GEBZE TECHNICAL UNIVERSITY
COMPUTER ENGINEERING

SYSTEM PROGRAMMING LECTURE

HOMEWORK 2

REPORT 2

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Design Decisions and Problem Solved Part

I read 3 bytes by 3 bytes from the input file and saved these values in my array. When I reached 10 points in total, I created a child process with fork and turned it into a new process with execve. I created a new c file for child processes. I sent my file to my child process with arguments and points as environment variable. Then I switched to my Child process file. There I took these points and sent them to my coveriance matrix function. Here I saved the calculated matrices in an array. Then I wrote them to my output file. Before writing to the file, I locked it with lock so that child processes cannot write to the file at the same time. I removed the lock when the process was finished. I waited with wait function for the children to finish their process. Then I read from the file one by one and saved them to double array. I made the calculations according to the Frobenius norm and printed the 2 matrices that the least difference between them to the terminal. In the parent process part, I blocked the sigint with the mask before the parts of reading from the input file and creating the child process ,creating child process and reading from the output file. The reason for this is that I do not want there to be any interrupts in the child process creation part by reading the values from the file, and to ensure that the place I opened with malloc is definitely opened, because while freeing the memory, there are fields that I leave free with fixed values in the for. I thought that if these fields were not opened and if I made these free in signal handler , I would get a seg fault. That's why I blocked the entrance with a mask in these 2 parts. Except for these 2 conditions, when the signal came, I freed the memories, closed the files and removed the output file.

I created a global variable in the signal handler part of the parent process and set it to 1, then I checked it in certain areas in the code. And accordingly I performed these free ,remove,close operations.

Which requirements I achieved

I think I did the tasks specified in the pdf, when sigint comes, send it to the child process, then I close the files and delete the file by creating a new child process. I calculated the coveriance matrices and found the difference. I created the child processes correctly. I waited for child processes to finish their work etc.

Which requirements I failed

I did the operations using array, structure could also create a structure, so a cleaner code structure could be created. I do not know if I have taken the necessary precautions against the signals sent with sigprocmask. I tried to use it where necessary. I can say this as a shortcoming.