Assignment 2 : On processes Programming

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UNIT: SYSTEMS PROGRAMMING

UNIT_CODE:ICS 2305

ASSIGNMENT 2

Exercise 1: Consider the code snippet below

a) How many processes are created by the initial running of this program including the initial program created by running this program

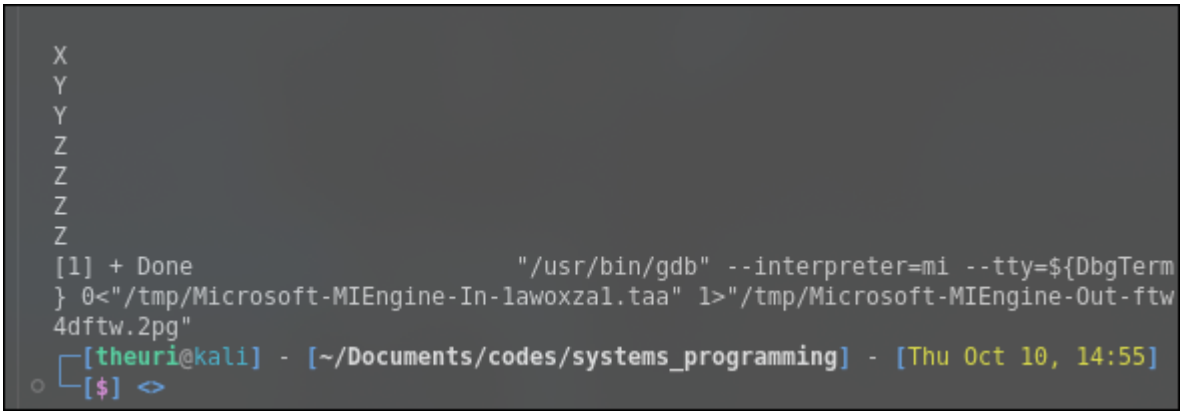
From my output I can see four values printed out 10,10,25,25 which means four processes have been created by running the program.

b) Show at least two possible outcomes of the program above after coding it in C and running it

The two possible outcomes are:

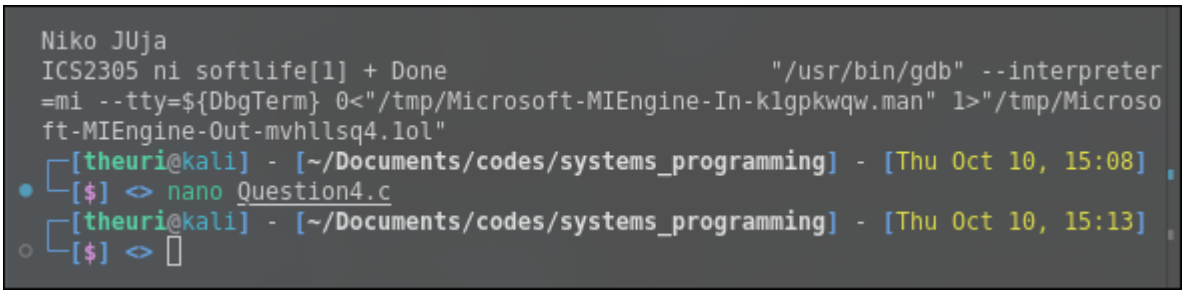
1. *The child process runs first : which was my output being 10, 10, 25, 25 ; the first two 10s signifying the Original child PID and the original child's child after the second fork*
2. *The parent process runs first: 25, 25, 10, 10; the first two 25s signifying the parent's PID as well as the Original Parent's child PID*

Exercise 2: The program uses fork() and printf(). How many X, Y and Z will be printed?



