

Course COMP-8567

Assignment 03

Fall 2023

Due Date: Nov/22/2023

50 Marks

Write a C program **mybash23s** (**mybash\$**) that goes into an infinite loop waiting for user's commands. Once a command is entered, the program should assemble and execute each command **using fork(), exec() and other system calls** as required with the following rules and conditions.

Rule 1: The argc (includes the name of the executable/command) of any individual command or program should be ≥ 1 and ≤ 3

- **mybash\$ ls > input.txt**
- **mybash\$ ls -l ~/chapter5/dir1**
- **mybash\$ cat input1.txt input2.txt**

Rule 2: The argc of individual commands or programs that are used along with the special characters listed below should be ≥ 1 and ≤ 3

- Ex: **mybash\$ ls -l ~/chapter2 | wc -w** //the first command has argc=3 and the second command has argc=2 which are used along with the special | character

Special Characters

The program should handle the following special characters (In accordance to Rule 2 and the additional rules listed below)

- | **Piping** (up to 4 piping operations should be supported)

Ex **mybash\$ cat ex1.c|grep std|wc| wc -w**

// Every command/program can have argc ≥ 1 and ≤ 3 as per Rule 2

- >, <, >> **Redirection**

Ex: **mybash\$ ls -l >>dirlist.txt**

- **&&** **Conditional Execution** // up to 4 conditional execution operators should be supported and could possibly be a combination of && and ||
 Ex : `mybash$ ex1 && ex2 && ex3 && ex4`
 - `mybash$ c1 && c2 || c3 && c4`
- **||** **Conditional Execution** // see &&
- **&** **Background Processing**
 - `mybash$ ex1 &` //should run ex1 in the background
- **;** **Sequential execution** of commands (up to 4 commands) the argc of each command should be >=1 and <=3 as per Rule 1
 Ex: `mybash$ cat e1.txt; cat e2.txt ; ls ; date`

Note:

- **You must include comments throughout the program reasonably explaining the working of the code.**
- You have to use **fork()** and **exec()** along with other pertinent system calls to run commands from minishell
- Appropriate **error messages** must be displayed by the program based on the specifications.

Submission Instructions:

You need to submit the following:

1. mybash23s.c
2. mybash23s.txt //note: mybash23s.txt must be an identical copy of mybash23s.c with a .txt extension
3. Zoom/Google Drive recording link explaining the following (not more than 15 minutes)
 - Overall working of the code and various modules (around 8-9 minutes)
 - Execution of the code under various inputs/conditions as per the requirements of the assignment (around 6-7 minutes)
 - Other form of links/MP4 files will NOT be acceptable.

- Include the link in the COMMENTS section.

Note: After your submission, you will be able to view the **Turnitin similarity report** that compares your submission with all the remaining submissions in the section/all the sections of the course.