

Simple Shell

There are 3 main major functions called in the main

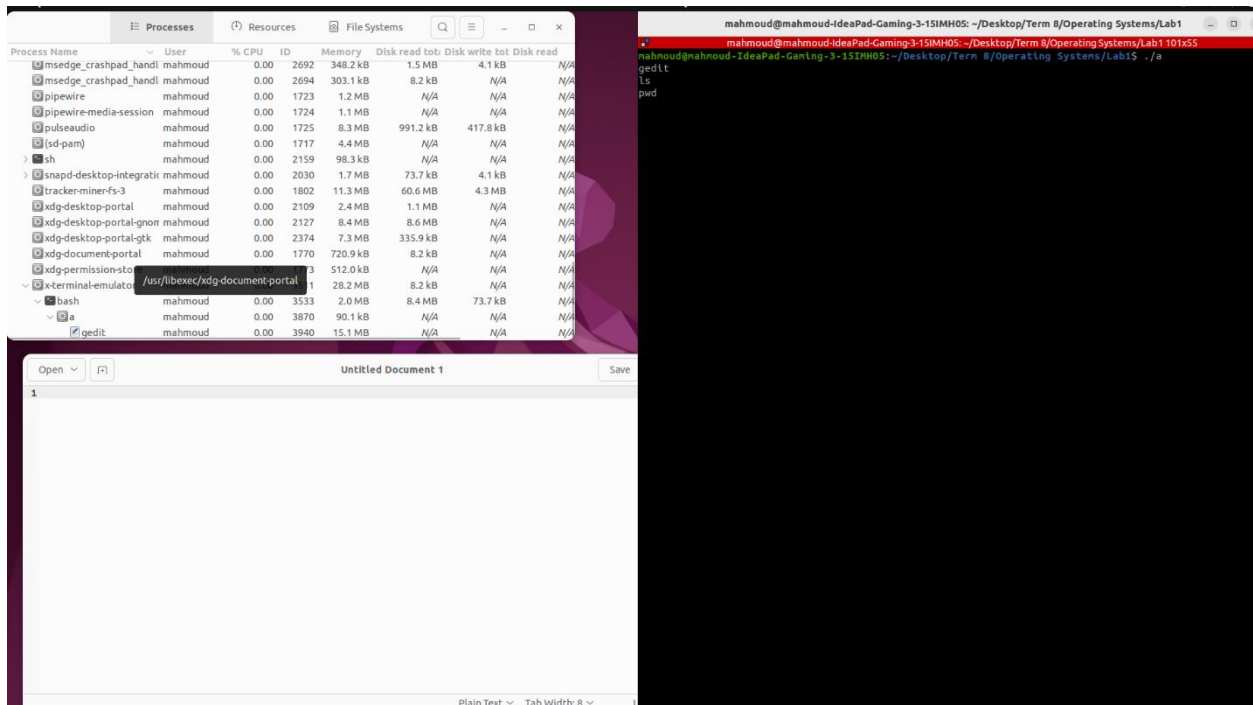
- 1-Signal (SIGCHLD, handle_sigint) so when a child dies, the parent process receives SIGCHLD (or SIGCLD) signal which will execute handle_sigint function which wait for the child process to terminate then append in log.txt file "Child process was terminated".
- 2-setup environment which chdir to current working directory.
- 3-shell which has the main functions it contains.
 - a-read input which take the input line from the user and parse it to array of strings.
 - b-evaluate expression which replace every environmental variable after \$ with its value.
 - c-check whether the command is exit or commands or shell built in.