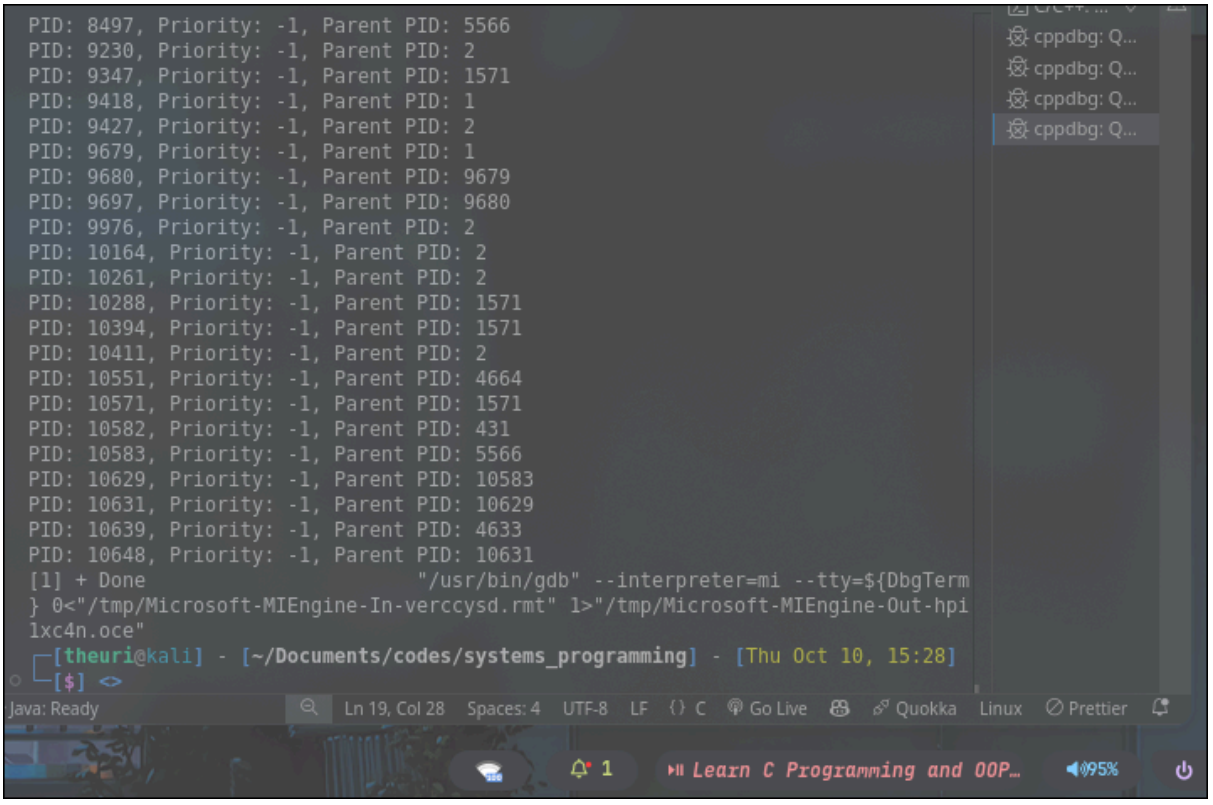
I have gotten 1X, 2Ys and 4Zs

Exercise 3: Write another program using fork(). The child process need to print “Niko Juja” and the parent process to print “ ICS2305 ni softlife” . The child process should print first ---this can be done without calling wait() in the parent.. Hint : use of for loop and sleep.



Exercise 4: Write a C program that prints the process ID , priorities and parent ID of all programs currently in the RAM.
Ref :
https://stackoverflow.com/questions/67851452/printing-the-process-id-and-parent-id-of-all-programs-currently-in-the-ram-using

Output snippet



Exercise 5: Write a program to illustrate the usage of execlp(),execle(),execv(),execvp(),exeve() system calls , ensure that in your program , there are enough comments explaining each of the workings.

1. execlp() - the l stands for list while the p stands for PATH environment variable. The execlp system call duplicates the actions of the shell in searching for an executable file if the specified file name does not contain a slash (/) character. It can be used when the number of arguments to the new program is known at compile time
2. execle() - the l stands for list while the e means we can specify the environment for the new process. Uses a list of arguments, requires full path to the executable and allows specifying the environment
3. execv() - the v stands for vector (arguments in an array). In comparison to execvp the execv system call doesn't search the PATH. Instead, the full path to the new executable must be specified. Uses an array of arguments and it requires the full path to the executable.
4. execvp() - the v stands for vector while the PATH environment variable Using this command, the created child process does not have to run the same program as the parent process does. It uses an array of arguments and it requires the full path to the executable.
5. execve() - the v stands for vector while the e means we can specify the environment for the new process. Uses an array of arguments, it requires the full path to the executable and allows specifying the environment.

The main purpose of exec is to run a new program in place of the current one.