



# Lab 1 OS

## Simple Shell

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## Description

In my code i have 3 major functions :

`proc_exit()` : it is called by signal after each termination, it writes a certain message in the log file after each termination of child process and handling zombie processes.

`splitInput()` : it splits input to command and array of arguments that will be used in `execvp()`.

`forkProcess()` : it forks a child process , sends the command and arguments to `execvp()` , sends the id of child to parent to wait on it if there is no & and at the end end the process.

Plus the main function:

- have the signal call .

- opening log file if it exists and creating it if it doesn't exist.

- while loop of main shell that have:

- Scan input from the user.
- Check if he press enter without anything then do nothing.
- If user enters the exit close program.
- Call `splitInput()`
- Call fork process.

## Sample runs

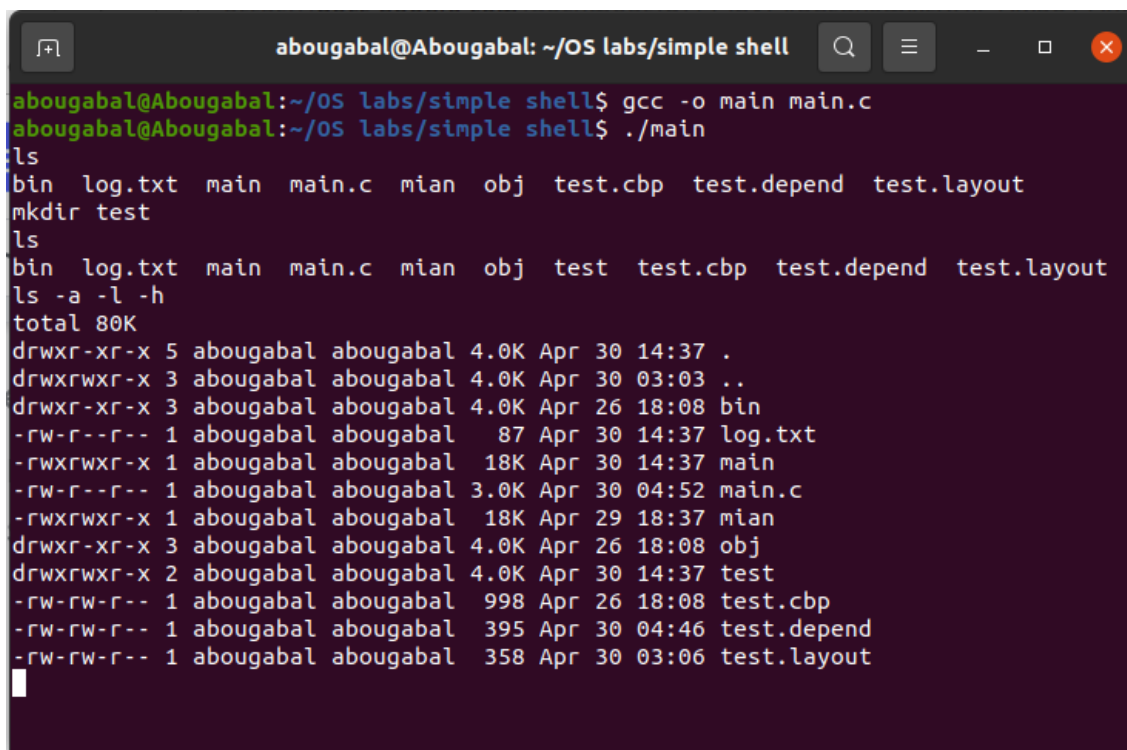
If we run the following sample:

```
ls
```

```
mkdir test
```

```
ls
```

```
ls -a -l -h
```



The image shows a terminal window titled "abougabal@Abougabal: ~/OS labs/simple shell". The window contains the following commands and their outputs:

