CSCI 3150 Introduction to Operating Systems
Assignment One
Deadline: 23:59,Oct. 5th, 2025
Total Marks: 100

This is a group assignment; each group can have up to 3 members and only need to submit one assignment by one member (by including all group members' names and student IDs). Please download Assign1.zip from the Blackboard. Following the instruction in Readme, you can find a simple shell program that can interpret and execute a command inputted.

In Assignment One, you are required to revise function shell_execute() in simple-execute.c, so the program can execute commands with up to three pipes. Basically, your program should be able to handle the case in which there is at least one space before or after "|" such as:

$$$ ls -l | grep D | wc -l
$$$ ls -l | tail -n 5 | head -n 3 | grep D

If there is no space between or after "|", for example, for the following case:
$$$ ls|
"ls|" is treated as one argument to be executed (rather than "ls" and "|").
You can safely assume we will not test such cases, which means there will always be a space before and after the "|".

Note:
1) We will run your code in the required environment when grading. So please make sure your program can be compiled and run on it; otherwise, you may get 0 marks.

2) Note that we can only grade what you submit in the Blackboard. Late submission will be graded based on our late submission policy (based on the submission time in the Blackboard). Several new test cases will be utilized when grading.

3) Tutor Zijie DAI is in charge of this assignment and you may contact him via email: 1155141656@link.cuhk.edu.hk.

Submission: You only need to submit simple-execute.c (including all members' names and SIDs by code comments). This also means DO NOT modify Makefile.

Tips:
1. Starting by print out arguments and argument counts to understand how they are passed in your function.
2. You will need to be familiar with dup(), dup2() and pipe() system calls to finish this assignment. (We DO NOT require you to use all of them, try to understand these system calls first, then think about how you can use them to finish the assignment.)

https://how.dev/answers/how-to-use-the-pipe-system-call-for-inter-process-communication