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/**********************************************************
* Project: Assignment 3 – Simple Shell
* File: WriteUp3.pdf
  Description: This is the write up file for the program and it includes a
* description of the project, what I did, issues I had, how I overcame the
* issues, compilation and execution output from the original program.
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Description: In this program, we create our own shell that runs on top of the regular command-line interpreter for Linux. My shell reads lines of user input, then parses it and executes the commands by forking/creating new processes. First we parse the input using a buffer which should not exceed than 512 bytes and then separate the input buffer into substrings. We store the commands in an array of character pointers, and compare all with strcmp(). Then we Execute system commands and libraries by forking a child and calling execvp. For executing a system command, a new child is created and then by using the execvp, the command is executed, and wait until it is finished. The shell waits for its child process to complete, and then prints the child PID and the return result from the child process. If the shell encounters EOF while reading a line of input, it exits gracefully without reporting an error. If the user enters the exit command, the shell terminates and returns to the regular shell. Creating this shell was certainly not easy and there were many obstacles that came throughout the project. Learning fork() and execvp() was quite easy but implementing it was difficult especially when the parent process is waiting for the child process to finish. Moreover, I kept on referring Slack, Discord and several online resources to finish this project efficiently and include all the requirements asked for.

Compilation and Execution/ Output:

```
student@student-VirtualBox: ~/Desktop/assignment-3-simple-shell-developer-soni

File  Edit  View  Search  Terminal  Help

student@student-VirtualBox:~/Desktop/assignment-3-simple-shell-developer-soni$ m
ake
gcc -c -o soni_dev_HW3_main.o soni_dev_HW3_main.c -g -I.
gcc -o soni_dev_HW3_main soni_dev_HW3_main.o -g -I. -l pthread
student@student-VirtualBox:~/Desktop/assignment-3-simple-shell-developer-soni$ m
ake run
./soni_dev_HW3_main "Prompt> "
Prompt>
```

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student@student-VirtualBox: ~/Desktop/assignment-3-simple-shell-developer-soni

File  Edit  View  Search  Terminal  Help

student@student-VirtualBox:~/Desktop/assignment-3-simple-shell-developer-soni$ m
ake run
./soni_dev_HW3_main "Prompt> "
Prompt> ls -l
total 48
-rw-r--r-- 1 student student  1728 Feb 25 01:49 Makefile
-rw-r--r-- 1 student student  4918 Feb 25 01:49 README.md
-rwxr-xr-x 1 student student 16520 Feb 26 22:18 soni_dev_HW3_main
-rw-r--r-- 1 student student  2680 Feb 26 22:18 soni_dev_HW3_main.c
-rw-r--r-- 1 student student  9784 Feb 26 22:18 soni_dev_HW3_main.o
Child 24858, exited with 0
Prompt> ls foo
ls: cannot access 'foo': No such file or directory
Child 24859, exited with 2
Prompt> pwd
/home/student/Desktop/assignment-3-simple-shell-developer-soni
Child 24860, exited with 0
Prompt> exit
student@student-VirtualBox:~/Desktop/assignment-3-simple-shell-developer-soni$
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