



GEBZE TEKNİK ÜNİVERSİTESİ

BİLGİSAYAR MÜHENDİSLİĞİ

CSE244 Sistem Programlama Midterm

Proje Raporu

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Öncelikle projede hangi kavramların yoğun şekilde kullanılacağını düşündüm.

Client server mimarisini bilmiyordum öncelikle bunun mantığını öğrenmeye çalıştım.

Sonrasında sinyallerle ilgili her hangi bir pratiğim olmadığı için 1 gün kadar sadece sinyaller ile haberleşme tarzı örnekler yaptım. Kitaptaki ve internetteki farklı örnekleri de deneyip test ettim.

Projede istendiği gibi oluşan her client server'e sinyal yolluyor ve aralarındaki fifo aracılığı ile generate edilen matrisi alıyorlar, ardından 2 ayrı process bu matrisi iki farklı şekilde işliyor ve sonuçlarını bir diğer programa(showresult) gönderiyor.

Sisteme düşen tüm processlerin pid'ini bir txt de topluyorum. Ctrl z veya ctrl c sinyali gelince, sinyalin düştüğü pid hariç kalanlara SIGUSR2 sinyali gönderiyorum.

SIGUSR2 sinyali gelen processler kendi loguna bir kill sinyali aldığını yazılıyor. Control sinyalinin düştüğü process ise kendi loguna ctrl sinyali aldığını loga yazılıyor. En son kendini öldürüyor.

Kendi bilgisayarımda denediğim kadarı ile 14x14 e kadar ($n=7$) için düzgün çalışıyor fakat

$n=8$ ve üzeri için matrix tersi o kadar küçülüyor ki 0.0000 şeklinde gösteriyor. Convolution matrisinde sorun yok.

Kendim test ettiğim kadarı ile memory leak yok fakat errorler mevcut. Hem valgrind hem ps -A ile mevcut processleri kontrol ettim.

2d Convolution uygulaması görüntü işleme teknolojisinde kullanılmaktadır.

Convolutionda kernel matrix olarak:

1	0	0
0	1	0
0	0	1

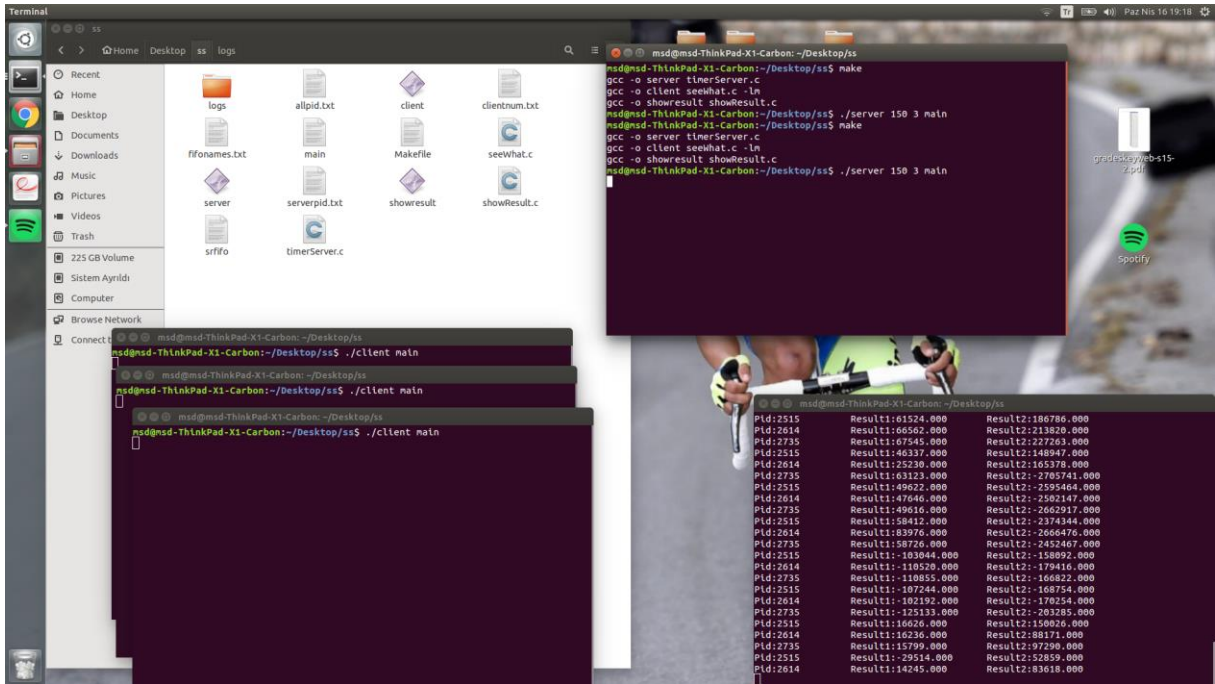
Kullandım.

