Simple Shell

Description:

-it’s a simple shell is simply a program that conveniently allows you to run other programs. Read up on your favorite shell to see what it does.

Organization of the code:

-the code take the commands of the user in infinite loop not be terminated except by close the program or write exit.

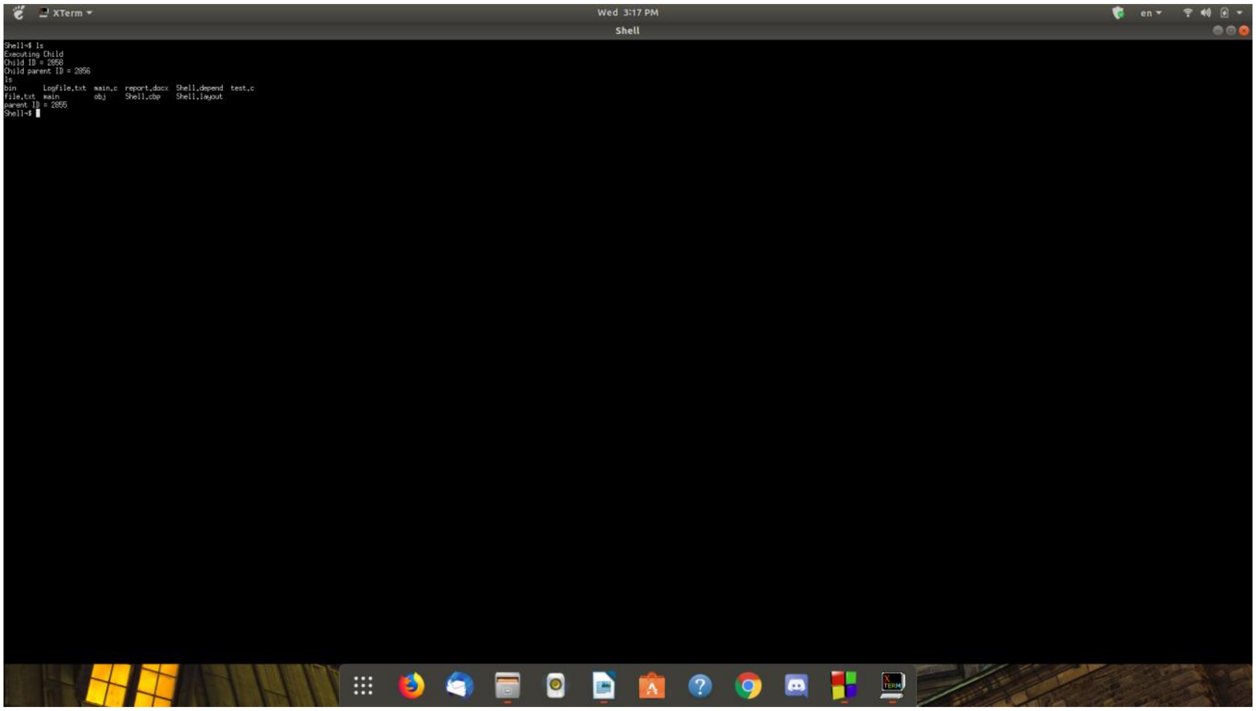
-then if it’s a process then it will do fork and check the parent id and child id to do it and in a child it will execute it by execvp function and the parent will wait or continue according to the ‘&’ to make it run in background or not.

-and then use the signal function to write in log file when the process is terminated.

Note: - my code handles the zombie mode too.

