

CSE 344 - System Programming

Homework #2

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April 13, 2021

1 How did I solve this problem?

After I check this situation, I opened the file in read mode. I get the file name from the first argument.

After that, I created 8 processes for each row. These processes firstly go into "work" function. In the "work" function, I lock the file so that the other processes can't access. Then the process go into "calculate" function. In the "calculate" function, the given problem in the assignment is calculated. And the calculated values are written to end of related line. And after this, I unlock the file so that the other processes can access.

Each process do that work. Then, after it finishes the works the all processes send a SIGUSR1 signal to the parent processes. The SIGUSR1_COUNT are increment to by 1 through these signals' handler. And the all child processes are suspended by SIGSUSPEND function.

And while all these processes is happen, the parent processes is suspended by SIGSUSPEND function until SI-

GUSR1_COUNT is 8. After SIGUSR1_COUNT is 8, the average error of degree 5 is calculated by the "calculateAverageError" function. After that, the parent process send a SIGUSR2 signal to the all child processes. And the parent waits until its children are died.

The children that got a SIGUSR2 signal do the second stage. In this stage, the children calculate the 6 degree of Lagrange polynomial and prints out the coefficients of the polynomial. After doing its works, the children are died by the "_exit" function.

So, after the its children are died, the waiting of the parent process is finished. The average error of degree 6 is calculated by the "calculateAverageError" function. So the program is finished.

2 My Design Decisions

I keep a SIGUSR1_COUNT and SIGUSR2_COUNT. Apart from that i keep all the children pids because i send SIGUSR2 signal.

In the signal handler if the signal is SIGUSR1, i increment the SIGUSR1_COUNT. And if the signal is SIGUSR2, i increment the SIGUSR2_COUNT.

3 Requirements I achieved and which I have failed

I think I achieved almost all the requirements. However, I may not have been able to achieve some requirements.

4 My Files

171044014_helper_hw2.h \Rightarrow The helper functions

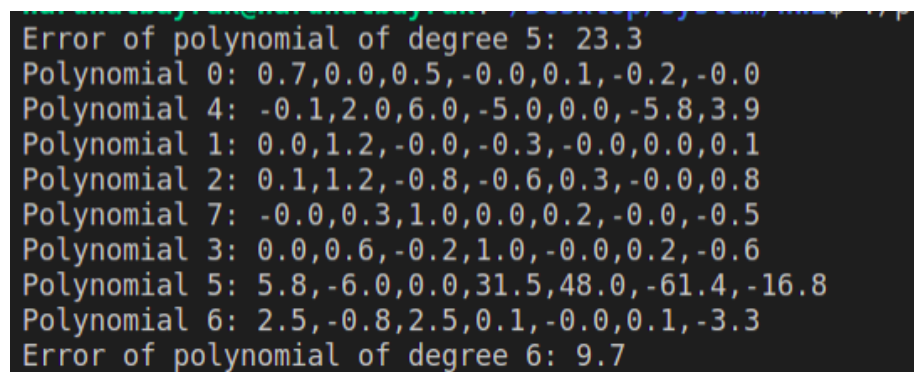
171044014_hw2.c \Rightarrow The Main C File

171044014_report.pdf \Rightarrow The Report PDF

171044014_report.tex \Rightarrow The Report Latex file

Makefile \Rightarrow The Makefile

5 Some screenshots from the program



```
Error of polynomial of degree 5: 23.3
Polynomial 0: 0.7,0.0,0.5,-0.0,0.1,-0.2,-0.0
Polynomial 4: -0.1,2.0,6.0,-5.0,0.0,-5.8,3.9
Polynomial 1: 0.0,1.2,-0.0,-0.3,-0.0,0.0,0.1
Polynomial 2: 0.1,1.2,-0.8,-0.6,0.3,-0.0,0.8
Polynomial 7: -0.0,0.3,1.0,0.0,0.2,-0.0,-0.5
Polynomial 3: 0.0,0.6,-0.2,1.0,-0.0,0.2,-0.6
Polynomial 5: 5.8,-6.0,0.0,31.5,48.0,-61.4,-16.8
Polynomial 6: 2.5,-0.8,2.5,0.1,-0.0,0.1,-3.3
Error of polynomial of degree 6: 9.7
```

Figure 1: The output