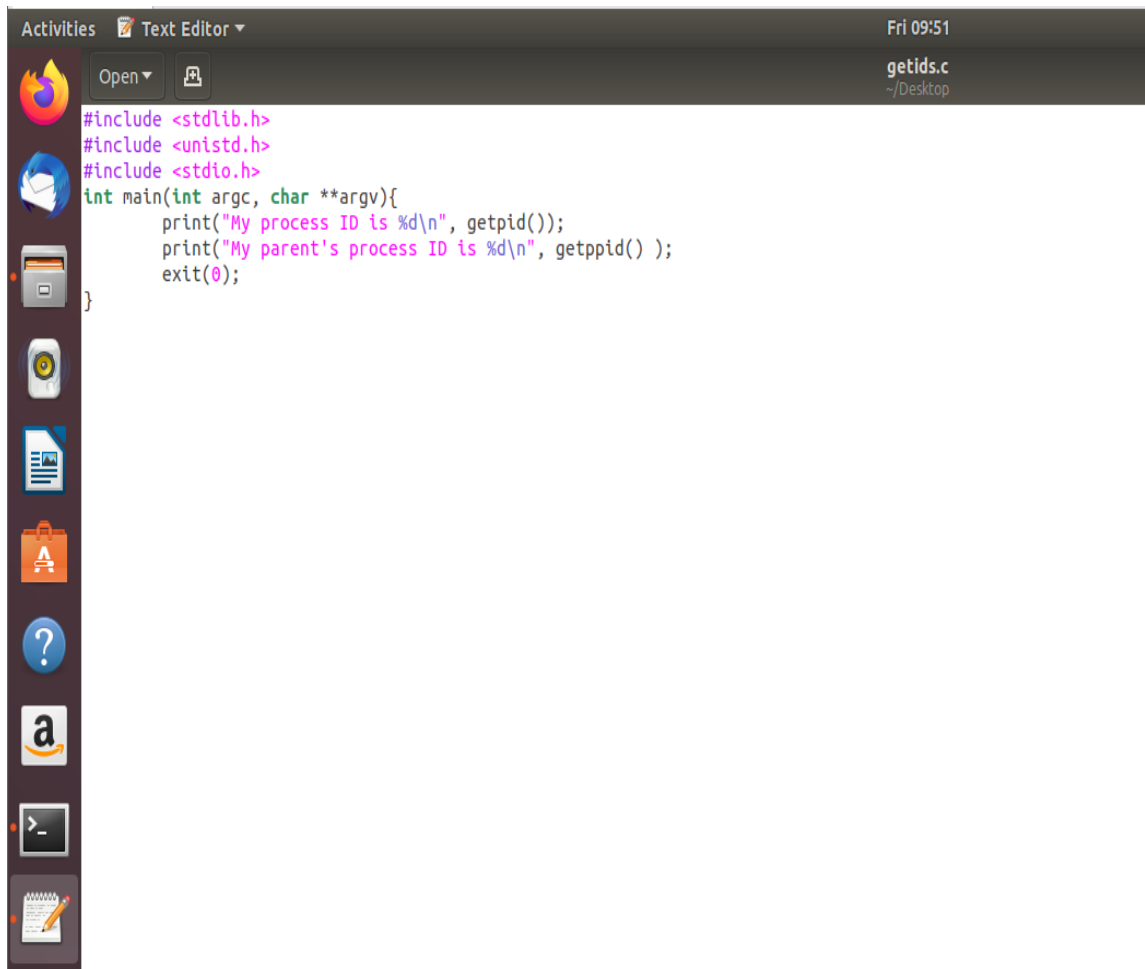
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Section: B