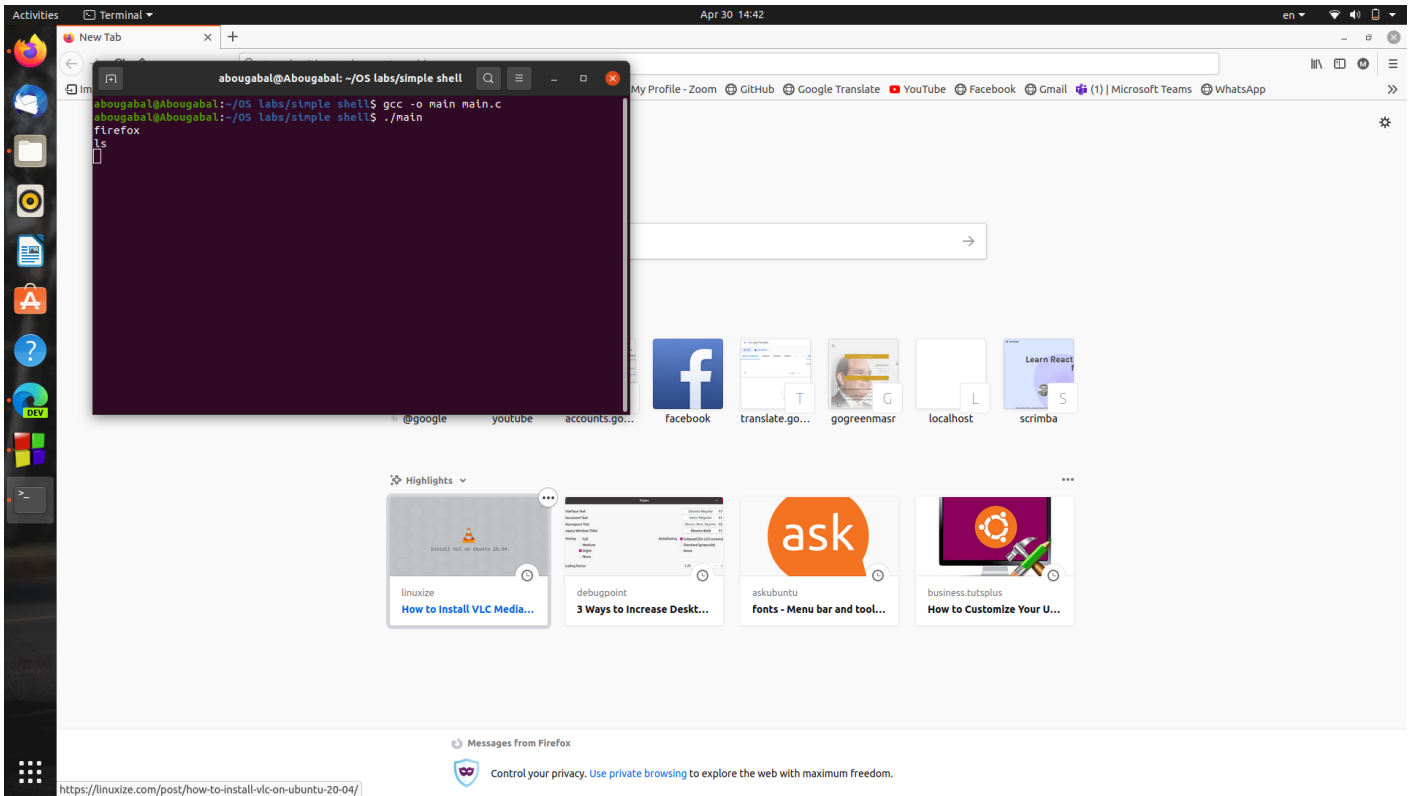
```
abougabal@Abougabal:~/OS labs/simple shell$ gcc -o main main.c
abougabal@Abougabal:~/OS labs/simple shell$ ./main
ls
bin log.txt main main.c mian obj test.cbp test.depend test.layout
mkdir test
ls
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
ls -a -l -h
total 80K
drwxr-xr-x 5 abougabal abougabal 4.0K Apr 30 14:37 .
drwxrwxr-x 3 abougabal abougabal 4.0K Apr 30 03:03 ..
drwxr-xr-x 3 abougabal abougabal 4.0K Apr 26 18:08 bin
-rw-r--r-- 1 abougabal abougabal 87 Apr 30 14:37 log.txt
-rwxrwxr-x 1 abougabal abougabal 18K Apr 30 14:37 main
-rw-r--r-- 1 abougabal abougabal 3.0K Apr 30 04:52 main.c
-rwxrwxr-x 1 abougabal abougabal 18K Apr 29 18:37 mian
drwxr-xr-x 3 abougabal abougabal 4.0K Apr 26 18:08 obj
drwxrwxr-x 2 abougabal abougabal 4.0K Apr 30 14:37 test
-rw-rw-r-- 1 abougabal abougabal 998 Apr 26 18:08 test.cbp
-rw-rw-r-- 1 abougabal abougabal 395 Apr 30 04:46 test.depend
-rw-rw-r-- 1 abougabal abougabal 358 Apr 30 03:06 test.layout
```

We will see that the folder test is created successfully and each command is executed well.

