

**Gebze Technical University Computer Engineering
CSE 344
2017 Spring**

FINAL REPORT

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Problem Tanımı : Hilecilerden oluşan bir client kümesi olup ,servera bağlanarak her bir hileciye thread açılıp clientların içerisinde barındırdığı seçim tercihinine göre serverın gerekli provider threadine yönlendirmesi ve verdiği açığa göre hesaplamaları yaparak clienta geri dönüş sağlamasıdır.

Programın İşleyiş Mekanizması :

Server Usage : ./homeworkServer 5555 data.dat log.dat

Client Usage : ./clientApp Hileci1 C 45 127.0.0.1 5555

~ Server parametre olarak aldığı .dat uzantılı providerları okuyarak prov adlı structa name,performance,price ve duration olarak initilaze eder.

~ Provider sayısı kadar thread oluşturarak bu thread functionlara arguman olarak index verir.

~ Socet ile server client ilişkisi verilen port ve ip adrese göre kurularak,server client beklemeye başlar.

~ Client parametre olarak aldığı bilgileri client adlı structa name,c,derece ve socket_id olarak initilaze eder.

~ Socet ile server client ilişkisi verilen port ve ip adrese göre kurularak , Hileci client olarak servera bağlanır ve bilgilerini göndererek cevabı beklemeye başlar .

~ Server clientı kabul ederek yeni bir thread oluşturur ve client tarafından gelen bilgileri içerisinde tuttuğu client musteri struct arrayinin ilk elemanına kopyalar.

~ Do_Client isimli thread fonksiyonu bu bilgileri bir fonksiyona vererek gelen harfe göre öncelik sırası tutan bir arrayi doldurur.

~ Daha sonra öncelik sıralaması yapılan arraye göre provider queue suna uygun olarak bu hileci clientı push edilerek,o provider threadine yönlendirilir.

~ Provider threadi gerekli bilgileri ekrana ve log dosyasına basarak verilen dereceyi Taylor serisine göre (tekrar sayısı 5 kabul edilerek) hesaplar.

~ Random olarak üretilen (5-15) saniye arasında sleep edilerek o providerın queuesundan pop() ile çıkarılır.

~ Gerekli bilgiler tekrar ekrana ve log dosyasına yazıldıktan sonra ,hileci clienta socket_id si üzerinden istenen mesaj gönderilerek o client sonlandırılır.

~ Bu anlatılan döngü bağlanan her client için gerçekleşmesi beklenen evreyi anlatır.

~ Serverda SIGINT sinyali geldiğinde gerekli file,mutex ve free leme işlemleri yapıldıktan sonra program kapatılır. Bağlı clientların tamamına SERVER SHUTDOWN mesajı gönderilerek clientlar da kapatılır.

~ Program kapatılmadan önce Statistics adı verilen hangi providera kaç adet client bağlanarak işlem yapmış bilgisi ekrana ve log dosyasına yazılır.

Senkranizasyon : Yukarda anlatılan mekanizmanın sağlanabilmesi için aşağıdaki mutex ve condition variabler kullanılmıştır.Ne anlam ifade ettikleri ve ne için kullanıldıkları hakkında bilgi edinebilirsiniz.

Mutex lock2 → Bağlanan clientı server ın tuttuğu client struct arrayine doğru şekile initialize ederek indeksleme yapmak globalde tutulan client_countu korumak için kullanılmıştır.

Cond cond2 → Kilit ile korumada olan client indeks değerinin artırılma işlemini main threade vermek üzere client thread fonksiyonundan signal_cond yapılarak yeni gelen clientlara doğru indeks vermek için kullanılmıştır.

Mutex cond → Client thread fonksiyonunda providera yönlendirmek üzere doldurulan öncelik arrayinden seçim yaptıktan sonra providera queuesuna push edilme ve provider thread fonksiyonu içerisinde gerekli hesaplamaların yapılması ve eklenen hilecinin işi yapılarak pop edilme işlemlerinin korunması için kullanılmıştır.

Cond cond → Client thread fonksiyonu hileciyi seçilen provider queuesuna push edip o provider threadini uyandırmak için kullanılmıştır.