Some Test Cases

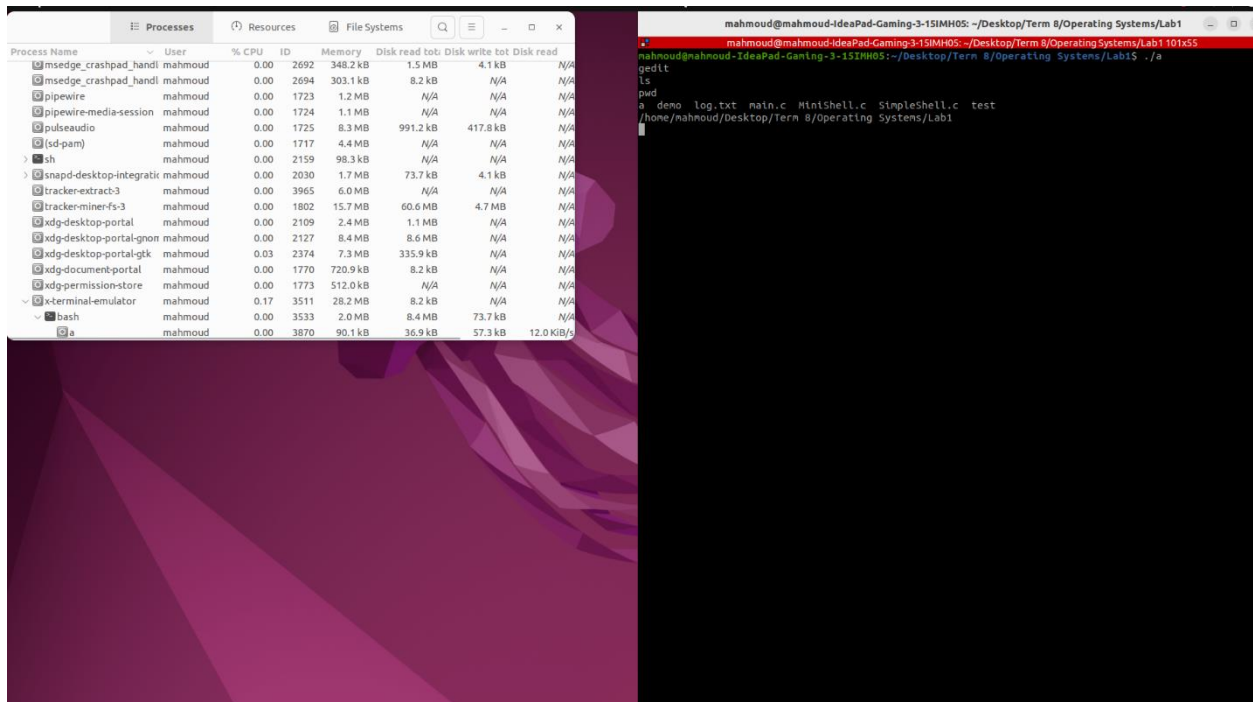
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mahmoud@mahmoud-IdeaPad-Gaming-3-15IMH05: ~/Desktop/Term 8/Operating Systems/Lab1 101x
mahmoud@mahmoud-IdeaPad-Gaming-3-15IMH05:~/Desktop/Term 8/Operating Systems/Lab1$ ./a
ls
a demo log.txt main.c MiniShell.c SimpleShell.c
mkdir test
ls
a demo log.txt main.c MiniShell.c SimpleShell.c test
ls -l
total 72
-rwxrwxr-x 1 mahmoud mahmoud 21224 Mar 12 04:51 a
drwxrwxr-x 2 mahmoud mahmoud 4096 Mar 10 17:37 demo
-rw-rw-r-- 1 mahmoud mahmoud 0 Mar 12 03:46 log.txt
-rw-rw-r-- 1 mahmoud mahmoud 6755 Mar 11 17:58 main.c
-rw-rw-r-- 1 mahmoud mahmoud 14029 Mar 12 01:00 MiniShell.c
-rw-rw-r-- 1 mahmoud mahmoud 13264 Mar 12 03:29 SimpleShell.c
drwxrwxr-x 2 mahmoud mahmoud 4096 Mar 12 04:53 test
export x="-l -a -h"
ls $x
total 80K
drwxrwxr-x 4 mahmoud mahmoud 4.0K Mar 12 04:53 .
drwxrwxrwx 6 mahmoud mahmoud 4.0K Mar 12 01:48 ..
-rwxrwxr-x 1 mahmoud mahmoud 21K Mar 12 04:51 a
drwxrwxr-x 2 mahmoud mahmoud 4.0K Mar 10 17:37 demo
-rw-rw-r-- 1 mahmoud mahmoud 0 Mar 12 03:46 log.txt
-rw-rw-r-- 1 mahmoud mahmoud 6.6K Mar 11 17:58 main.c
-rw-rw-r-- 1 mahmoud mahmoud 14K Mar 12 01:00 MiniShell.c
-rw-rw-r-- 1 mahmoud mahmoud 13K Mar 12 03:29 SimpleShell.c
drwxrwxr-x 2 mahmoud mahmoud 4.0K Mar 12 04:53 test
export y="Hello world"
echo "wow"
wow
echo "$y"
Hello world
echo "hello $x"
hello -l -a -h
exit
mahmoud@mahmoud-IdeaPad-Gaming-3-15IMH05:~/Desktop/Term 8/Operating Systems/Lab1$
```