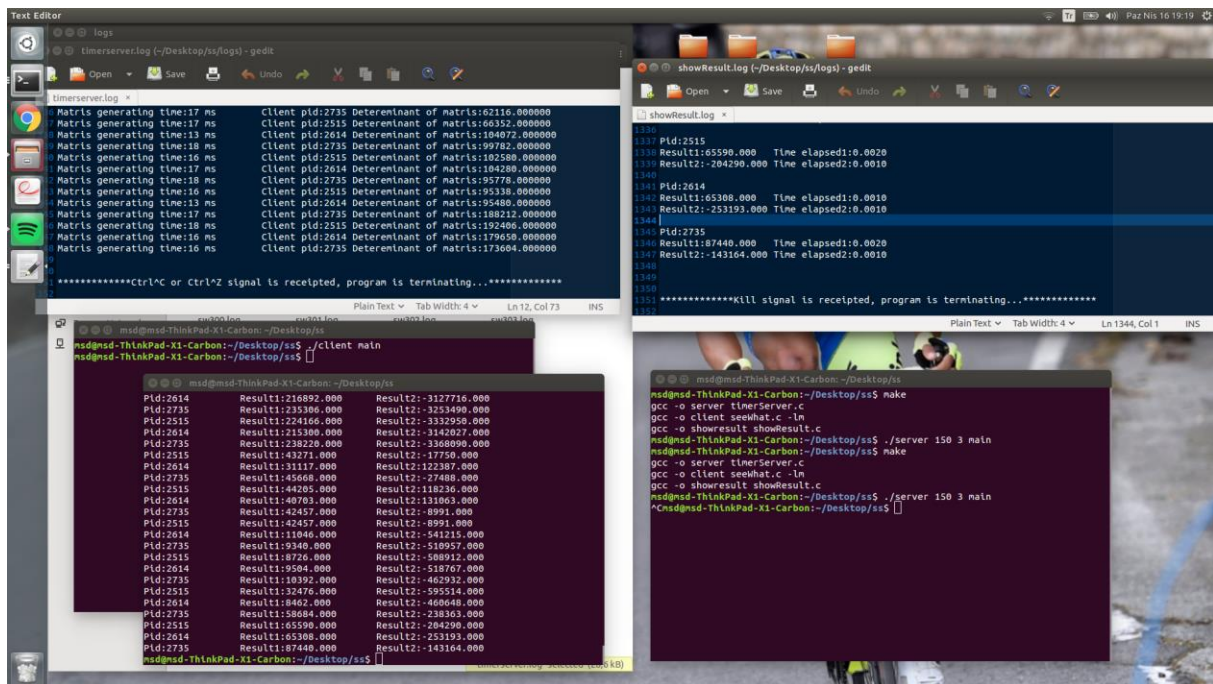
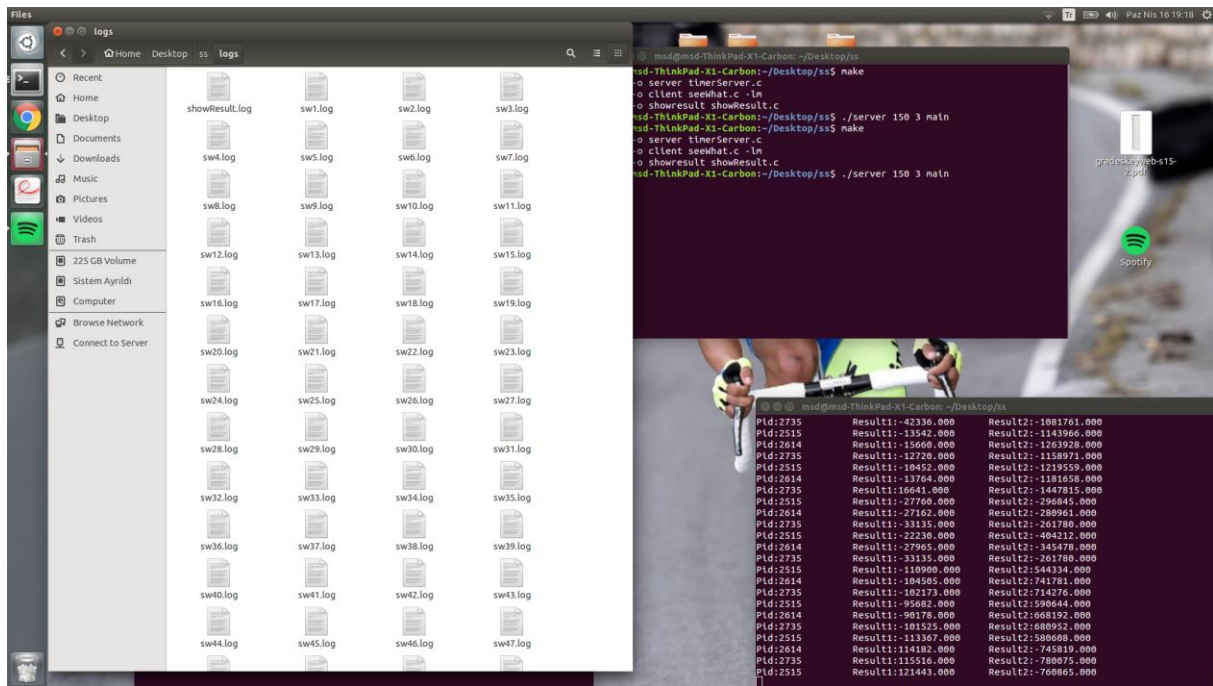
Kendi bilgisayarımda ufak bir test yaptım video linki şurada:

<https://www.youtube.com/watch?v=JDJSUPA1noE>

Genel olarak proje için 1 hafta süre harcadım, her ne kadar uzun sürse de eğlenceli ve öğretici olduğunu düşünüyorum.

Bir kaç test fotoğrafı aşağıdaki gibidir.





```
Text Editor
sw1.log (-/Desktop/ss/logs) - gedit
sw1.log +
Original Matrix=
[54.000000 12.000000 57.000000 48.000000 28.000000 83.000000 ;27.000000 16.000000 12.000000 26.000000
20.000000 26.000000 ;20.000000 87.000000 18.000000 41.000000 60.000000 11.000000 ;39.000000 21.000000
63.000000 71.000000 26.000000 33.000000 ;65.000000 16.000000 85.000000 66.000000 59.000000
57.000000 ;61.000000 79.000000 63.000000 5.000000 35.000000 75.000000 ]
Shifted Inverse Matrix=
[ -0.010518 0.065988 -0.016685 -0.033411 0.159268 -0.037592 ; -0.063423 -0.002337 0.012396 0.010205
-0.098016 0.040843 ;0.028229 -0.062023 0.007513 0.025228 -0.059048 0.007989 ; -0.091555 0.058020
0.012465 0.016675 -0.002367 -0.005538 ;0.017486 -0.022235 0.012513 -0.032012 0.035409
-0.012826 ;0.006721 -0.028877 -0.011888 0.013827 -0.016366 0.019688 ]
Convolution Matrix=
[70.000000 24.000000 57.000000 68.000000 48.000000 83.000000 ;114.000000 88.000000 24.000000 86.000000
79.000000 48.000000 ;28.000000 114.000000 34.000000 41.000000 86.000000 31.000000 ;55.000000
106.000000 63.000000 130.000000 77.000000 33.000000 ;144.000000 118.000000 106.000000 101.000000
205.000000 77.000000 ;61.000000 144.000000 79.000000 5.000000 101.000000 134.000000 ]

showResult.log (-/Desktop/ss/logs) - gedit
showResult.log +
Result1:101818.000 Time elapsed1:0.0030
Result2:1589699.000 Time elapsed2:0.0020
Pid:4096
Result1:-8358.000 Time elapsed1:0.0030
Result2:527443.000 Time elapsed2:0.0030
Pid:4096
Result1:-10222.000 Time elapsed1:0.0040
Result2:350209.000 Time elapsed2:0.0030
Pid:4096
Result1:-2700.000 Time elapsed1:0.0030
Result2:-451614.000 Time elapsed2:0.0020
Pid:4096
Result1:-4612.000 Time elapsed1:0.0040
Result2:-408020.000 Time elapsed2:0.0020
Pid:4096
Result1:-1499.999 Time elapsed1:0.0030
Result2:142405.000 Time elapsed2:0.0020

sw14.log (-/Desktop/ss/logs) - gedit
sw14.log +
Original Matrix=
[52.000000 57.000000 83.000000 19.000000 70.000000 47.000000 ;28.000000 78.000000 45.000000
37.000000 12.000000 57.000000 ;56.000000 81.000000 69.000000 40.000000 27.000000
14.000000 ;34.000000 36.000000 15.000000 77.000000 65.000000 25.000000 ;39.000000 80.000000
79.000000 68.000000 65.000000 50.000000 ;39.000000 11.000000 72.000000 12.000000 60.000000
41.000000 ]
Shifted Inverse Matrix=
[ -0.034423 -0.055291 0.077467 -0.011267 0.002375 0.028155 ; -0.011653 0.021087 0.000317 0.014400
-0.013264 0.005391 ;0.041617 0.020214 -0.048751 0.004265 0.018795 -0.019411 ;0.036028 -0.017878
0.012110 0.010388 0.005174 -0.012644 ;0.002011 0.013723 -0.015476 0.017025 -0.022231
0.016730 ; -0.019822 0.007587 0.009094 -0.036268 0.041663 -0.004552 ]
Convolution Matrix=
[120.000000 102.000000 83.000000 31.000000 127.000000 47.000000 ;109.000000 199.000000
102.000000 64.000000 45.000000 127.000000 156.000000 109.000000 147.000000 40.000000 64.000000
26.000000 ;114.000000 115.000000 15.000000 142.000000 115.000000 25.000000 ;50.000000
186.000000 115.000000 148.000000 183.000000 115.000000 ;39.000000 50.000000 152.000000
12.000000 148.000000 160.000000 ]

timerserver.log (-/Desktop/ss/logs) - gedit
timerserver.log +
1 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:48000.000000
2 Matrix generating time:276 ms Client pid:4096 Determinant of matrix:13530.000000
3 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:49791.000000
4 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:250024.000000
5 Matrix generating time:277 ms Client pid:4096 Determinant of matrix:21102.000000
6 Matrix generating time:19 ms Client pid:4096 Determinant of matrix:17090.000000