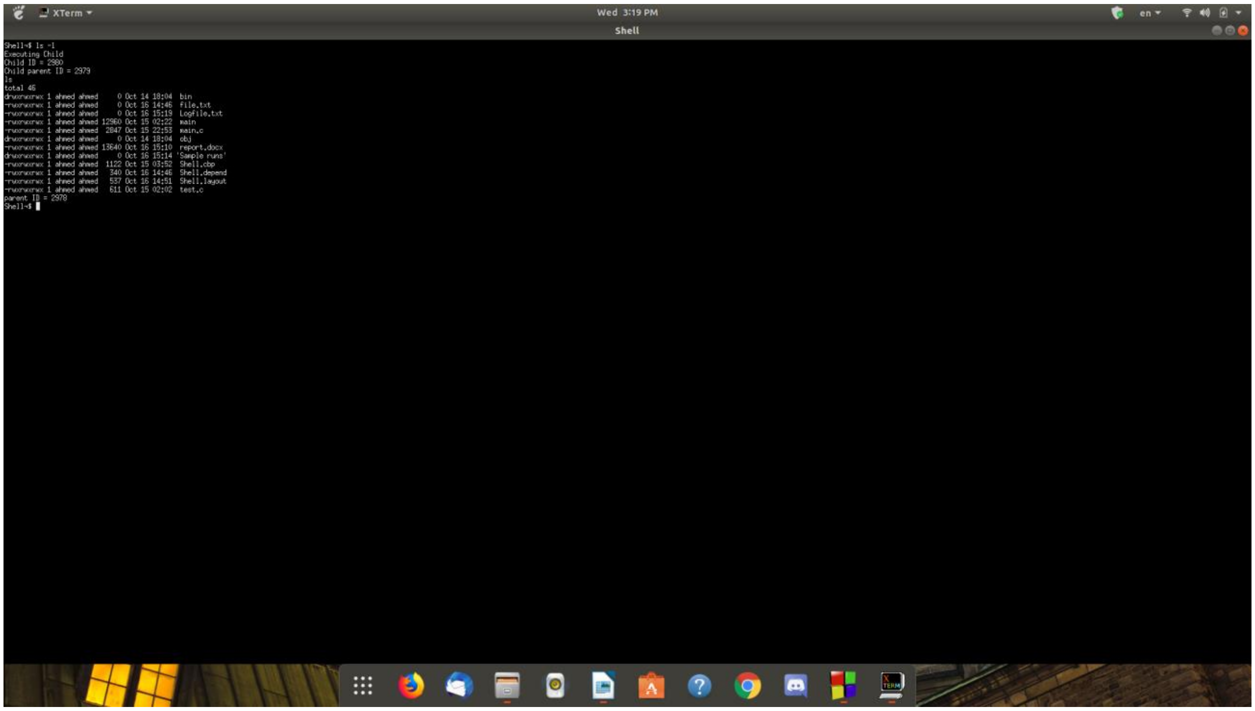
Sample runs:

commands with no arguments:



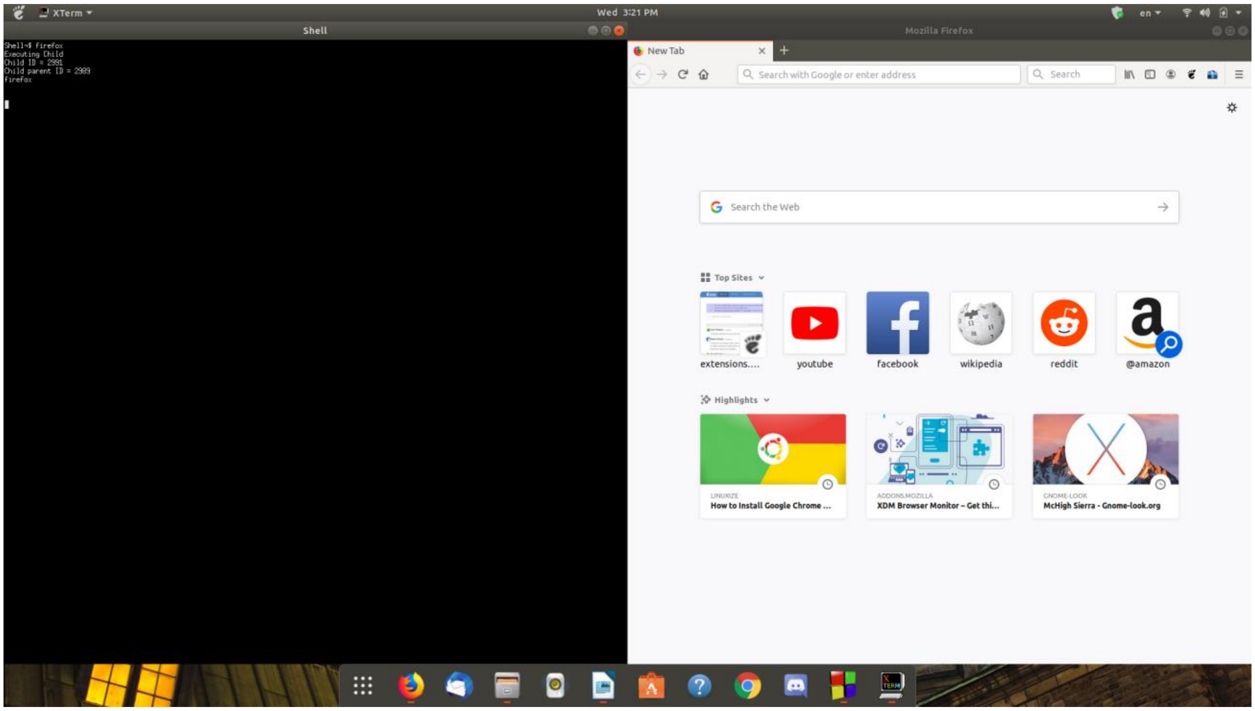
```
Shell~$ ls
Executing Child
Child ID = 2858
Child parent ID = 2856
ls
bin       Logfile.txt  main.c  report.docx  Shell.depend  test.c
file.txt  main         obj     Shell.cbp    Shell.layout
parent ID = 2855
Shell~$
```

commands with arguments:



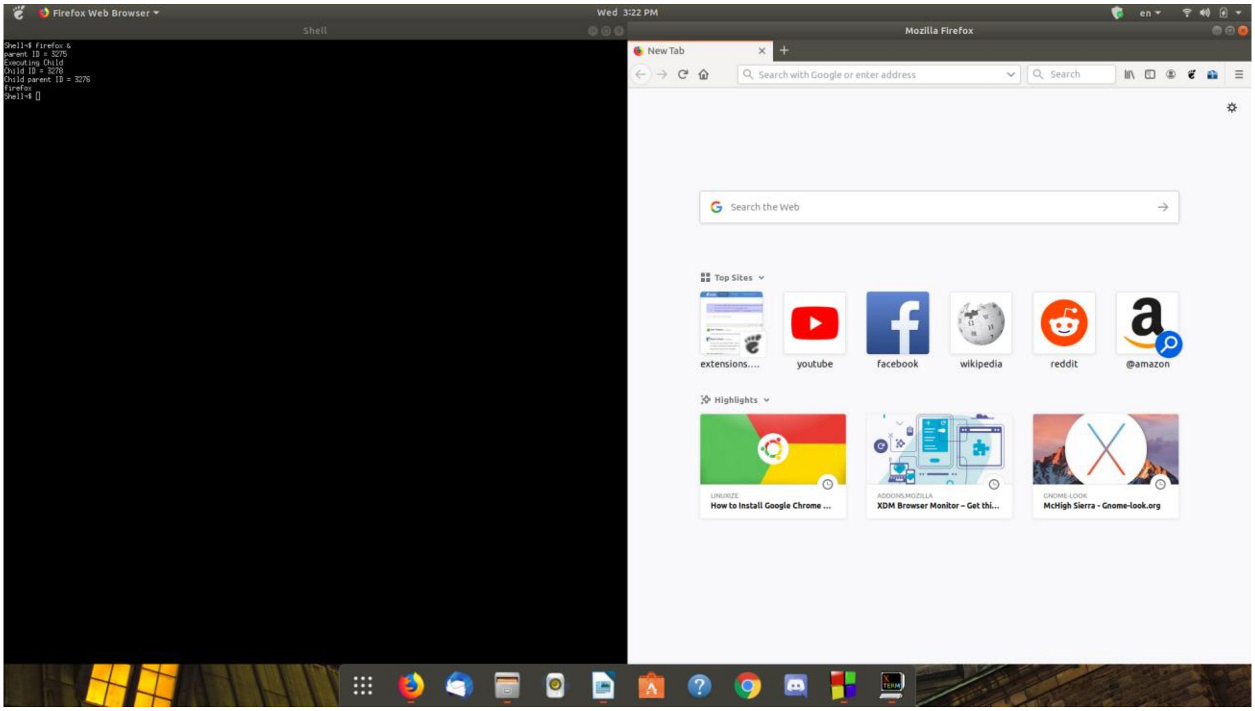
```
Shell-$ ls -l
Executing Child
Child ID = 2980
Child parent ID = 2979
ls
total 46
drwxrwxrwx 1 ahmed ahmed     0 Oct 14 18:04  bin
-rwxrwxrwx 1 ahmed ahmed     0 Oct 16 14:46  file.txt
-rwxrwxrwx 1 ahmed ahmed     0 Oct 16 15:19  Logfile.txt
-rwxrwxrwx 1 ahmed ahmed 12960 Oct 15 02:22  main
-rwxrwxrwx 1 ahmed ahmed  2847 Oct 15 22:53  main.c
drwxrwxrwx 1 ahmed ahmed     0 Oct 14 18:04  obj
-rwxrwxrwx 1 ahmed ahmed 13640 Oct 16 15:10  report.docx
drwxrwxrwx 1 ahmed ahmed     0 Oct 16 15:14 'Sample runs'
-rwxrwxrwx 1 ahmed ahmed  1122 Oct 15 03:52  Shell.cbp
-rwxrwxrwx 1 ahmed ahmed   340 Oct 16 14:46  Shell.depend
-rwxrwxrwx 1 ahmed ahmed   537 Oct 16 14:51  Shell.layout
-rwxrwxrwx 1 ahmed ahmed   611 Oct 15 02:02  test.c
parent ID = 2978
Shell-$ 
```

commands without &:



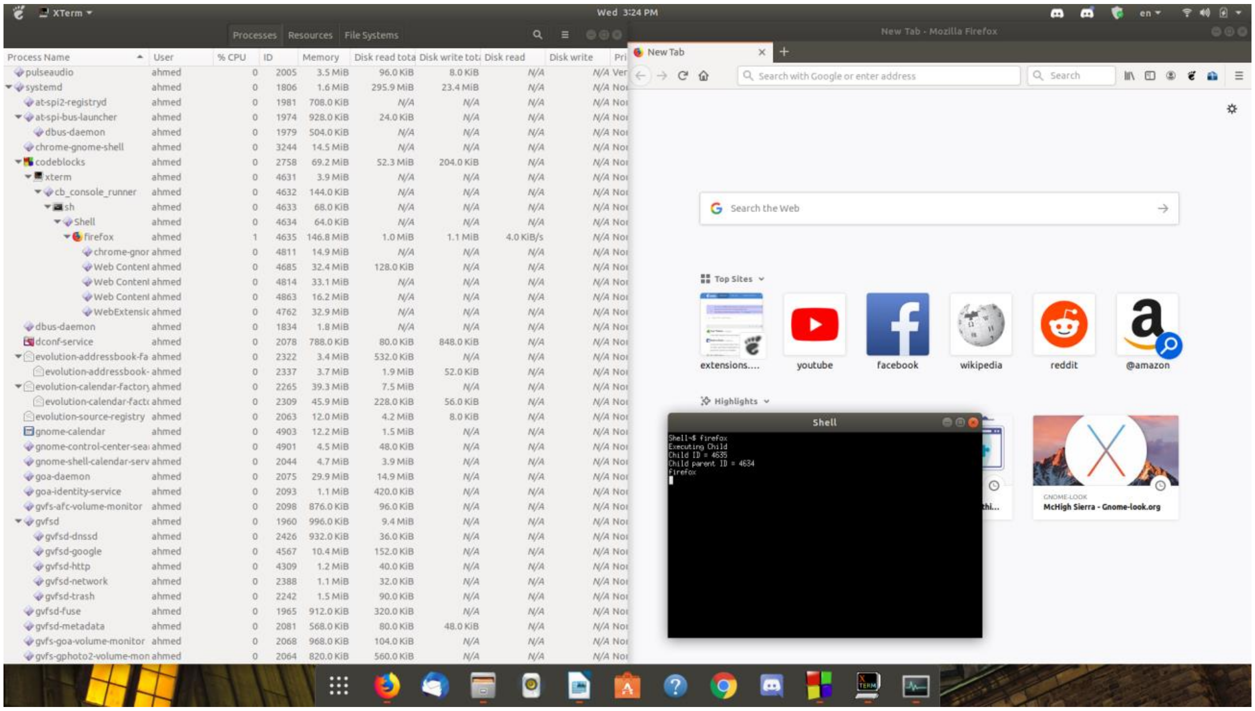
```
Shell-$ firefox
Executing Child
Child ID = 2991
Child parent ID = 2989
firefox
```

commands with ‘&’:



```
Shell~$ firefox &
parent ID = 3275
Executing Child
Child ID = 3278
Child parent ID = 3276
firefox
Shell~$ []
```

The process hierarchy with system monitor:



Process Name	User	% CPU	ID	Memory	Disk read tota	Disk write tot:	Disk read	Disk write	Pri
pulseaudio	ahmed	0	2005	3.5 MiB	96.0 KiB	8.0 KiB	N/A	N/A	Ver
systemd	ahmed	0	1806	1.6 MiB	295.9 MiB	23.4 MiB	N/A	N/A	Noi
at-spi2-registryd	ahmed	0	1981	708.0 KiB	N/A	N/A	N/A	N/A	Noi
at-spi-bus-launcher	ahmed	0	1974	928.0 KiB	24.0 KiB	N/A	N/A	N/A	Noi
dbus-daemon	ahmed	0	1979	504.0 KiB	N/A	N/A	N/A	N/A	Noi
chrome-gnome-shell	ahmed	0	3244	14.5 MiB	N/A	N/A	N/A	N/A	Noi
codeblocks	ahmed	0	2758	69.2 MiB	52.3 MiB	204.0 KiB	N/A	N/A	Noi
xterm	ahmed	0	4631	3.9 MiB	N/A	N/A	N/A	N/A	Noi
cb_console_runner	ahmed	0	4632	144.0 KiB	N/A	N/A	N/A	N/A	Noi
sh	ahmed	0	4633	68.0 KiB	N/A	N/A	N/A	N/A	Noi
Shell	ahmed	0	4634	64.0 KiB	N/A	N/A	N/A	N/A	Noi
firefox	ahmed	1	4635	146.8 MiB	1.0 MiB	1.1 MiB	4.0 KiB/s	N/A	Noi
chrome-gnor	ahmed	0	4811	14.9 MiB	N/A	N/A	N/A	N/A	Noi
Web Content	ahmed	0	4685	32.4 MiB	128.0 KiB	N/A	N/A	N/A	Noi
Web Content	ahmed	0	4814	33.1 MiB	N/A	N/A	N/A	N/A	Noi
Web Content	ahmed	0	4863	16.2 MiB	N/A	N/A	N/A	N/A	Noi
WebExtensic	ahmed	0	4762	32.9 MiB	N/A	N/A	N/A	N/A	Noi
dbus-daemon	ahmed	0	1834	1.8 MiB	N/A	N/A	N/A	N/A	Noi
dconf-service	ahmed	0	2078	788.0 KiB	80.0 KiB	848.0 KiB	N/A	N/A	Noi
evolution-addressbook-fa	ahmed	0	2322	3.4 MiB	532.0 KiB	N/A	N/A	N/A	Noi
evolution-addressbook-	ahmed	0	2337	3.7 MiB	1.9 MiB	52.0 KiB	N/A	N/A	Noi
evolution-calendar-factory	ahmed	0	2265	39.3 MiB	7.5 MiB	N/A	N/A	N/A	Noi
evolution-calendar-facto	ahmed	0	2309	45.9 MiB	228.0 KiB	56.0 KiB	N/A	N/A	Noi
evolution-source-registry	ahmed	0	2063	12.0 MiB	4.2 MiB	8.0 KiB	N/A	N/A	Noi
gnome-calendar	ahmed	0	4903	12.2 MiB	1.5 MiB	N/A	N/A	N/A	Noi
gnome-control-center-sea	ahmed	0	4901	4.5 MiB	48.0 KiB	N/A	N/A	N/A	Noi
gnome-shell-calendar-serv	ahmed	0	2044	4.7 MiB	3.9 MiB	N/A	N/A	N/A	Noi
goa-daemon	ahmed	0	2075	29.9 MiB	14.9 MiB	N/A	N/A	N/A	Noi
goa-identity-service	ahmed	0	2093	1.1 MiB	420.0 KiB	N/A	N/A	N/A	Noi
gvfs-afc-volume-monitor	ahmed	0	2098	876.0 KiB	96.0 KiB	N/A	N/A	N/A	Noi
gvfsd	ahmed	0	1960	996.0 KiB	9.4 MiB	N/A	N/A	N/A	Noi
gvfsd-dnssd	ahmed	0	2426	932.0 KiB	36.0 KiB	N/A	N/A	N/A	Noi
gvfsd-google	ahmed	0	4567	10.4 MiB	152.0 KiB	N/A	N/A	N/A	Noi
gvfsd-http	ahmed	0	4309	1.2 MiB	40.0 KiB	N/A	N/A	N/A	Noi
gvfsd-network	ahmed	0	2388	1.1 MiB	32.0 KiB	N/A	N/A	N/A	Noi
gvfsd-trash	ahmed	0	2242	1.5 MiB	90.0 KiB	N/A	N/A	N/A	Noi
gvfsd-fuse	ahmed	0	1965	912.0 KiB	320.0 KiB	N/A	N/A	N/A	Noi
gvfsd-metadata	ahmed	0	2081	568.0 KiB	80.0 KiB	48.0 KiB	N/A	N/A	Noi
gvfs-goa-volume-monitor	ahmed	0	2068	968.0 KiB	104.0 KiB	N/A	N/A	N/A	Noi
gvfs-gphoto2-volume-mon	ahmed	0	2064	820.0 KiB	560.0 KiB	N/A	N/A	N/A	Noi

```
Shell~$ firefox
Executing Child
Child ID = 4635
Child parent ID = 4634
firefox
█
```