If we run the following sample:

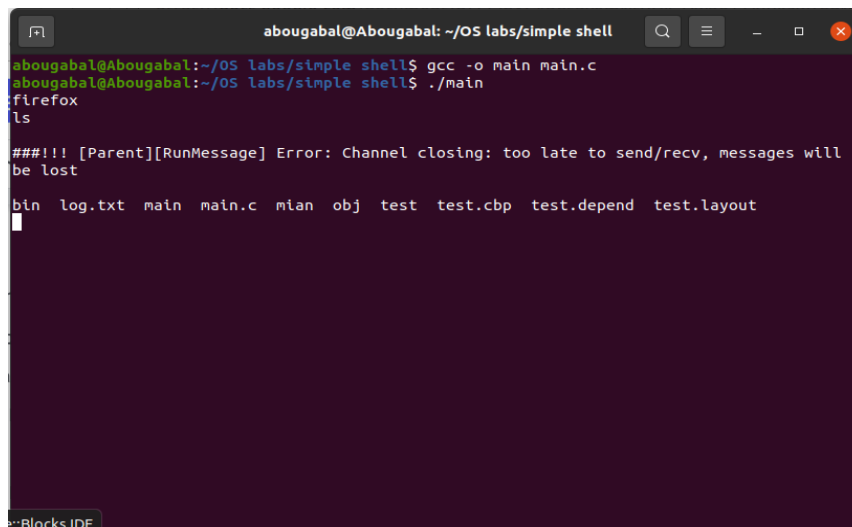
**firefox**

**ls**



We will see that shell is waiting on firefox and ls isn't executed.

After closing firefox:



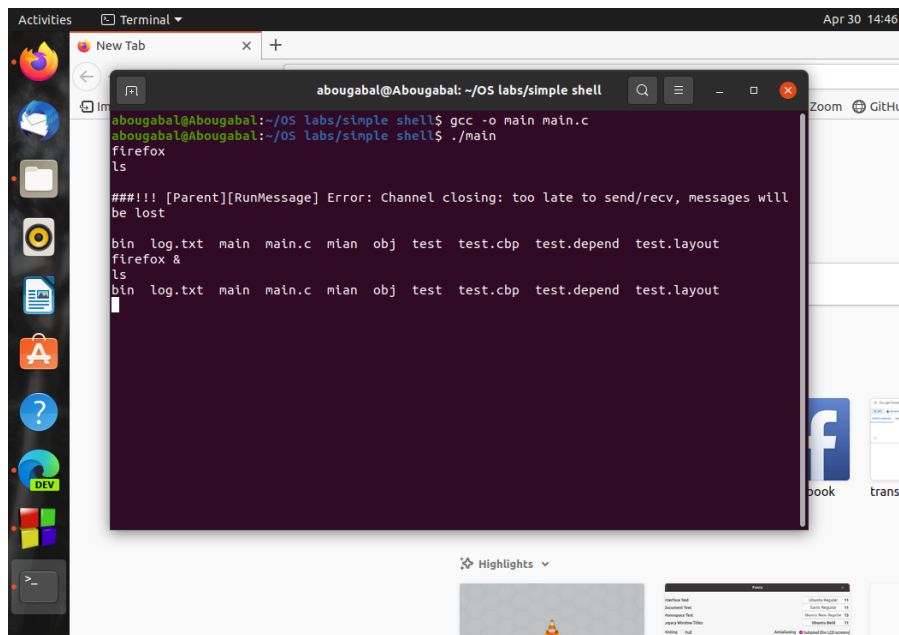
```
abougabal@Abougabal: ~/OS labs/simple shell
abougabal@Abougabal:~/OS labs/simple shell$ gcc -o main main.c
abougabal@Abougabal:~/OS labs/simple shell$ ./main
firefox
ls
###!!! [Parent][RunMessage] Error: Channel closing: too late to send/rcv, messages will
be lost
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
```

We will see that ls is executed after closing firefox.

