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

Introduction to Operating Systems (CS-GY6233)
Fall 2021

Assignment 4
(10 points)

Write a program whose main routine obtains two parameters n and d from the user, i.e. passed to your program when it was invoked from the shell. Your program shall then create a shared memory and a child process.

The child process should obtain the values of n and d (you have multiple choices on how to do that) and create an arithmetic sequence of length n, and whose first element is 0 and each subsequent element has the value of kd, where k is the element number (k= 0 to n-1).

The child process shall create the elements, one at a time and wait for a random interval of time (0 to 9.999 seconds) between generating elements of the sequence. As soon as an element is generated, the child places the element in the shared buffer by organizing it as described in slides 33-37 of lecture 4.
(e.g.: if n=5 and d=2, the sequence shall be 0,2,4,6,8)

The parent process shall NOT wait for the child to exit but instead shall prints an element as soon as it arrives into the shared buffer (again, in a manner similar to slides 33-37 of lecture 4)

Hint; use fflush() to ensure printf's are printed immediately into the screen.

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):

- A source file named **"lab4.c"** (with appropriate comments). Do not attach project or make files.
- Your Makefile if any.

- A .pdf file named **“lab4.pdf”**, 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.