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Simple Unix Shell Implementation

Simple Unix Shell Design & Implementation

Using c code to write my own Unix shell. The program will basically follow the following step:

1. take user input
2. allocate memory for user input
3. create a child process using fork () command
4. execute the input command if valid (in the child process). Parent will wait for the completion of child process
5. child process uses `execvp()` to transform user input into Linux command, and execute it
6. Return to step 1 when success
7. Use if else for exception handling. Ex: Special case is “cd” command will not work with the C Unix Shell, allocation fail, fail to create child process, fail to execute Linux command...

The purpose of the program is running Linux system command using my own shell (c code) and practicing child and parent process in Linux Shell. User input is the parent process, Linux commands execute is the child process. Please look at my diagram for further verification:

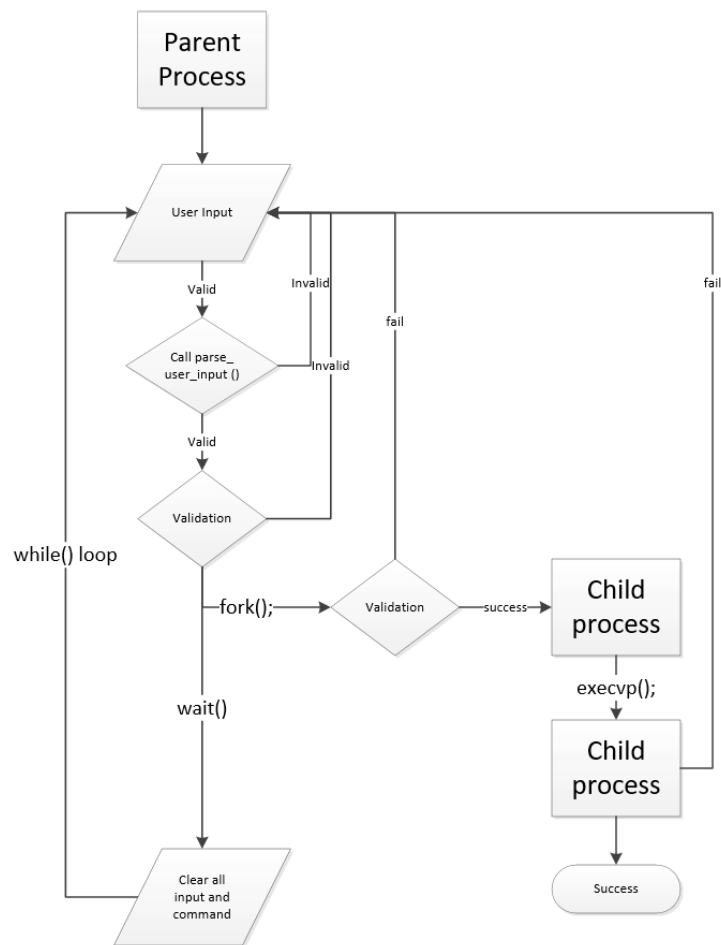


Diagram designed by Truc Huynh

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osc@ubuntu: ~
rm: cannot remove 'wait': No such file or directory
TrucShell> rm wait.c
rm: remove write-protected regular file 'wait.c'? y
TrucShell> ls -a -h
.                fork.c                sleep_child.c
..               hello.c                sleep_parent.c
a.out            .nano                sleep_parent.c.save
.bash_history    .profile                .ssh
.bash_logout     .python_history         .sudo_as_admin_successful
.bashrc          README                 .vim
.cache           Share                 .viminfo
final-src-osc10e shell2.c            waitprogram
final-src-osc10e.zip shell.c
TrucShell> sudo nano sheel2.c
[sudo] password for osc:
TrucShell> gcc shell2.c -l readline
TrucShell> ./a.out
TrucShell> asdsad
asdsad: No such file or directory
TrucShell> asdasd
asdasd: No such file or directory
TrucShell> cd
Bad address
TrucShell> --help
--help: No such file or directory
TrucShell> pwd
/home/osc
TrucShell> ls
a.out                fork.c    Share      shell.c      sleep_parent.c.save
final-src-osc10e     hello.c   sheel2.c   sleep_child.c waitprogram
final-src-osc10e.zip README    shell2.c   sleep_parent.c
TrucShell> ls
a.out                fork.c    Share      shell.c      sleep_parent.c.save
final-src-osc10e     hello.c   sheel2.c   sleep_child.c waitprogram
final-src-osc10e.zip README    shell2.c   sleep_parent.c
TrucShell> ls a
ls: cannot access 'a': No such file or directory
TrucShell> ls -a a--a- a- a- a-a -a - -a-a-a
ls: invalid option -- '-'
Try 'ls --help' for more information.
TrucShell> ls -a
.                final-src-osc10e     README      sleep_parent.c.save
..               final-src-osc10e.zip Share        .ssh
a.out            fork.c              sheel2.c    .sudo_as_admin_successful
.bash_history    hello.c            shell2.c    .vim
.bash_logout     .nano              shell.c     .viminfo
.bashrc          .profile           sleep_child.c waitprogram
.cache           .python_history    sleep_parent.c
TrucShell>

```