If we run the following sample:

**firefox &**

**ls**



We will see that the shell is not waiting on firefox and command ls is executed immediately.

If we run the following sample:

**hey**

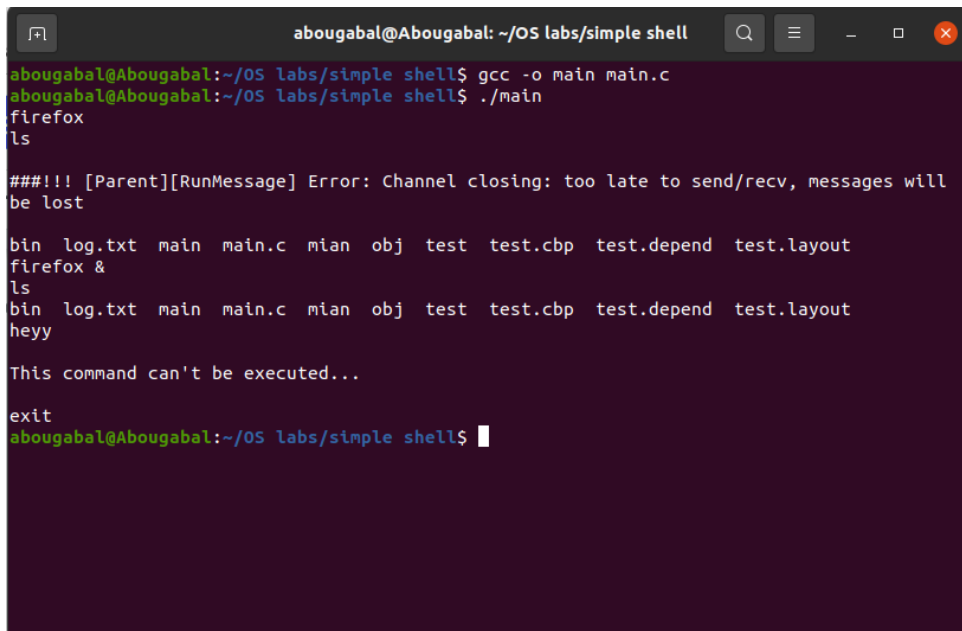


```
abougabal@Abougabal: ~/OS labs/simple shell
abougabal@Abougabal:~/OS labs/simple shell$ gcc -o main main.c
abougabal@Abougabal:~/OS labs/simple shell$ ./main
firefox
ls
###!!! [Parent][RunMessage] Error: Channel closing: too late to send/rcv, messages will
be lost
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
firefox &
ls
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
hey
This command can't be executed...
```

This command is not in the system so it can't be executed.

If we run the following sample:

**exit**

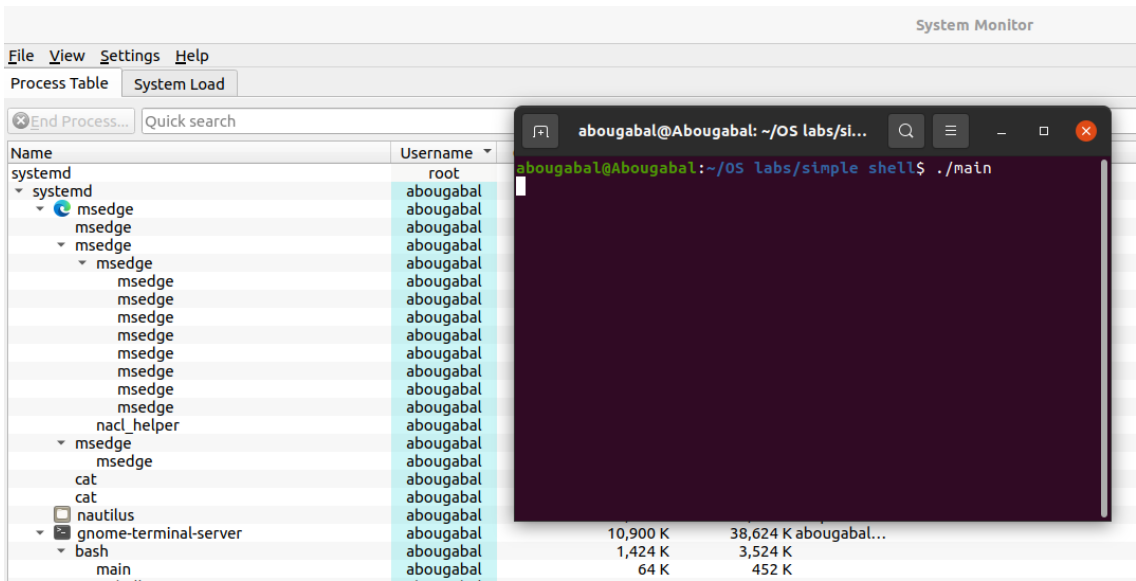


```
abougabal@Abougabal:~/OS labs/simple shell$ gcc -o main main.c
abougabal@Abougabal:~/OS labs/simple shell$ ./main
firefox
ls
###!!! [Parent][RunMessage] Error: Channel closing: too late to send/rcv, messages will
be lost
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
firefox &
ls
bin log.txt main main.c mian obj test test.cbp test.depend test.layout
hey
This command can't be executed...
exit
abougabal@Abougabal:~/OS labs/simple shell$
```

