

ASSIGNMENT 3 - SIMPLE SHELL

Description:

The purpose of this assignment is to practice forking and understanding processes. The assignment covers prompting user input while parsing and using commands such as `execvp()` and `strtok()` which allows for use of linux command line executions and tokenizing C strings.

Approach:

My approach began by researching and looking up the man pages for the commands `execvp()` and `strtok()`. After realizing that `strtok()` accepts a string and tokenizes the words based on whitespaces (which took care of most of the parsing). Then I realized the command `execvp()` corresponds with forking., along with accepting an array in its parameters which then executes linux commands. .

Below is an image of me using the commands in practice to learn how they work!

```
int main(void) {
    char UserInput[2429];
    char delim[] = " ";
    int WordCount;

    fgets(UserInput, 2429, stdin);

    char * portion1 = strtok(UserInput, delim);
    char * portion2 = strtok(NULL, delim);

    printf("%s\n", portion1);
    printf("%s\n", portion2);
    char* args[4];

    args[0] = portion1;
    args[1] = portion2;
    |
    if(execvp(portion1, args) == -1) {
        perror("exec");
    }
```

Issues And Resolutions:

[illegible]

```
IF (FEOF(STDIN)) { EXIT(0); }
```

Screenshot Of Compilation:

```
parallels@ubuntu-linux-22-04-desktop:~/Desktop/csc415-assignment3-simpleshell-chris3953$ make run
./Mcglothen_Christian_HW3_main "Prompt> "
Prompt> █
```

Screenshot Of Output:

```
parallels@ubuntu-linux-22-04-desktop:~/Desktop/csc415-assignment3-simpleshell-chris3953$ make run
./Mcglothen_Christian_HW3_main "Prompt> "
Prompt> ls -l
total 52
-rw-rw-r-- 1 parallels parallels 1872 Jun 16 00:32 Makefile
-rwxrwxr-x 1 parallels parallels 17256 Jun 20 23:39 Mcglothen_Christian_HW3_main
-rw-rw-r-- 1 parallels parallels 3021 Jun 20 23:34 Mcglothen_Christian_HW3_main.c
-rw-rw-r-- 1 parallels parallels 10576 Jun 20 23:39 Mcglothen_Christian_HW3_main.o
-rw-rw-r-- 1 parallels parallels 5333 Jun 16 00:28 README.md
-rw-rw-r-- 1 parallels parallels 42 Jun 16 00:28 commands.txt
Child 2080782, exited with 0
Prompt> ./Mcglothen_Christian_HW3_main
Prompt> ps
  PID TTY          TIME CMD
2047263 pts/0    00:00:00 bash
2047433 pts/0    00:00:00 make
2047440 pts/0    00:00:00 sh
2047441 pts/0    00:00:00 Mcglothen_Chris
2047640 pts/0    00:00:00 Mcglothen_Chris
2080563 pts/0    00:00:00 make
2080564 pts/0    00:00:00 sh
2080565 pts/0    00:00:00 Mcglothen_Chris
2081059 pts/0    00:00:00 Mcglothen_Chris
2081078 pts/0    00:00:00 ps
Child 2081078, exited with 0
Prompt>
```

```
parallels@ubuntu-linux-22-04-desktop:~/Desktop/csc415-assignment3-simpleshell-chris3953$ make run
./Mcglothen_Christian_HW3_main "Prompt> "
Prompt> ls -l
total 52
-rw-rw-r-- 1 parallels parallels 1872 Jun 16 00:32 Makefile
-rwxrwxr-x 1 parallels parallels 17256 Jun 20 23:39 Mcglothen_Christian_HW3_main
-rw-rw-r-- 1 parallels parallels 3021 Jun 20 23:34 Mcglothen_Christian_HW3_main.c
-rw-rw-r-- 1 parallels parallels 10576 Jun 20 23:39 Mcglothen_Christian_HW3_main.o
-rw-rw-r-- 1 parallels parallels 5333 Jun 16 00:28 README.md
-rw-rw-r-- 1 parallels parallels 42 Jun 16 00:28 commands.txt
Child 2080782, exited with 0
Prompt> ./Mcglothen_Christian_HW3_main
Prompt> ps
  PID TTY          TIME CMD
2047263 pts/0    00:00:00 bash
2047433 pts/0    00:00:00 make
2047440 pts/0    00:00:00 sh
2047441 pts/0    00:00:00 Mcglothen_Chris
2047640 pts/0    00:00:00 Mcglothen_Chris
2080563 pts/0    00:00:00 make
2080564 pts/0    00:00:00 sh
2080565 pts/0    00:00:00 Mcglothen_Chris
2081059 pts/0    00:00:00 Mcglothen_Chris
2081078 pts/0    00:00:00 ps
Child 2081078, exited with 0
Prompt> exit
Child 2081059, exited with 0
Prompt> exit
parallels@ubuntu-linux-22-04-desktop:~/Desktop/csc415-assignment3-simpleshell-chris3953$ █
```

```
parallels@ubuntu-linux-22-04-desktop: ~/Desktop/csc415-assignment3-simpleshell-chris3953$ make run < commands.txt
./Mcglothen_Christian_HW3_main "Prompt> "
Makefile  Mcglothen_Christian_HW3_main  Mcglothen_Christian_HW3_main.c  Mcglothen_Christian_HW3_main.o  README.md  commands.txt
Prompt> Child 2081976, exited with 0
"Hello World"
Prompt> Child 2081977, exited with 0
total 68
drwxrwxr-x 4 parallels parallels 4096 Jun 20 23:39 .
drwxr-xr-x 5 parallels parallels 4096 Jun 16 00:28 ..
drwxrwxr-x 8 parallels parallels 4096 Jun 19 14:25 .git
drwxrwxr-x 2 parallels parallels 4096 Jun 16 00:32 .vscode
-rw-rw-r-- 1 parallels parallels 1872 Jun 16 00:32 Makefile
-rwxrwxr-x 1 parallels parallels 17256 Jun 20 23:39 Mcglothen_Christian_HW3_main
-rw-rw-r-- 1 parallels parallels 3021 Jun 20 23:34 Mcglothen_Christian_HW3_main.c
-rw-rw-r-- 1 parallels parallels 10576 Jun 20 23:39 Mcglothen_Christian_HW3_main.o
-rw-rw-r-- 1 parallels parallels 5333 Jun 16 00:28 README.md
-rw-rw-r-- 1 parallels parallels 42 Jun 16 00:28 commands.txt
Prompt> Child 2081978, exited with 0
  PID TTY          TIME CMD
2047263 pts/0    00:00:00 bash
2047433 pts/0    00:00:00 make
2047440 pts/0    00:00:00 sh
2047441 pts/0    00:00:00 Mcglothen_Chris
2047640 pts/0    00:00:00 Mcglothen_Chris
2081973 pts/0    00:00:00 make
2081974 pts/0    00:00:00 sh
2081975 pts/0    00:00:00 Mcglothen_Chris
2081979 pts/0    00:00:00 ps
Prompt> Child 2081979, exited with 0
ls: cannot access 'foo': No such file or directory
Prompt> Child 2081980, exited with 512
Prompt> Prompt> parallels@ubuntu-linux-22-04-desktop: ~/Desktop/csc415-assignment3-simpleshell-chris3953$
```