

CSCI 340 Operating Systems Program Assignment 1

Date assigned: Thursday September 19th, 2019

Date due: Thursday September 26th 2019

Description: Design, code, and test your own LINUX/UNIX interactive console shell.

Requirements - The shell program...

1. must be written in C and must compile and run on LINUX Mint.
2. displays a distinctive input prompt such as > \$ %
3. accepts user command input on a single line of text ended by [ENTER]
4. accepts user commands comprised of a LINUX command that may be followed by one or more arguments, each separated by at least one blank space.
5. tokenizes or splits space-separated tokens into a list of arguments.
6. uses the fork and execvp system calls to run the LINUX command as a child process.
7. waits for the child process to complete if the ampersand character & is the last token of a command and after that child completes, the shell goes on to display the next input prompt and await another command.
8. does not wait for the child process to complete if the ampersand & is the last token of a command and immediately goes on to display the next input prompt and await another command.
9. terminates the command input loop if the first token is "exit". LINUX is case sensitive.

Grading Rubrics per Numbered Requirements:

Test Script:

Create a short plain text file called text.txt.

Test your shell by entering the following series of LINUX console commands. Copy the console window trace and paste it into a plain TXT file named trace.txt

date

cal

pwd

ls -l

cat test.txt

wc test.txt

```
wc -l test.txt
```

```
cal > calOut.txt
```

```
cat calOut.txt
```

```
sleep 5
```

```
sleep & 5          SHOULD NOT RUN IN BACKGROUND SINCE & IS NOT LAST
```

```
sleep 5 &
```

```
ps                TYPE THIS QUICKLY SO WE CAN SEE THE SLEEP PROCESS
```

```
exit
```

Submitting programs:

Please create a single ZIP or TAR archive that contains your single .c source file named shell.c and your trace.txt text file.

Please upload this archive file into OAKS dropbox prior to start of class on the due date.