Sukkur IBA

Assignment 1

Deadline: Friday 10th July, 2020

Task 1: (15 marks: Program 1 = 4 marks, Program 2 = 8 marks, Report = 3 marks)
First, write a program (with single process) to calculate timings for matrix addition and subtraction. You should take large matrix such as 10 X 10 so you can get some noticeable amount of time or you may be required to calculate results in loop (multiple times). Calculate both sum and difference in single loop structure.

Secondly, you should write a program (with two processes, separate for both addition and subtraction) and compare the timings with the first exercise.

You should get the results of both exercise and justify those results. **This will be an analytical report.**

Task 2: (12 marks)
Write a program that takes two command line arguments, the first of which is the name of a text file, while the second argument can be any of the (***file_stats***, ***num_stats***, ***change_stats***). If the second argument is ***'file_stats'***, then your program should display the size and permissions for the file in following format:

rwxrwxrwx 120 a.txt

File permissions should be displayed in the same format as used by Linux. If the second argument is ***'num_stats'***, then your program should create a child process that reads the text file, determines its mean (correct to the nearest integer), maximum and mode (mode is the most frequent number in the file). The child then communicates these numbers to the parent via a pipe and terminates. The parent displays these results. If the second argument is ***'change_stats'***, then your program should set the permissions on the text file to 'read only' for group and other but there will be no change in permission for owner. It should also display the new permissions and file size in the same format as mentioned above.
The format of the text file given to the program as input would be as follows (non-negative integers only):

3
421
6
3
66
8
24

All printing, input, reading (from files or the console) should be done by system calls. You cannot use any library functions.