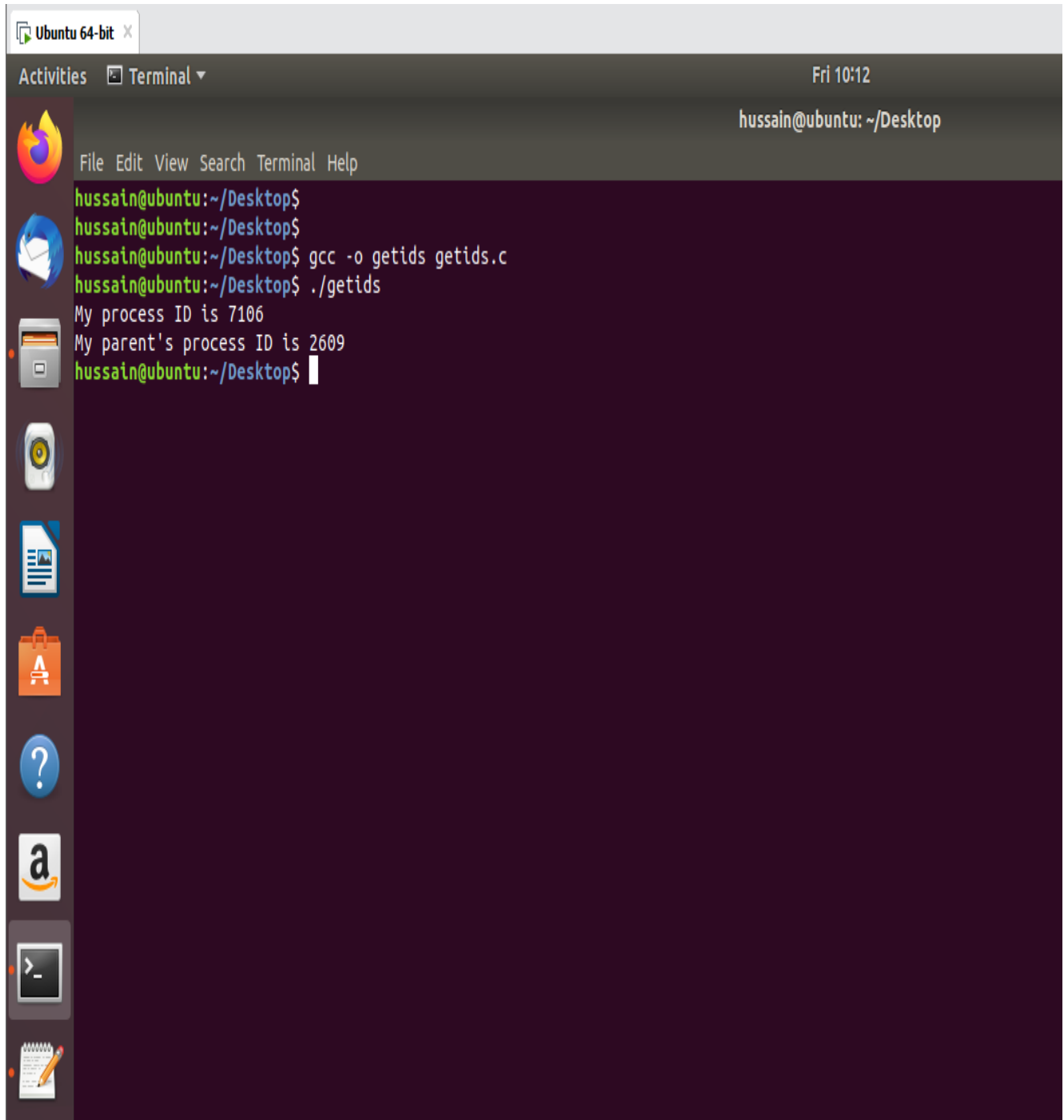
Assignment: 02

1. I have written the given code by replacing the contents of squared bracket with these function calls getpid() and getppid().

