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Assignment 3 - Simple Shell

Description:
In this assignment we must use a C program that takes in user input from the command prompt so the shell we create will work on top of the regular command-line interpreter for linux.

Approach / What I did:
After I accepted the assignment on github and cloned the assignment immediately after. After I cloned the assignment before I did anything I decided to read the README.md file. Once I was done with that I headed into the Makefile, so I could check it out, even though I probably don't understand yet. After I made my C program file with the custom name. Later, I copied the header and made sure to update it. Then I made sure to push my changes to github so I don't lose my progress. Then I re-read the assignment instructions, so I can make sure I understood it. Then I planned how I was going to work on it. Lastly, I started to code and finished the code and pushed my changes to github.

Issues and Resolutions:
My first issue was "make: *** No rule to make target 'Malek_Shahriz_HW3_main.o', needed by 'Malek_Shahriz_HW3_main'. Stop."
I resolved the issue by asking a few peers from class, and they told me to make sure the name of my file has no spelling errors or format errors.

My second issue I ran into was that my user input function was not called before the main function.

```
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
ool$ make run
gcc -c -o Malek_Shahriz_HW3_main.o Malek_Shahriz_HW3_main.c -g -I.
Malek_Shahriz_HW3_main.c: In function 'main':
Malek_Shahriz_HW3_main.c:37:17: warning: implicit declaration of function 'userI
nput' [-Wimplicit-function-declaration]
                userInput(commandLineBuffer, limitCMDArgument); //this is to re
ad userinput using the
                ^~~~~~~~~
Malek_Shahriz_HW3_main.c: At top level:
Malek_Shahriz_HW3_main.c:83:6: warning: conflicting types for 'userInput'
 void userInput(char commandArray[], char * cmdPointer[]) { //this userInput fun
ction will be used
      ^~~~~~~~~
Malek_Shahriz_HW3_main.c:37:17: note: previous implicit declaration of 'userInpu
t' was here
                userInput(commandLineBuffer, limitCMDArgument); //this is to re
ad userinput using the
                ^~~~~~~~~
gcc -o Malek_Shahriz_HW3_main Malek_Shahriz_HW3_main.o -g -I. -l pthread
./Malek_Shahriz_HW3_main "Prompt> "
Prompt$ exit
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
```

I resolved this issue by googling Wimplicit-function-declaration and it told me to declare the function before main.

My third issue was that my userInput function was not working when I first implemented my main function. I don't know why it was so I ended up deleting the userInput function and rewriting it, again with not much difference and it ended up working.

Analysis:
N/A

Screenshot of compilation:

```
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
ool$ make run
gcc -c -o Malek_Shahriz_HW3_main.o Malek_Shahriz_HW3_main.c -g -I.
gcc -o Malek_Shahriz_HW3_main Malek_Shahriz_HW3_main.o -g -I. -l pthread
./Malek_Shahriz_HW3_main "Prompt> "
Prompt$ ls -l
total 84
-rwxrwxr-x 1 student student 13032 Feb 22 15:30 a.out
-rw-rw-r-- 1 student student    42 Feb 22 14:11 commands.txt
-rwxrwxr-x 1 student student 13016 Feb 22 15:04 csc415-assignment3-simpleshell-S
hahrizSchool
-rw-rw-r-- 1 student student  1777 Feb 22 15:11 Makefile
-rwxrwxr-x 1 student student 16592 Feb 22 16:47 Malek_Shahriz_HW3_main
-rw-rw-r-- 1 student student  3698 Feb 22 16:46 Malek_Shahriz_HW3_main.c
-rw-rw-r-- 1 student student  9360 Feb 22 16:47 Malek_Shahriz_HW3_main.o
-rw-rw-r-- 1 student student  4967 Feb 22 14:11 README.md
Child 26056, exited with 0
Prompt$ ls foo
ls: cannot access 'foo': No such file or directory
Child 26057, exited with 2
Prompt$ exit
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
ool$
```