OLASI SENARYOLAR

Case1 : Q parametresi ile 6 hilecinin farklı dereceler ile aynı anda bağlanması (Scripte andlenerek çalıştırıldı).

```


Terminal
Open Save
test.sh log.dat
13 Provider Murat waiting for tasks
14 Provider Hakan waiting for tasks
15 Provider Cengiz waiting for tasks
16 Provider Nuray waiting for tasks
17 Provider Ertan waiting for tasks
18 Server is waiting for client connections at port 5555
19 Client Hileci1 (Q 0) connected, forwarded to provider Ayse
20 Client Hileci2 (Q 5) connected, forwarded to provider Ayse
21 Client Hileci6 (Q 60) connected, forwarded to provider Hakan
22 Client Hileci5 (Q 45) connected, forwarded to provider Hakan
23 Client Hileci4 (Q 30) connected, forwarded to provider Ertan
24 Client Hileci3 (Q 15) connected, forwarded to provider Ertan
25 Provider Ayse is processing task number 1: 0
26 Provider Ayse completed task number 1: cos(0)=1.000 in 5.655 seconds.
27 Provider Ayse is processing task number 2: 5
28 Provider Ayse completed task number 2: cos(5)=0.996 in 8.646 seconds.
29 Provider Ertan is processing task number 1: 30
30 Provider Ertan completed task number 1: cos(30)=0.866 in 8.000 seconds.
31 Provider Ertan is processing task number 2: 15
32 Provider Ertan completed task number 2: cos(15)=0.966 in 5.115 seconds.
33 Provider Hakan is processing task number 1: 60
34 Provider Hakan completed task number 1: cos(60)=0.500 in 7.133 seconds.
35 Provider Hakan is processing task number 2: 45
36 Provider Hakan completed task number 2: cos(45)=0.707 in 10.757 seconds.
37
38 Termination signal received
39 Terminating all clients
40 Terminating all providers
41 Statistics
42 Name      Number of clients served
43 Ayse      2
44 Fatma     0
45 Murat     0
46 Hakan     2
47 Cengiz    0
48 Nuray     0
49 Ertan     2
50 Goodbye.

bedo@bedo-X550JK: ~/Desktop/system_final
Socket created
Socket created
Connected
Connected
Socket created
Connected
Socket created
Connected
Server reply : Hileci's task completed by Ayse in 5.655 seconds, cos(0)=1.000, cost is 900TL, total time spent 5.633 seconds.
Server reply : Hileci's task completed by Ayse in 8.646 seconds, cos(5)=0.996, cost is 900TL, total time spent 13.632 seconds.
Server reply : Hileci's task completed by Ertan in 8.000 seconds, cos(30)=0.866, cost is 600TL, total time spent 21.632 seconds.
Server reply : Hileci's task completed by Ertan in 5.115 seconds, cos(15)=0.966, cost is 600TL, total time spent 26.631 seconds.
Server reply : Hileci's task completed by Hakan in 7.133 seconds, cos(60)=0.500, cost is 750TL, total time spent 33.637 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$ Server reply : Hileci's task completed by Hakan in 10.757 seconds, cos(45)=0.707, cost is 750TL, total time spent 43.636 seconds.

```

Case2 : T parametresi ile 6 hilecinin farklı açılar ile aynı anda bağlanması (Scripte andlenerek çalıştırıldı).

Terminal

Open ▾  Save

test.sh x log.dat x

```

14 Provider Hakan waiting for tasks
15 Provider Cengiz waiting for tasks
16 Provider Nuray waiting for tasks
17 Provider Ertan waiting for tasks
18 Server is waiting for client connections at port 5555
19 Client Hileci6 (T 60) connected, forwarded to provider Ayse
20 Client Hileci5 (T 45) connected, forwarded to provider Fatma
21 Client Hileci4 (T 30) connected, forwarded to provider Murat
22 Client Hileci2 (T 5) connected, forwarded to provider Hakan
23 Client Hileci1 (T 0) connected, forwarded to provider Cengiz
24 Client Hileci3 (T 15) connected, forwarded to provider Nuray
25 Provider Ayse is processing task number 1: 60
26 Provider Ayse completed task number 1: cos(60)=0.500 in 6.283 seconds.
27 Provider Cengiz is processing task number 1: 0
28 Provider Cengiz completed task number 1: cos(0)=1.000 in 10.789 seconds.
29 Provider Hakan is processing task number 1: 5
30 Provider Hakan completed task number 1: cos(5)=0.996 in 12.657 seconds.
31 Provider Murat is processing task number 1: 30
32 Provider Murat completed task number 1: cos(30)=0.866 in 11.114 seconds.
33 Provider Fatma is processing task number 1: 45
34 Provider Fatma completed task number 1: cos(45)=0.707 in 10.890 seconds.
35 Provider Nuray is processing task number 1: 15
36 Provider Nuray completed task number 1: cos(15)=0.966 in 9.653 seconds.
37
38 Termination signal received
39 Terminating all clients
40 Terminating all providers
41 Statistics
42 Name      Number of clients served
43 Ayse      1
44 Fatma     1
45 Murat     1
46 Hakan     1
47 Cengiz    1
48 Nuray     1
49 Ertan     0
50 Goodbye.

