CSE 344 SYSTEMS PROGRAMMING
HW02 REPORT

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In this homework we are supposed to do a signal handling between processes. Firstly, I used fork function to create two processes.

In parent process,

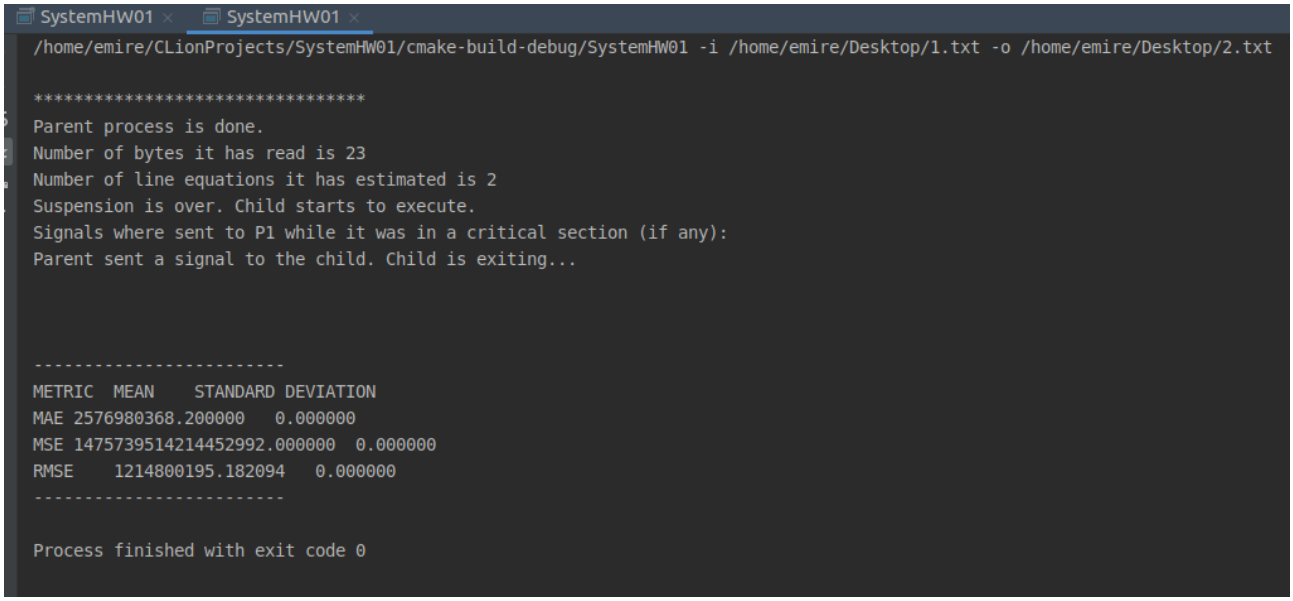
While parent process is busy to read the input file, child process is suspended until parent signals to the child process. In parent, every couple of unsigned bytes it reads, is interpreted as a 2D coordinate (x,y). For every 10 coordinates (i.e. every 20 bytes) it reads, it applies the least squares method to the corresponding 2D coordinates and calculates the line equation (ax+b) that fits them. Then, parent writes in a comma separated line the 10 coordinates followed by the line equation as a new line of a temporary file created via **mkstemp** and sends a signal to the child process to wake it up and proceed to the next 20 bytes and repeat.

After finishing processing the contents of the input file, parent terminates gracefully by closing open files and printing on screen how many bytes it has read as input, how many line equations it has estimated, and which signals where sent to parent while it was in a critical section.

In child process,

It is suspended until the parent process sends a signal to it. After waking up, it reads the temporary file, was created before to communicate with the parent process, line by line, and for every line it reads, it calculates the mean absolute error (MAE), mean squared error (MSE) and root mean squared error (RMSE) between the coordinates and the estimated line.

After processing all the contents of the temporary file and making sure that no more input will arrive, child terminates and prints on screen for each error metric, its mean and standard deviation.


SystemHW01
SystemHW01
/home/emire/CLionProjects/SystemHW01/cmake-build-debug/SystemHW01 -i /home/emire/Desktop/1.txt -o /home/emire/Desktop/2.txt
****
Parent process is done.
Number of bytes it has read is 23
Number of line equations it has estimated is 2
Suspension is over. Child starts to execute.
Signals where sent to P1 while it was in a critical section (if any):
Parent sent a signal to the child. Child is exiting...

METRIC MEAN STANDARD DEVIATION
MAE 2576980368.200000 0.000000
MSE 1475739514214452992.000000 0.000000
RMSE 1214800195.182094 0.000000

Process finished with exit code 0