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CSE344 HOMEWORK 2

1) PROBLEM SOLUTION

In this assignment, first of all, when I compile the program, I check the accuracy of the data it sends (are the files it sends in the folder? Are input and output files specified? Etc.). Then I create a child process with the help of fork (). The child process is waiting until the parent process is over. I did this using sigsuspend (). After reading everything in the parent process inputPath, it calls the child process using the kill () function. Child process takes a single line in the temporary file and processes it. I updated the temporary file using the truncate () function because it needs to delete the line it received. And so the child process continues this process until the temporary file is empty. While doing this, MAE, MSE, RMSE are written to outputPath. While calculating MAE, MSE, RMSE, its average and standard deviation are calculated and placed in a sequence. And so after the child process is over, the inputPath file is deleted with the unlink () function. And the SIGTERM signal is CALLED. The SIGTERM signal closes and deletes all opened files and terminates the program. Since it was not fully specified in the assignment, I called the SIGTERM signal by typing raise (SIGTERM) and sent it to my own catcher () function. In addition, after all processes are finished, Parent process prints on the screen how many lines and how many bytes it reads. Unfortunately, I couldn't do exactly what signals it was reading in which critical section. I tried to capture the signals using the signal () function. For this problem, my helper functions are _counter() and signalcounter(). I also called the wait () function after calling the kill () function in the parent process to fix the zombie process problem. Thus, the program waits until the child process is over. SIGINT and SIGTSTP are blocked using sigset_t in the critical section. In the assignment, SIGSTOP says that it should be blocked, but SIGSTOP cannot be blocked. So I blocked SIGTSTP instead. In addition, if the program somehow generates NaN (Not a number), this problem is handled by assigning 0 instead of

that value. The parent process reads numbers less than zero and greater than 255, assigning the number 10 instead.

2) SAMPLE OUTPUT

inputPath:

```
inputPath
dsjfehwbsdkbhvhsdh
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhwe423t7vhdcjd
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhfuyqwibcbbkvzxk
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdh
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhwe423t7vhdcjd
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhfuyqwibcbbkvzxk
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdh
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhwe423t7vhdcjd
vdsbhjvsdhbvhjwegfbbdsv
dsjfehwbsdkbhvhsdhfuyqwibcbbkvzxk
vdsbhjvsdhbvhjwegfbbdsv
```

Terminal:

```
o outputPath
0. Mean: 61095.232 Standard Deviation: 85930.82
8
1. Mean: 3942.180 Standard Deviation: 5422.895
2. Mean: 3440.133 Standard Deviation: 4722.971
3. Mean: 3435.608 Standard Deviation: 4718.979
4. Mean: 3294.902 Standard Deviation: 4520.730
5. Mean: 3892.941 Standard Deviation: 5354.197
6. Mean: 4512.086 Standard Deviation: 6218.136
7. Mean: 3283.947 Standard Deviation: 4505.418
8. Mean: 3147.119 Standard Deviation: 4317.894
9. Mean: 26443.033 Standard Deviation: 37000.06
0
10. Mean: 9660.252 Standard Deviation: 13422.38
9
11. Mean: 2935.036 Standard Deviation: 4023.677
12. Mean: 48085.299 Standard Deviation: 67467.6
21
13. Mean: 6446.228 Standard Deviation: 8921.214
14. Mean: 503.938 Standard Deviation: 660.252
15. Mean: 48923.577 Standard Deviation: 68648.4
57
16. Mean: 4997.350 Standard Deviation: 6895.726
17. Mean: 3283.947 Standard Deviation: 4505.418
18. Mean: 206.990 Standard Deviation: 260.691
19. Mean: 5334.420 Standard Deviation: 7367.189
20. Mean: 3270.703 Standard Deviation: 4486.998
21. Mean: 1934.605 Standard Deviation: 2629.891
22. Mean: 4721.820 Standard Deviation: 6510.918


-o-o-o-o-o-o- P1 is Terminated -o-o-o-o-o-o-
```

```
-o-o-o-o-o-o- P1 is Terminated -o-o-o-o-o-o-

Number of read bytes : 460
Number of read line of equations : 23


-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-

 Sent signals :
 -SIGALRM-
Number of signals : 1


-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-

 Caught SIGTERM
```

outputPath:

outputPath

```
(100,115), (106,102), (101,104), (119,98), (115,100), (107,98), (104,118), (104,115), (100,104), (10,118), -0.147x+121.422, 238.630, 182619.726, 427.
(100,115), (98,104), (106,118), (115,100), (104,98), (118,104), (106,119), (101,103), (102,98), (98,100), -0.015x+107.449, 107.472, 11611.312, 107.75
(115,118), (10,100), (115,106), (102,101), (104,119), (98,115), (100,107), (98,104), (118,104), (115,100), 0.072x+100.333, 100.380, 10119.423, 100.59
(104,119), (101,52), (50,51), (116,55), (118,104), (100,99), (106,100), (10,118), (100,115), (98,104), -0.059x+96.989, 97.028, 10109.252, 100.545
(106,118), (115,100), (104,98), (118,104), (106,119), (101,103), (102,98), (98,100), (115,118), (10,100), 0.079x+98.139, 98.097, 9688.179, 98.429
(115,106), (102,101), (104,119), (98,115), (100,107), (98,104), (118,104), (115,100), (104,102), (117,121), 0.010x+106.816, 106.829, 11464.919, 107.0
(113,119), (105,98), (99,98), (98,107), (118,122), (120,107), (10,118), (100,115), (98,104), (106,118), -0.046x+115.019, 115.048, 13305.858, 115.351
(115,100), (104,98), (118,104), (106,119), (101,103), (102,98), (98,100), (115,118), (10,100), (115,106), 0.067x+98.022, 98.007, 9655.570, 98.263
(102,101), (104,119), (98,115), (100,107), (98,104), (118,104), (115,100), (104,10), (118,100), (115,98), 0.039x+91.606, 91.619, 9253.542, 96.195
(104,106), (118,115), (100,104), (98,118), (104,106), (119,101), (103,102), (98,98), (100,115), (118,10), -1.713x+279.440, 279.421, 78769.020, 280.65
(100,115), (106,102), (101,104), (119,98), (115,100), (107,98), (104,118), (104,115), (100,104), (119,101), -0.592x+169.144, 169.140, 28642.376, 169.
(52,50), (51,116), (55,118), (104,100), (99,106), (100,10), (118,100), (115,98), (104,106), (118,115), 0.055x+86.830, 86.862, 8625.374, 92.873
(100,104), (98,118), (104,106), (119,101), (103,102), (98,98), (100,115), (118,10), (100,115), (106,102), -2.687x+378.193, 378.160, 143498.924, 378.8
(101,104), (119,98), (115,100), (107,98), (104,118), (104,115), (100,104), (102,117), (121,113), (119,105), -0.281x+137.893, 137.885, 19062.730, 138.
(98,99), (98,98), (107,118), (122,120), (107,10), (118,100), (115,98), (104,106), (118,115), (100,104), 0.671x+23.882, 36.222, 1437.675, 37.917
(98,118), (104,106), (119,101), (103,102), (98,98), (100,115), (118,10), (100,115), (106,102), (101,104), -2.716x+381.482, 381.465, 146007.156, 382.1
(119,98), (115,100), (107,98), (104,118), (104,115), (100,104), (10,118), (100,115), (98,104), (106,118), -0.129x+121.178, 121.223, 14749.379, 121.44
(115,100), (104,98), (118,104), (106,119), (101,103), (102,98), (98,100), (115,118), (10,100), (115,106), 0.067x+98.022, 98.007, 9655.570, 98.263
(102,101), (104,119), (98,115), (100,107), (98,104), (118,104), (115,100), (104,119), (101,52), (50,51), 0.831x+14.957, 21.317, 575.659, 23.993
(116,55), (118,104), (100,99), (106,100), (10,118), (100,115), (98,104), (106,118), (115,100), (104,98), -0.241x+124.501, 124.549, 15753.199, 125.512
(118,104), (106,119), (101,103), (102,98), (98,100), (115,118), (10,100), (115,106), (102,101), (104,119), 0.093x+97.806, 97.770, 9616.277, 98.063
(98,115), (100,107), (98,104), (118,104), (115,100), (104,102), (117,121), (113,119), (105,98), (99,98), 0.300x+74.795, 74.790, 5653.833, 75.192
(98,107), (118,122), (120,107), (10,118), (100,115), (98,104), (106,118), (115,100), (104,98), (118,104), -0.086x+117.823, 117.788, 13929.649, 118.02
```

Makefile:

makefile

```
target: hw2

hw2:    program.c
        gcc program.c -o program -lm
clean:
    rm hw2

```