```

bedo@bedo-X550JK: ~/Desktop/system_final

```

Socket created
Connected
Connected
Socket created
Socket created
Socket created
Connected
Connected
Connected
Server reply : Hileci's task completed by Ayse in
6.283 seconds, cos(60)=0.500, cost is 900TL,total
time spent 6.633 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$ Server re
ply : Hileci's task completed by Cengiz in 10.789
seconds, cos(0)=1.000, cost is 75TL,total time spe
nt 16.631 seconds.
Server reply : Hileci's task completed by Hakan in
12.657 seconds, cos(5)=0.996, cost is 750TL,total
time spent 28.632 seconds.
Server reply : Hileci's task completed by Murat in
11.114 seconds, cos(30)=0.866, cost is 200TL,tota
l time spent 39.633 seconds.
Server reply : Hileci's task completed by Fatma in
10.890 seconds, cos(45)=0.707, cost is 500TL,tota
l time spent 49.634 seconds.
Server reply : Hileci's task completed by Nuray in
9.653 seconds, cos(15)=0.966, cost is 450TL,total
time spent 58.634 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$

```

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Case3 : C parametresi ile 6 hilecinin farklı açılar ile aynı anda bağlanması (Scripte andlenerek çalıştırıldı).

```

Terminal
Open ▾ [icon] Save

test.sh x log.dat x

15 Provider Cengiz waiting for tasks
16 Provider Nuray waiting for tasks
17 Provider Ertan waiting for tasks
18 Server is waiting for client connections at port 5555
19 Client Hileci6 (C 60) connected, forwarded to provider Cengiz
20 Client Hileci5 (C 45) connected, forwarded to provider Cengiz
21 Client Hileci4 (C 30) connected, forwarded to provider Murat
22 Client Hileci3 (C 15) connected, forwarded to provider Murat
23 Client Hileci2 (C 5) connected, forwarded to provider Nuray
24 Client Hileci1 (C 0) connected, forwarded to provider Nuray
25 Provider Cengiz is processing task number 1: 60
26 Provider Cengiz completed task number 1: cos(60)=0.500 in 10.067 seconds.
27 Provider Cengiz is processing task number 2: 45
28 Provider Cengiz completed task number 2: cos(45)=0.707 in 6.217 seconds.
29 Provider Murat is processing task number 1: 30
30 Provider Murat completed task number 1: cos(30)=0.866 in 9.163 seconds.
31 Provider Murat is processing task number 2: 15
32 Provider Murat completed task number 2: cos(15)=0.966 in 8.799 seconds.
33 Provider Nuray is processing task number 1: 5
34 Provider Nuray completed task number 1: cos(5)=0.996 in 11.740 seconds.
35 Provider Nuray is processing task number 2: 0
36 Provider Nuray completed task number 2: cos(0)=1.000 in 11.453 seconds.
37
38 Termination signal received
39 Terminating all clients
40 Terminating all providers
41 Statistics
42 Name      Number of clients served
43 Ayse      0
44 Fatma     0
45 Murat     2
46 Hakan     0
47 Cengiz    2
48 Nuray     2
49 Ertan     0
50 Goodbye.

bedo@bedo-X550JK: ~/Desktop/system_final
Connected
Socket created
Connected
Socket created
Connected
Socket created
Socket created
Connected
Connected
Server reply : Hileci's task completed by Cengiz in 10.067 seconds, cos(60)=0.500, cost is 75TL, total time spent 10.633 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$ Server reply : Hileci's task completed by Cengiz in 6.217 seconds, cos(45)=0.707, cost is 75TL, total time spent 16.632 seconds.
Server reply : Hileci's task completed by Murat in 9.163 seconds, cos(30)=0.866, cost is 200TL, total time spent 25.632 seconds.
Server reply : Hileci's task completed by Murat in 8.799 seconds, cos(15)=0.966, cost is 200TL, total time spent 33.632 seconds.
Server reply : Hileci's task completed by Nuray in 11.740 seconds, cos(5)=0.996, cost is 450TL, total time spent 44.632 seconds.
Server reply : Hileci's task completed by Nuray in 11.453 seconds, cos(0)=1.000, cost is 450TL, total time spent 55.632 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$