A screenshot of a Linux desktop environment. The top panel shows the 'Activities' button, a 'Text Editor' window title, and the system clock 'Fri 09:51'. The text editor window displays a C program named 'getids.c' located at '~/Desktop'. The code includes headers for stdlib.h, unistd.h, and stdio.h. The main function takes two arguments, argc and argv, and prints the process ID of the current process and its parent process using getpid() and getppid() respectively, before exiting with exit(0). The left sidebar contains various application icons including Firefox, a file manager, a terminal, and others.

```
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
int main(int argc, char **argv){
    print("My process ID is %d\n", getpid());
    print("My parent's process ID is %d\n", getppid() );
    exit(0);
}
```

2. The output of above code after compilation and execution is:

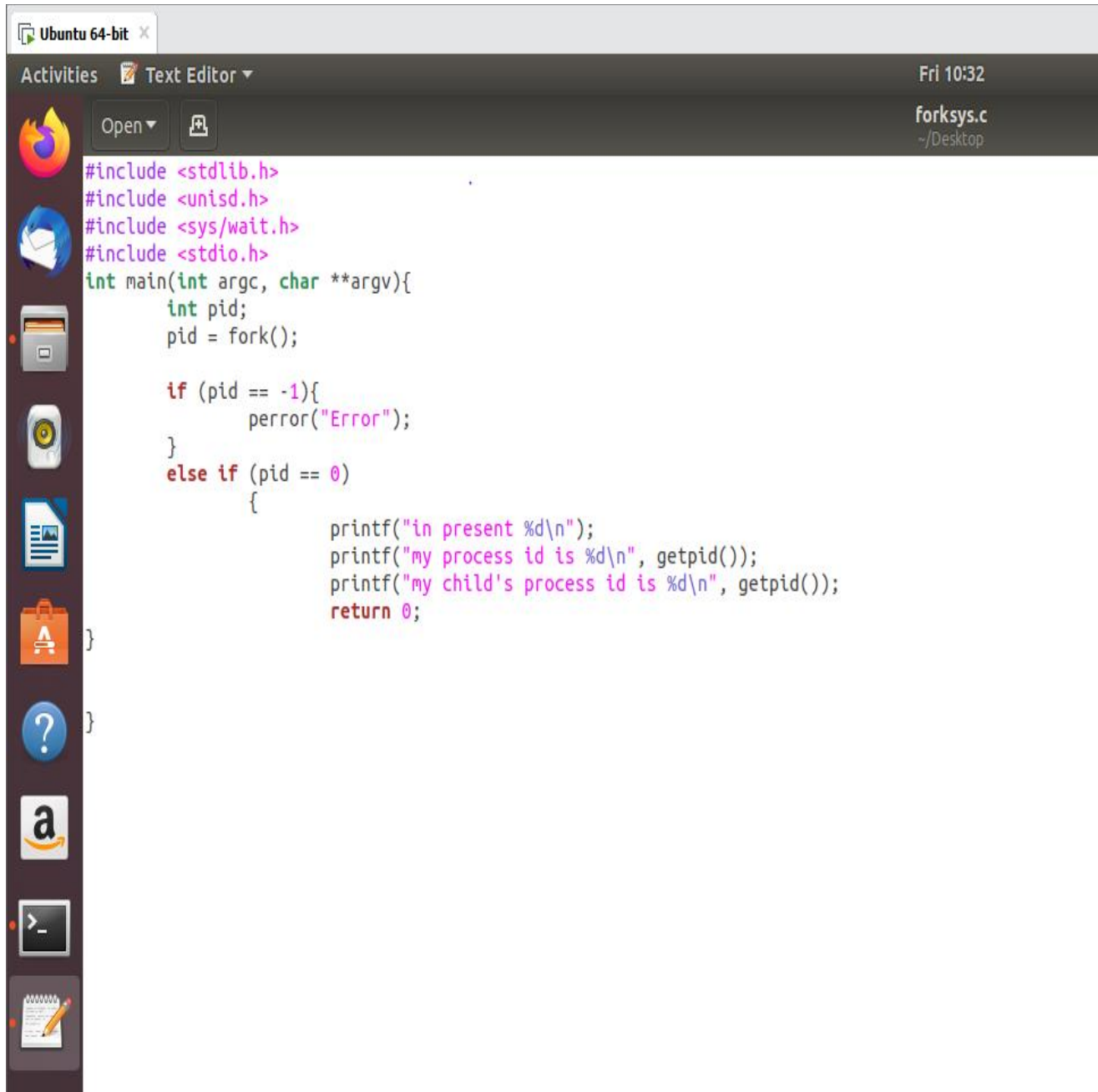


```
hussain@ubuntu:~/Desktop$ gcc -o getids getids.c
hussain@ubuntu:~/Desktop$ ./getids
My process ID is 7106
My parent's process ID is 2609
hussain@ubuntu:~/Desktop$
```

