# **CSC415 HW3**

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Guest OS: Linux (Ubuntu 14) on VirtualBox

## 1. Programming in Linux (in VirtualBox)

### Requirement:

- A simple shell program that can accept the user input and execute the corresponding build-in program
- Input requirement
  - Maximum length of input is 1024 bytes. Extra input beyond that will be omit, only the truncated input will be used.
  - Maximum arguments accepted is 5 (in the program it is set to be modifiable)
  - Empty input (return or space) is acceptable.

#### **Code structure:**

- The lcsh include 3 funcs, prompt and read, parse, and lcsh
- prompt\_and\_read prompts and read the user input,
- parse parses the input
- lcsh do the fork, execvp and wait work

#### Compile and run:

```
🔊 🛑 📵 cheng@cheng-VirtualBox: ~/CSC415/HW3
cheng@cheng-VirtualBox:~$ cd CSC415/HW3
cheng@cheng-VirtualBox:~/CSC415/HW3$ ls
lcsh.c
cheng@cheng-VirtualBox:~/CSC415/HW3$ cc -Wall -std=c99 lcsh.c -o lcsh
cheng@cheng-VirtualBox:~/CSC415/HW3$ ./lcsh
lcsh>> ls
lcsh lcsh.c
lcsh>> ll
Exec Failed: No such file or directory
lcsh>> ls -l
total 12
-rwxrwxr-x 1 cheng cheng 8072 Mar 3 11:20 lcsh
-rw-rw-r-- 1 cheng cheng 2570 Mar 3 11:19 lcsh.c
lcsh>> ps
 PID TTY
                     TIME CMD
                00:00:00 bash
 3051 pts/0
              00:00:00 lcsh
 3072 pts/0
              00:00:00 lcsh
 3074 pts/0
3076 pts/0
lcsh>>
                00:00:00 ps
```

#### Compile and run:

```
🔊 🖨 📵 cheng@cheng-VirtualBox: ~/CSC415/HW3
cheng@cheng-VirtualBox:~/CSC415/HW3$ cc -Wall -std=c99 lcsh.c -o lcsh
cheng@cheng-VirtualBox:~/CSC415/HW3$ ./lcsh
lcsh>> ls
lcsh lcsh.c
lcsh>> ls -a
   .. lcsh lcsh.c
lcsh>> ps
 PID TTY
                   TIME CMD
 3051 pts/0
               00:00:00 bash
3093 pts/0
3096 pts/0
               00:00:00 lcsh
               00:00:00 ps
lcsh>> pwd
/home/cheng/CSC415/HW3
lcsh>> exit
Shell teminated!
cheng@cheng-VirtualBox:~/CSC415/HW3$
```

## **Error Handling:**

```
🕒 🗊 cheng@cheng-VirtualBox: ~/CSC415/HW3
cheng@cheng-VirtualBox:~/CSC415/HW3$ ./lcsh
Lcsh>>
Empty Commands !
lcsh>> ls -a -a-a-a- -a -a -a
of arguments, Too Many Arguments!
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.0
абабабабабабабабабабабабабабабабабабаба
Input is larger than BUFFER_SIZE, truncated input will be used, be careful!
xec Failed: File name too long
lcsh>> exit
```

#### 🕽 🖯 🗇 cheng@cheng-VirtualBox: ~/CSC415/HW3 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa Input is larger than BUFFER\_SIZE, truncated input will be used, be careful! Exec Failed: File name too long lcsh>> exit cheng@cheng-VirtualBox:~/CSC415/HW3\$ ./lcsh lcsh>> ll Exec Failed: No such file or directory lcsh>> ls lcsh lcsh.c lcsh>> abc a a a a 5 arguments, Too Many Arguments! lcsh>> pwd /home/cheng/CSC415/HW3 lcsh>> exit Shell teminated!