```


Case4 : Q,T ve C parametreleri ile 10 hilecinin farklı açılar ile aynı anda bağlanması (Scripte andlenerek çalıştırıldı).

```

Terminal
Open ▾ [icon]

test.sh x
27 Client Hileci7 (C 110) connected, forwarded to provider Nuray
28 Client Hileci6 (T 60) connected, forwarded to provider Ertan
29 Provider Cengiz is processing task number 1: 0
30 Provider Cengiz completed task number 1: cos(0)=1.000 in 12.938 seconds.
31 Provider Cengiz is processing task number 2: 5
32 Provider Cengiz completed task number 2: cos(5)=0.996 in 12.930 seconds.
33 Provider Ayse is processing task number 1: 130
34 Provider Ayse completed task number 1: cos(130)=-0.643 in 9.309 seconds.
35 Provider Ayse is processing task number 2: 45
36 Provider Ayse completed task number 2: cos(45)=0.707 in 9.429 seconds.
37 Provider Hakan is processing task number 1: 120
38 Provider Hakan completed task number 1: cos(120)=-0.500 in 12.622 seconds.
39 Provider Fatma is processing task number 1: 30
40 Provider Fatma completed task number 1: cos(30)=0.866 in 8.458 seconds.
41 Provider Murat is processing task number 1: 140
42 Provider Murat completed task number 1: cos(140)=-0.766 in 8.869 seconds.
43 Provider Murat is processing task number 2: 15
44 Provider Murat completed task number 2: cos(15)=0.966 in 9.912 seconds.
45 Provider Ertan is processing task number 1: 60
46 Provider Ertan completed task number 1: cos(60)=0.500 in 6.234 seconds.
47 Provider Nuray is processing task number 1: 110
48 Provider Nuray completed task number 1: cos(110)=-0.342 in 12.062 seconds.
49
50 Termination signal received
51 Terminating all clients
52 Terminating all providers
53 Statistics
54 Name      Number of clients served
55 Ayse      2
56 Fatma     1
57 Murat     2
58 Hakan     1
59 Cengiz    2
60 Nuray     1
61 Ertan     1
62 Goodbye.

Socket created
Connected
Socket created
Connected
Connected
Connected
Socket created
Socket created
Connected
Connected
Server reply : Hileci's task completed by Cengiz in 12.938 seconds, cos(0)=1.000, cost is 75TL,total time spent 12.633 seconds.
Server reply : Hileci's task completed by Cengiz in 12.930 seconds, cos(5)=0.996, cost is 75TL,total time spent 24.633 seconds.
Server reply : Hileci's task completed by Ayse in 9.309 seconds, cos(130)=-0.643, cost is 900TL,total time spent 33.632 seconds.
Server reply : Hileci's task completed by Ayse in 9.429 seconds, cos(45)=0.707, cost is 900TL,total time spent 42.632 seconds.
Server reply : Hileci's task completed by Hakan in 12.622 seconds, cos(120)=-0.500, cost is 750TL,total time spent 54.633 seconds.
Server reply : Hileci's task completed by Fatma in 8.458 seconds, cos(30)=0.866, cost is 500TL,total time spent 62.632 seconds.
Server reply : Hileci's task completed by Murat in 8.869 seconds, cos(140)=-0.766, cost is 200TL,total time spent 70.633 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$ Server reply : Hileci's task completed by Murat in 9.912 seconds, cos(15)=0.966, cost is 200TL,total time spent 79.633 seconds.
Server reply : Hileci's task completed by Ertan in 6.234 seconds, cos(60)=0.500, cost is 600TL,total time spent 85.633 seconds.
Server reply : Hileci's task completed by Nuray in 12.062 seconds, cos(110)=-0.342, cost is 450TL,total time spent 97.634 seconds.
bedo@bedo-X550JK:~/Desktop/system_final$