```
exit
mahmoud@mahmoud-IdeaPad-Gaming-3-15IMH05:~/Desktop/Term 8/Operating Systems/Lab1$ ./a
export x=5
export y="hello world"
echo "$y m$x n$x"
hello world m5 n5
exit
mahmoud@mahmoud-IdeaPad-Gaming-3-15IMH05:~/Desktop/Term 8/Operating Systems/Lab1$
```

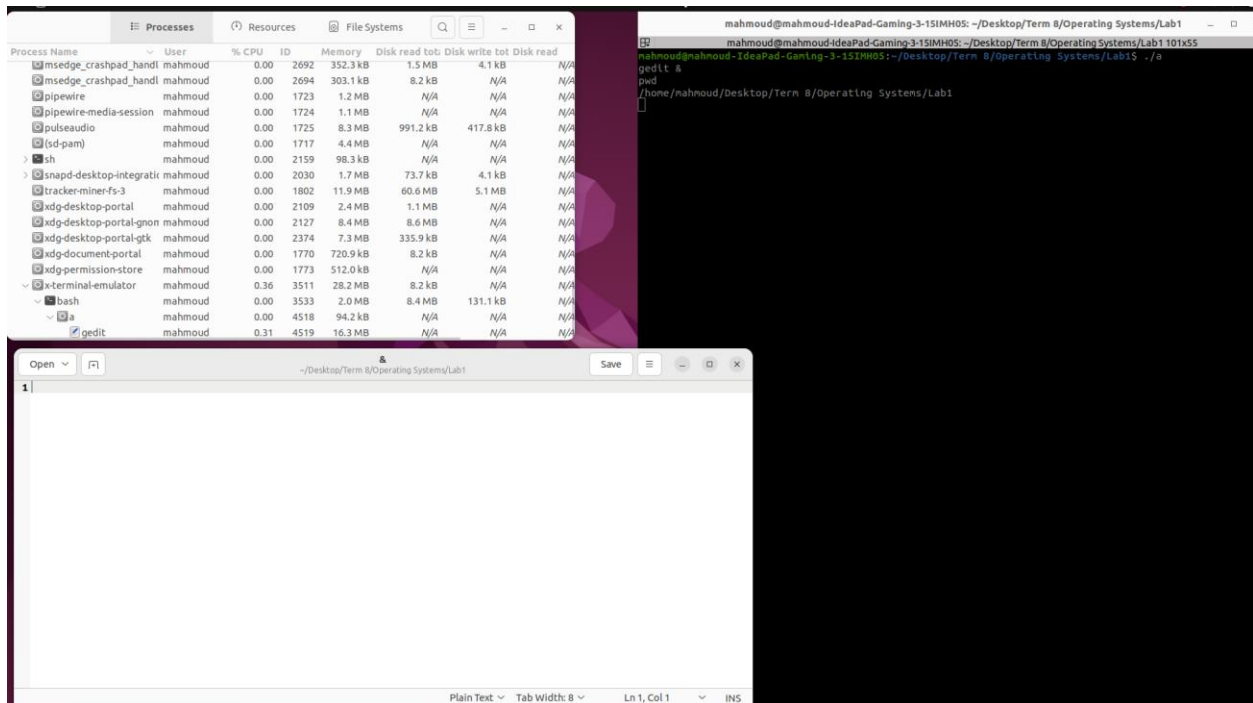
When we open gedit or Firefox normally we can observe that the terminal stuck and stops executing commands



When we close it everything returns to the normal state



When we add & gedit is opened and working in the background so we can complete using the shell



When it's closed everything returns to normal state and we can observe from the system monitor that there is no child processes