We will see that program is terminated.

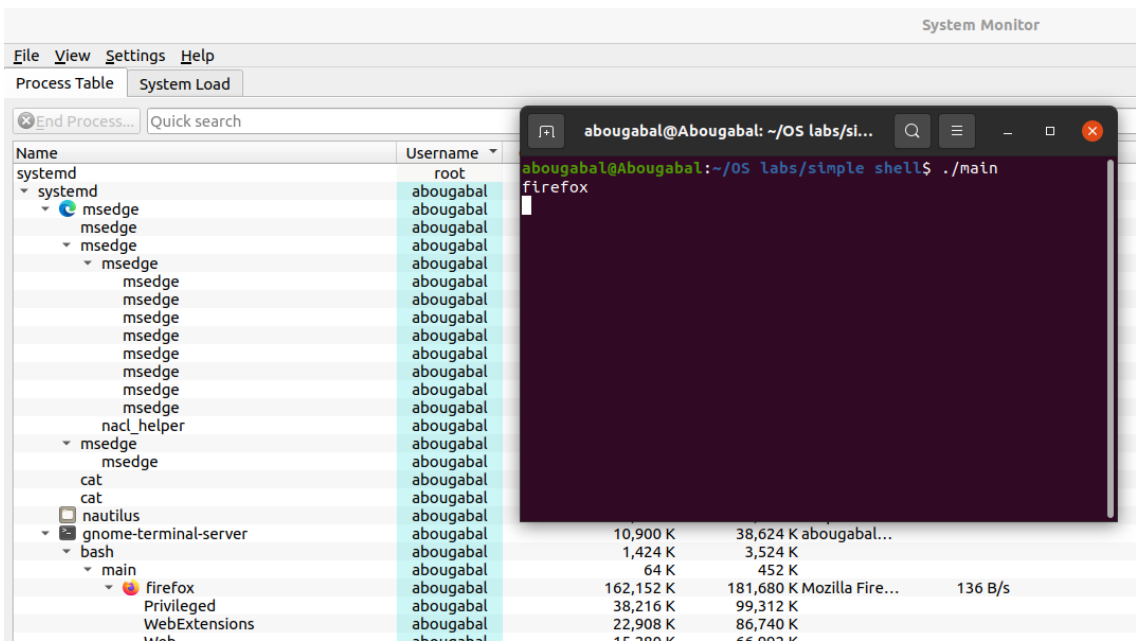
# ScreenShots of Ksysguard

## When we start our shell



We will see that in gnome-terminal-server “main” is starting.

## When we open firefox



# When exit my shell

System Monitor

File View Settings Help

Process Table System Load

End Process... Quick search

Name	Username		
systemd	root		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
msedge	abougabal		
nacl_helper	abougabal		
msedge	abougabal		
msedge	abougabal		
cat	abougabal		
cat	abougabal		
nautilus	abougabal		
gnome-terminal-server	abougabal	10,900 K	38,624 K abougabal...
bash	abougabal	1,424 K	3,524 K

abougabal@Abougabal: ~/OS labs/sl...

abougabal@Abougabal:~/OS labs/simple shell\$ ./main  
firefox  
###!!! [Parent][RunMessage] Error: Channel closing: too late  
to send/recv, messages will be lost  
exit  
abougabal@Abougabal:~/OS labs/simple shell\$