

**Gebze Technical University
Computer Engineering**

CSE 344

HOMEWORK 1 REPORT

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1 INTRODUCTION

1.1 Problem Definition

In this assignment, 2 different files are requested from the user for programA. These files contain characters. programA takes these actions by reading these two files. After these processes, it writes the outputs to the outputA file. Then programB reads the outputA file and applies the "Fast Fourier Transform" algorithm to the values contained in it. The values obtained after applying this algorithm are written to the outputB file. In addition, 2 programBs must be run simultaneously during this process. These processes should work simultaneously and there should be no interruption.

2 METHOD

2.1 Problem Solution Approach

In order to make the programA part, I first handled the errors while opening the files. Then I process the data from the user and put it in a string. Then, complex numbers are created by making operations with the data in the string obtained. And these complex numbers are written to the output file. While writing to the file, the file crashes with flock. After writing, sleep is run. This process continues until the data given by the user is finished. To solve a problem in programB, a file is opened in programA. And when all the processes of programA are finished, "1" is written in this file. That is, if 2 programs terminate in A file, it will write "11" in this file. Thus, when programB checks this file, programB will end if sufficient conditions are met.

While making the programB part, the accuracy of the files given by the user as in programA was first checked. Then, it was checked whether the input file given by the user is full or not. If this file is not currently filled (because it may fill up in the future) the program waits until the file is full. However, an extra solution was applied here, since there is a possibility of never filling. This solution is described when explaining the programA part. If both programs A have terminated their operation, programB will also terminate. Otherwise, programB waits until the input file given by the user is full. Then, a random line is determined and that line in the input file is taken. If that line is empty, the program will scroll down until it finds a filled line. Then the data in this line is taken and the FFT algorithm is applied. The data obtained from this applied FFT algorithm is written to the output file. After writing, programB runs the sleep process. This process continues until programA processes are finished and then terminated. In some cases, the data in the input file given by the user is corrupted. However, no solution has been found for this problem.

3 RESULT

≡ inputA.txt

```
1 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
2 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
3 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
4 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
5 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
6 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
7 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
8 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
9 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
10 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd|
```

≡ inputA2.txt

```
1 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
2 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
3 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
4 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
5 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
6 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
7 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
8 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
9 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
10 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
11 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
12 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
13 a5a9g3m2y4a1g5tet5ikmfr3t5AxCtyr
14 a5a9g3m2y4a1g5tet5ikmfr3t5AxCsd
```

≡ outputA.txt

```
1 67 +i115,100 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116
2 97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116 +i53,65 +i120,67
3 121 +i114,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51 +i116,53
4 114 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116 +i53,65
5 10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51 +i116,53 +i65,120
6 10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51 +i116,53 +i65,120
7 114 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116 +i53,65
8 100 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116 +i53,65
9 121 +i114,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51 +i116,53
10 115 +i100,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51 +i116,53
11 116 +i121,114 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,11
12 67 +i115,100 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114 +i51,116
13 67 +i116,121 +i114,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51
14 120 +i67,115 +i100,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102 +i114,51
15 120 +i67,116 +i121,114 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,11
16 65 +i120,67 +i115,100 +i10,97 +i53,97 +i57,103 +i51,109 +i50,121 +i52,97 +i49,103 +i53,116 +i101,116 +i53,105 +i107,109 +i102,114
17 65 +i120,67 +i116,121 +i114,10 +i97,53 +i97,57 +i103,51 +i109,50 +i121,52 +i97,49 +i103,53 +i116,101 +i116,53 +i105,107 +i109,102
18
```

≡ outputB.txt

```
1 1083.463 +i0.000,79.465 +i-452.757,202.008 +i-406.691,-253.687 +i-188.834,-120.662 +i-213.695,-99.568 +i31.625,-48.882 +i53.161,-
2 1082.442 +i0.000,79.465 +i-452.757,202.008 +i-406.691,-253.687 +i-188.834,-120.662 +i-213.695,-99.568 +i31.625,-48.882 +i53.161,-
3 1082.442 +i0.000,202.092 +i-423.980,215.350 +i-350.836,-75.329 +i-136.875,107.744 +i-213.323,105.030 +i-4.838,-42.930 +i5.747,-9.
4 1661.880 +i0.000,186.536 +i-764.085,246.067 +i-661.388,-145.703 +i-280.566,68.852 +i-365.287,-12.375 +i-69.454,-91.807 +i-33.925,
5 1703.871 +i0.000,236.293 +i-754.617,290.687 +i-718.074,1.058 +i-411.366,-19.847 +i-454.211,-17.547 +i-49.501,-131.298 +i-144.644,
6 |
```

≡ ExitControlForProgramB.txt

```
1 11|
```

IMPORTANT NOTE: After programA has finished reading the files, it writes "1" to the file named "ExitControlForProgramB.txt". However, this file **MUST** be deleted every time the program is tested. So please delete this file after testing or delete the values in it.