New York University
Tandon School of Engineering
Department of Electrical & Computer Engineering

Introduction to Operating Systems (CS-GY6233)
Fall 2022

Assignment 2
(10 points)

Write a C program whose main routine implements the example in Lecture 2, slide 28. Invoke the program using strace. Use the unix functions and not the standard c functions (i.e. open() and not fopen(), etc.).

Answer the following questions:

1) What are the system call names for opening a file, closing a file, reading a file and writing a file?
2) How many system calls are involved with opening a file, closing a file, reading a file and writing a file? (count each individually)
3) What is the file number of the standard input? Should we expect it to ever change?
4) What is the file number of the standard output? Should we expect it to ever change?
5) What was the file number of your read file? Should we expect it to ever change?
6) What was the file number of your write file? Should we expect it to ever change?

Notes:
- Please include your answers, the strace log in your submitted .pdf file.
- Create a text file and use it to test your program, e.g. type:
    touch lab2_test.txt
    echo "Hello world, this is lab2" > lab2_test.txt
- Use the man pages to learn how to use strace, e.g. type:
    man strace

Submission file structure:

Please submit a **single .zip file** named **[Your Netid]_lab#.zip**. It shall have the following structure (replace # with the actual assignment number):

└── [Your Netid] hw# (Single folder includes all your submissions)

 ├── lab#_1.c (Source code for problem 1)

 ├── lab#_2a.c (Source code for problem 2a, and so on)

 ├── lab#_1.h (Source code header file, if any)

 ├── Makefile (makefile used to build your program, if any)

 ├── lab#.pdf (images + Report/answers to short-answer questions)

What to hand in (using Brightspace):

- Source files (.c or .h) with appropriate comments.
- Your Makefile if any.
- A .pdf file named **"lab#.pdf"** (# is replaced by the assignment number), containing:
  - Screen shot(**s**) of your terminal window showing the current directory, the command used to compile your program, the command used to run your program and the output of your program.

RULES:

- You shall **use kernel version 4.x.x or above**. You shall not use kernel version 3.x.x.
- You may consult with other students about GENERAL concepts or methods but copying code (or code fragments) or algorithms is NOT ALLOWED and is considered cheating (whether copied form other students, the internet or any other source).
- If you are having trouble, please ask your teaching assistant for help.
- You must submit your assignment prior to the deadline.