

Assignment 3 – Simple Shell

Description:

We are designing a shell that allows user to input linux cmd and run it in the cmd line written in C. We are using wait,execvp,fork in order to properly make this work

Approach / What I Did:

My approach to this problem was to look at the regular shell as well as check out documentation of linux commands. This shell is being executed in the environment path /bin folder that stores all the binaries that we need. I looked at different youtube videos in order to approach this solution. I looked at the tokens and how to properly grab the tokens using all possible delimiters/separators. The hardest part was to malloc the buffer and copy the cmd line to the buffer. We only had 180 buffer size and cmd had to have half of that size. So $180/2 = 90$.

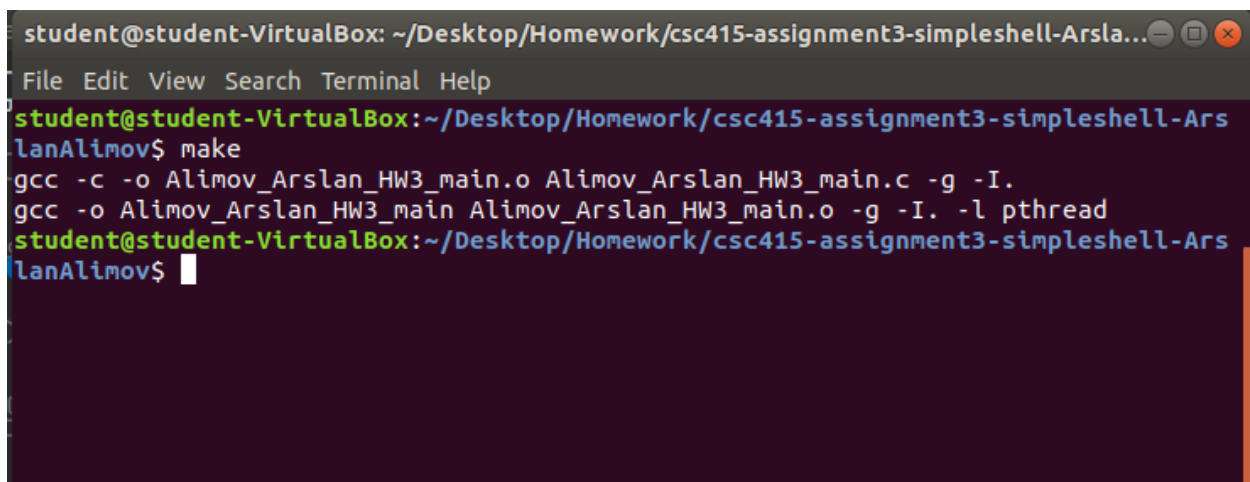
Issues and Resolutions:

I faced couple of issues with this cmd line project, I was not sure how to print out stuff on new line and how to find out whether input comes from file or from cmd line. Because if it comes from file we have - \n "" and \0. I then started to look into youtube videos about creating a simple shell , though all of them were using Buffer[size] and none of them were using malloc, I understood the logic behind the shell and then once I understood I started to get to work. I was not sure how to divide commands into arguments , but after a bit of thinking I understood that there is such a good command as strtok, which takes a string and delimiter to divide it from.

Analysis: (If required for the assignment)

NO analysis for this assignment

Screen shot of compilation:



```
student@student-VirtualBox: ~/Desktop/Homework/csc415-assignment3-simpleshell-Arsla...
File Edit View Search Terminal Help
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-Ars
lanAlimov$ make
gcc -c -o Alimov_Arslan_HW3_main.o Alimov_Arslan_HW3_main.c -g -I.
gcc -o Alimov_Arslan_HW3_main Alimov_Arslan_HW3_main.o -g -I. -l pthread
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-Ars
lanAlimov$
```

Screen shot(s) of the execution of the program:

```
student@student-VirtualBox: ~/Desktop/Homework/csc415-assignment3-simpleshell-Arsla...
File Edit View Search Terminal Help
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-Ars
lanAlimov$ ./asmt3 prompt$
prompt$ ls -l
total 72
-rwxrwxr-x 1 student student 16696 Sep 16 18:41 Alimov_Arslan_HW3_main
-rw-rw-r-- 1 student student 5523 Sep 16 18:37 Alimov_Arslan_HW3_main.c
-rw-rw-r-- 1 student student 10696 Sep 16 18:41 Alimov_Arslan_HW3_main.o
-rwxrwxr-x 1 student student 13264 Sep 16 18:41 asmt3
-rw-rw-r-- 1 student student 42 Sep 16 18:36 commands.txt
-rw-rw-r-- 1 student student 1777 Sep 16 18:28 Makefile
-rw-rw-r-- 1 student student 4967 Sep 11 14:10 README.md
Child 32027, exited with 0
prompt$ ls foo
ls: cannot access 'foo': No such file or directory
Child 32029, exited with 2
prompt$ exit
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-Ars
lanAlimov$
```

Make Run <commands.txt

```
student@student-VirtualBox: ~/Desktop/Homework/csc415-assignment3-simpleshell-ArslanAlimov
File Edit View Search Terminal Help
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-ArslanAlimov$ make run <commands.txt
./Alimov_Arslan_HW3_main "Prompt> "
Prompt> ls
Alimov_Arslan_HW3_main Alimov_Arslan_HW3_main.c Alimov_Arslan_HW3_main.o asmt3 commands.txt Makefile README.md
Child 3217, exited with 0
Prompt> echo
"Hello
"Hello
Child 3218, exited with 0
Prompt> ls
-l
total 72
-rwxrwxr-x 1 student student 16728 Sep 17 13:03 Alimov_Arslan_HW3_main
-rw-rw-r-- 1 student student 7751 Sep 17 13:02 Alimov_Arslan_HW3_main.c
-rw-rw-r-- 1 student student 10728 Sep 17 13:03 Alimov_Arslan_HW3_main.o
-rwxrwxr-x 1 student student 13264 Sep 16 18:41 asmt3
-rw-rw-r-- 1 student student 42 Sep 16 18:54 commands.txt
-rw-rw-r-- 1 student student 1777 Sep 16 18:28 Makefile
-rw-rw-r-- 1 student student 4967 Sep 11 14:10 README.md
Child 3219, exited with 0
Prompt> ps
  PID TTY          TIME CMD
 3160 pts/0    00:00:00 bash
 3214 pts/0    00:00:00 make
 3215 pts/0    00:00:00 sh
 3216 pts/0    00:00:00 Alimov_Arslan_H
 3220 pts/0    00:00:00 ps
Child 3220, exited with 0
Prompt> ls
foo
ls: cannot access 'foo': No such file or directory
Child 3221, exited with 2
Prompt> Prompt>
student@student-VirtualBox:~/Desktop/Homework/csc415-assignment3-simpleshell-ArslanAlimov$
```