The screenshot shows a terminal window titled "Ubuntu 64-bit". The terminal displays the following commands and output:

- `hussain@ubuntu:~/Desktop$ gcc -o getids getids.c`
- `hussain@ubuntu:~/Desktop$./getids`
- Output: `My process ID is 7106`
- Output: `My parent's process ID is 2609`
- `hussain@ubuntu:~/Desktop$`

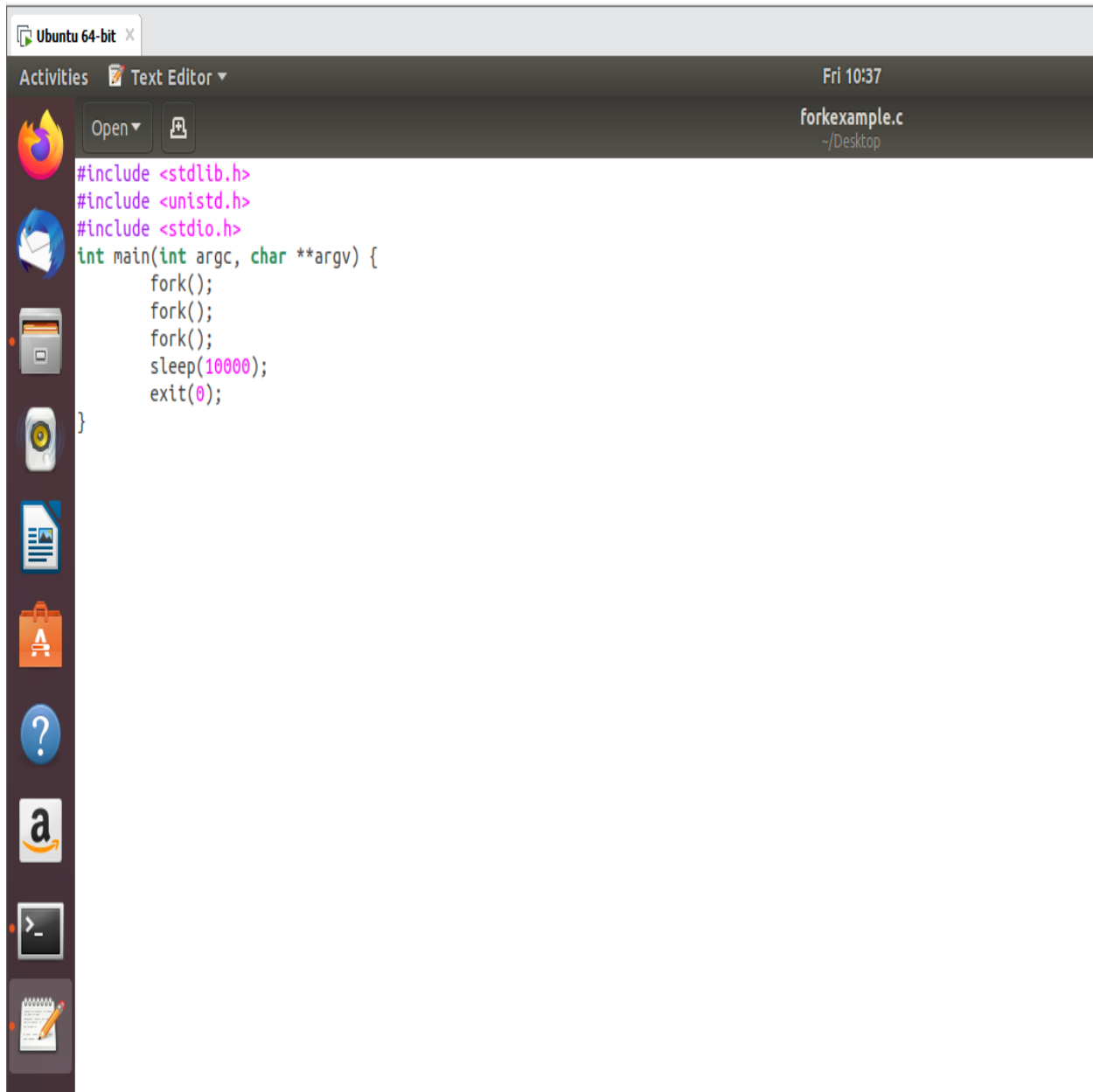
3. Below is the screenshot of complete code for both parent and child processes.