Screenshots of the execution of program:

```
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
ool$ make run
./Malek_Shahriz_HW3_main "Prompt> "
Prompt$ ls -l
total 84
-rwxrwxr-x 1 student student 13032 Feb 22 15:30 a.out
-rw-rw-r-- 1 student student    42 Feb 22 14:11 commands.txt
-rwxrwxr-x 1 student student 13016 Feb 22 15:04 csc415-assignment3-simpleshell-S
hahrizSchool
-rw-rw-r-- 1 student student  1777 Feb 22 15:11 Makefile
-rwxrwxr-x 1 student student 16632 Feb 22 16:43 Malek_Shahriz_HW3_main
-rw-rw-r-- 1 student student  3695 Feb 22 16:42 Malek_Shahriz_HW3_main.c
-rw-rw-r-- 1 student student  9424 Feb 22 16:43 Malek_Shahriz_HW3_main.o
-rw-rw-r-- 1 student student  4967 Feb 22 14:11 README.md
Child 26005, exited with 0
Prompt$ ls foo
ls: cannot access 'foo': No such file or directory
Child 26006, exited with 2
Prompt$ exit
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSch
ool$
```

```
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSchool$ make run < commands.txt
./Malek_Shahriz_HW3_main "Prompt> "
a.out                                    Malek_Shahriz_HW3_main
commands.txt                             Malek_Shahriz_HW3_main.c
csc415-assignment3-simpleshell-ShahrizSchool  Malek_Shahriz_HW3_main.o
Makefile                                 README.md
Prompt$ Child 5615, exited with 0
"Hello World"
Prompt$ Child 5616, exited with 0
total 96
drwxrwxr-x 3 student student  4096 Feb 22 15:39 .
drwxr-xr-x 5 student student  4096 Feb 22 14:11 ..
-rwxrwxr-x 1 student student 13032 Feb 22 15:30 a.out
-rw-rw-r-- 1 student student    42 Feb 22 14:11 commands.txt
-rwxrwxr-x 1 student student 13016 Feb 22 15:04 csc415-assignment3-simpleshell-ShahrizSchool
drwxrwxr-x 8 student student  4096 Feb 22 14:11 .git
-rw-rw-r-- 1 student student  1777 Feb 22 15:11 Makefile
-rwxrwxr-x 1 student student 16560 Feb 22 15:39 Malek_Shahriz_HW3_main
-rw-rw-r-- 1 student student  3233 Feb 22 15:35 Malek_Shahriz_HW3_main.c
-rw-rw-r-- 1 student student  9320 Feb 22 15:39 Malek_Shahriz_HW3_main.o
-rw-rw-r-- 1 student student  4967 Feb 22 14:11 README.md
Prompt$ Child 5617, exited with 0
  PID TTY          TIME CMD
 2308 pts/0    00:00:00 bash
 5612 pts/0    00:00:00 make
 5613 pts/0    00:00:00 sh
 5614 pts/0    00:00:00 Malek_Shahriz_H
 5618 pts/0    00:00:00 ps
Prompt$ Child 5618, exited with 0
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSchool$
```

This is to test the EOF by running make run < commands.txt

```
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSchool$ make run < commands.txt
./Malek_Shahriz_HW3_main "Prompt> "
a.out                                    Malek_Shahriz_HW3_main
commands.txt                             Malek_Shahriz_HW3_main.c
csc415-assignment3-simpleshell-ShahrizSchool  Malek_Shahriz_HW3_main.o
Makefile                                 README.md
Prompt$ Child 5615, exited with 0
"Hello World"
Prompt$ Child 5616, exited with 0
total 96
drwxrwxr-x 3 student student  4096 Feb 22 15:39 .
drwxr-xr-x 5 student student  4096 Feb 22 14:11 ..
-rwxrwxr-x 1 student student 13032 Feb 22 15:30 a.out
-rw-rw-r-- 1 student student    42 Feb 22 14:11 commands.txt
-rwxrwxr-x 1 student student 13016 Feb 22 15:04 csc415-assignment3-simpleshell-ShahrizSchool
drwxrwxr-x 8 student student  4096 Feb 22 14:11 .git
-rw-rw-r-- 1 student student  1777 Feb 22 15:11 Makefile
-rwxrwxr-x 1 student student 16560 Feb 22 15:39 Malek_Shahriz_HW3_main
-rw-rw-r-- 1 student student  3233 Feb 22 15:35 Malek_Shahriz_HW3_main.c
-rw-rw-r-- 1 student student  9320 Feb 22 15:39 Malek_Shahriz_HW3_main.o
-rw-rw-r-- 1 student student  4967 Feb 22 14:11 README.md
Prompt$ Child 5617, exited with 0
  PID TTY          TIME CMD
 2308 pts/0    00:00:00 bash
 5612 pts/0    00:00:00 make
 5613 pts/0    00:00:00 sh
 5614 pts/0    00:00:00 Malek_Shahriz_H
 5618 pts/0    00:00:00 ps
Prompt$ Child 5618, exited with 0
student@student-VirtualBox:~/Documents/csc415-assignment3-simpleshell-ShahrizSchool$
```