7 Matrix generating time:83 ms Client pid:4096 Determinant of matrix:202600.000000
8 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:210198.000000
9 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:19882.000000
10 Matrix generating time:43 ms Client pid:4096 Determinant of matrix:5180.000000
11 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:3933.000000
12 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:11601.000000
13 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:191152.000000
14 Matrix generating time:39 ms Client pid:4096 Determinant of matrix:104796.000000
15 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:4764.000000
16 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:93282.000000
17 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:88860.000000
18 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:152006.000000
19 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:114665.000000
20 Matrix generating time:39 ms Client pid:4096 Determinant of matrix:28947.000000
21 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:28440.000000
22 Matrix generating time:45 ms Client pid:4096 Determinant of matrix:2821.000000
23 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:6201.000000
24 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:63734.000000
```

```
Text Editor
sw1.log (-/Desktop/ss/logs) - gedit
sw1.log +
Original Matrix=
[10.000000 80.000000 68.000000 60.000000 ;86.000000 56.000000 70.000000
88.000000 ;9.000000 38.000000 25.000000 10.000000 ;55.000000 10.000000 33.000000 40.000000
]
Shifted Inverse Matrix=
[ -0.008865 0.012658 0.049327 -0.033632 ;0.013608 -0.001582 -0.039238 0.038117 ; -0.005008
0.019900 0.059701 -0.014925 ;0.027500 -0.004500 -0.049254 0.037313 ]
Convolution Matrix=
[66.000000 80.000000 156.000000 60.000000 ;86.000000 66.000000 70.000000
156.000000 ;19.000000 38.000000 65.000000 10.000000 ;55.000000 19.000000 33.000000
65.000000 ]

sw25.log (-/Desktop/ss/logs) - gedit
sw25.log +
*****kill signal is receipted, program is terminating.....*****

timerserver.log (-/Desktop/ss/logs) - gedit
timerserver.log +
1 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:48000.000000
2 Matrix generating time:276 ms Client pid:4096 Determinant of matrix:13530.000000
3 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:49791.000000
4 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:250024.000000
5 Matrix generating time:277 ms Client pid:4096 Determinant of matrix:21102.000000
6 Matrix generating time:19 ms Client pid:4096 Determinant of matrix:17090.000000
7 Matrix generating time:83 ms Client pid:4096 Determinant of matrix:202600.000000
8 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:210198.000000
9 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:19882.000000
10 Matrix generating time:43 ms Client pid:4096 Determinant of matrix:5180.000000
11 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:3933.000000
12 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:11601.000000
13 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:191152.000000
14 Matrix generating time:39 ms Client pid:4096 Determinant of matrix:104796.000000
15 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:4764.000000
16 Matrix generating time:41 ms Client pid:4096 Determinant of matrix:93282.000000
17 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:88860.000000
18 Matrix generating time:42 ms Client pid:4096 Determinant of matrix:152006.000000
19 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:114665.000000
20 Matrix generating time:39 ms Client pid:4096 Determinant of matrix:28947.000000
21 Matrix generating time:40 ms Client pid:4096 Determinant of matrix:28440.000000
22 Matrix generating time:39 ms Client pid:4096 Determinant of matrix:2821.000000
```