A screenshot of a Ubuntu 64-bit desktop environment. The top panel shows the 'Activities' button, a 'Text Editor' window, and the system clock 'Fri 10:32'. The left sidebar contains several application icons: Firefox, a file manager, a terminal, a web browser, a question mark icon, an Amazon logo, a terminal icon, and a notepad icon. The main window is a text editor titled 'forksys.c' located at '~/Desktop'. It contains the following C code:

```
#include <stdlib.h>
#include <unistd.h>
#include <sys/wait.h>
#include <stdio.h>
int main(int argc, char **argv){
    int pid;
    pid = fork();

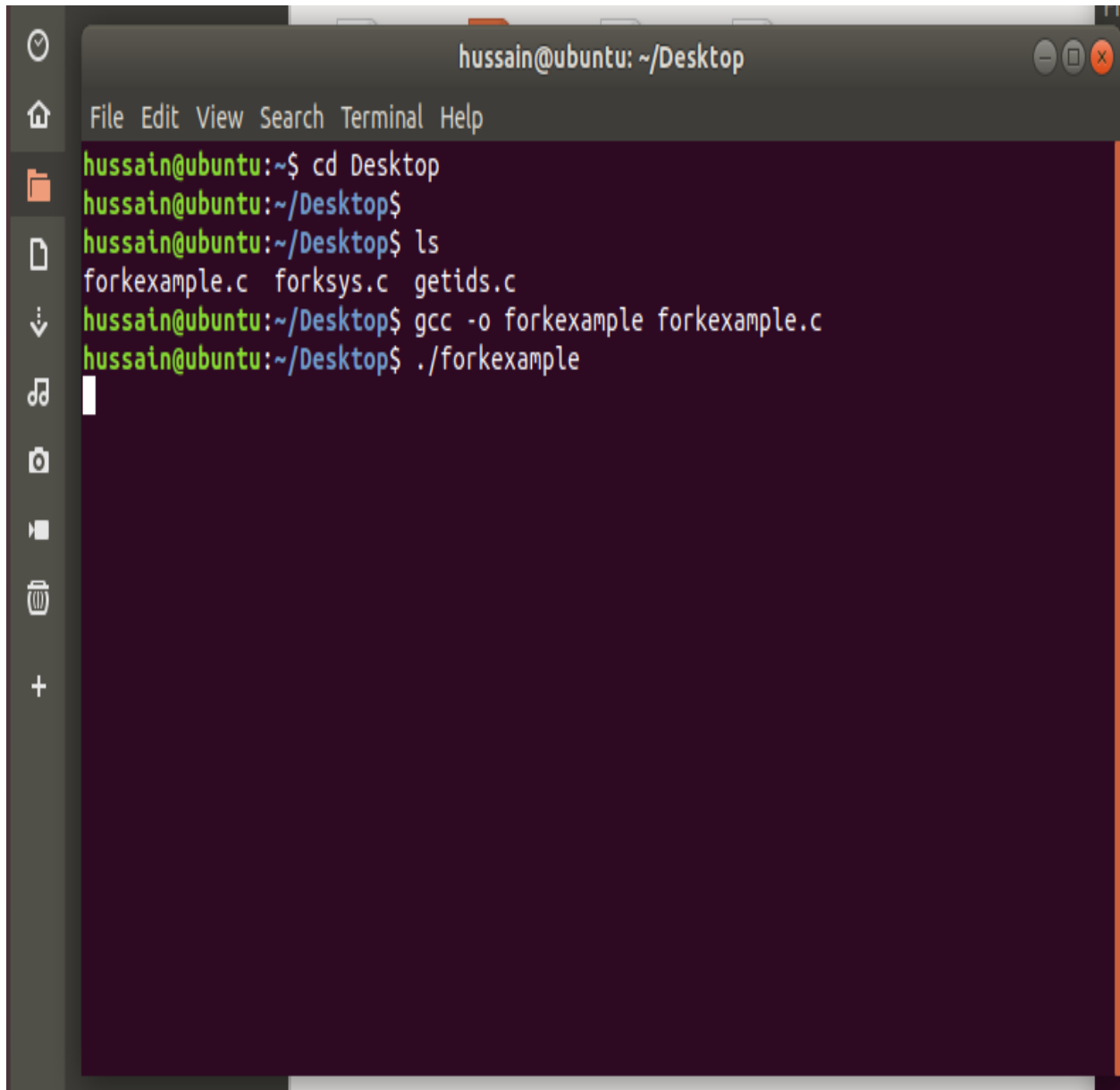
    if (pid == -1){
        perror("Error");
    }
    else if (pid == 0)
    {
        printf("in present %d\n");
        printf("my process id is %d\n", getpid());
        printf("my child's process id is %d\n", getpid());
        return 0;
    }
}
```

4. Below is the screenshot of code of forkexample.c .



```
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>
int main(int argc, char **argv) {
    fork();
    fork();
    fork();
    sleep(10000);
    exit(0);
}
```

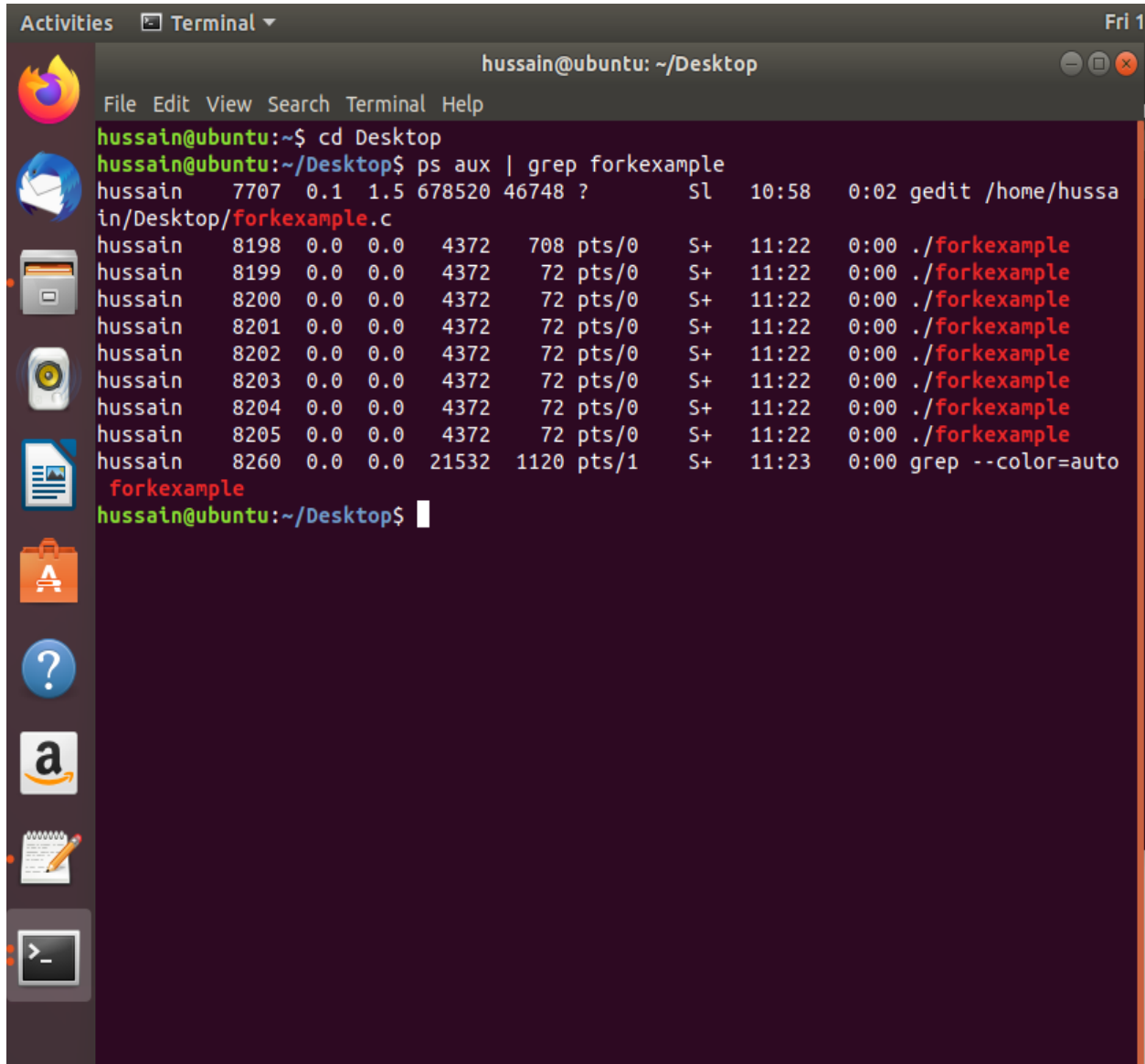
5. This screenshot is the compilation and execution of forkexample.c

A screenshot of a terminal window titled "hussain@ubuntu: ~/Desktop". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". On the left side, there is a vertical toolbar with icons for home, file manager, document, download, music, camera, video, trash, and a plus sign. The terminal text shows the user navigating to the Desktop directory, listing files (forkexample.c, forksys.c, getids.c), compiling forkexample.c with gcc, and then executing it with ./forkexample. The prompt "hussain@ubuntu:~/Desktop\$" is shown at the end of the last command.

```
hussain@ubuntu:~/Desktop$ cd Desktop
hussain@ubuntu:~/Desktop$ ls
forkexample.c forksys.c getids.c
hussain@ubuntu:~/Desktop$ gcc -o forkexample forkexample.c
hussain@ubuntu:~/Desktop$ ./forkexample
```

6. This is the screenshot for given command which I have executed by opening another terminal.

We can clearly see that currently there are eight processes are running as a result of three `fork()` system calls.



```
hussain@ubuntu: ~/Desktop
File Edit View Search Terminal Help
hussain@ubuntu:~$ cd Desktop
hussain@ubuntu:~/Desktop$ ps aux | grep forkexample
hussain    7707  0.1  1.5 678520 46748 ?        Sl   10:58   0:02 gedit /home/hussa
in/Desktop/forkexample.c
hussain    8198  0.0  0.0   4372   708 pts/0    S+   11:22   0:00 ./forkexample
hussain    8199  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8200  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8201  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8202  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8203  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8204  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8205  0.0  0.0   4372    72 pts/0    S+   11:22   0:00 ./forkexample
hussain    8260  0.0  0.0  21532  1120 pts/1    S+   11:23   0:00 grep --color=auto
forkexample
hussain@ubuntu:~/Desktop$
```

*****THE END*****