```

Case5 : Providerın duration süresini tamamlaması sonucu oluşan durum, Bu durum 7 hilecinin servera bağlanması ile (Not zaman üzerinde ekleme yapılarak test edilmiştir).

```

Terminal
Open ▾ Save
test.sh x log.dat x client.c x server.c x data.dat x server.c x test.sh x log.dat x

17 Provider Ertan waiting for tasks
18 Server is waiting for client connections at port 5555
19 Client Hileci1 (Q 0) connected, forwarded to provider Ayse
20 Provider Ayse is processing task number 1: 0
21 Provider Ayse completed task number 1: cos(0)=1.000 in 7.576 seconds.
22 Client Hileci2 (Q 5) connected, forwarded to provider Ayse
23 Provider Ayse is processing task number 2: 5
24 Provider Ayse completed task number 2: cos(5)=0.996 in 9.256 seconds.
25 Client Hileci3 (C 15) connected, forwarded to provider Cengiz
26 Provider Cengiz is processing task number 1: 15
27 Provider Cengiz completed task number 1: cos(15)=0.966 in 12.676 seconds.
28 ***Provider Ayse duration süresini doldurmuştur.Yeni clientlara kapalıdır.***
29 Client Hileci4 (T 15) connected, forwarded to provider Fatma
30 Provider Fatma is processing task number 1: 15
31 Provider Fatma completed task number 1: cos(15)=0.966 in 6.661 seconds.
32 Client Hileci5 (Q 30) connected, forwarded to provider Hakan
33 Provider Hakan is processing task number 1: 30
34 Provider Hakan completed task number 1: cos(30)=0.866 in 5.633 seconds.
35 Client Hileci6 (Q 45) connected, forwarded to provider Hakan
36 Provider Hakan is processing task number 2: 45
37 Provider Hakan completed task number 2: cos(45)=0.707 in 5.320 seconds.
38 Client Hileci7 (Q 45) connected, forwarded to provider Hakan
39 Provider Hakan is processing task number 3: 45
40 Provider Hakan completed task number 3: cos(45)=0.707 in 7.405 seconds.
41
42 Termination signal received
43 Terminating all clients
44 Terminating all providers
45 Statistics
46 Name      Number of clients served
47 Ayse      2
48 Fatma     1
49 Murat     0
50 Hakan     3
51 Cengiz    1
52 Nuray     0
53 Ertan     0
54 Goodbye.

bedo@bedo-X550JK: ~/Desktop/141044073_FP_CSE344
bedo@bedo-X550JK:~/Desktop/141044073_FP_CSE344$ ./test.sh
Socket created
Connected
Server reply : Hileci's task completed by Ayse in 7.576 second
os(0)=1.000, cost is 900TL,total time spent 7.630 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Ayse in 9.256 second
os(5)=0.996, cost is 900TL,total time spent 9.630 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Cengiz in 12.676 sec
, cos(15)=0.966, cost is 750TL,total time spent 12.633 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Fatma in 6.661 secon
cos(15)=0.966, cost is 500TL,total time spent 6.631 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Hakan in 5.633 secon
cos(30)=0.866, cost is 750TL,total time spent 5.630 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Hakan in 5.320 secon
cos(45)=0.707, cost is 750TL,total time spent 5.630 seconds.
Socket created
Connected
Server reply : Hileci's task completed by Hakan in 7.405 secon
cos(45)=0.707, cost is 750TL,total time spent 7.630 seconds.
bedo@bedo-X550JK:~/Desktop/141044073_FP_CSE344$

```


Case6 : Tüm providerlar dolu iken clientların servera bağlanması.Bu durum 16 hilecinin farklı açılar ile aynı anda bağlanması (Scripte andlenerek çalıştırıldı).

```

Terminal
Open ▾ [icon]

test.sh x log.dat x
37 Provider Fatma is processing task number 1: 30
38 Provider Fatma completed task number 1: cos(30)=0.866 in 7.863 seconds.
39 Provider Fatma is processing task number 2: 110
40 Provider Fatma completed task number 2: cos(110)=-0.342 in 7.674 seconds.
41 Provider Ertan is processing task number 1: 42
42 Provider Ertan completed task number 1: cos(42)=0.743 in 11.149 seconds.
43 Provider Ertan is processing task number 2: 32
44 Provider Ertan completed task number 2: cos(32)=0.848 in 10.629 seconds.
45 Provider Murat is processing task number 1: 140
46 Provider Murat completed task number 1: cos(140)=-0.766 in 11.326 seconds.
47 Provider Murat is processing task number 2: 2
48 Provider Murat completed task number 2: cos(2)=0.999 in 10.705 seconds.
49 Provider Hakan is processing task number 1: 60
50 Provider Hakan completed task number 1: cos(60)=0.500 in 8.415 seconds.
51 Provider Hakan is processing task number 2: 45
52 Provider Hakan completed task number 2: cos(45)=0.707 in 8.151 seconds.
53 Provider Ayse is processing task number 1: 130
54 Provider Ayse completed task number 1: cos(130)=-0.643 in 9.393 seconds.
55 Provider Ayse is processing task number 2: 120
56 Provider Ayse completed task number 2: cos(120)=-0.500 in 9.233 seconds.
57 Provider Nuray is processing task number 1: 52
58 Provider Nuray completed task number 1: cos(52)=0.616 in 10.425 seconds.
59 Provider Nuray is processing task number 2: 0
60 Provider Nuray completed task number 2: cos(0)=1.000 in 12.127 seconds.
61
62 Termination signal received
63 Terminating all clients
64 Terminating all providers
65 Statistics
66 Name      Number of clients served
67 Ayse      2
68 Fatma     2
69 Murat     2
70 Hakan     2
71 Cengiz    2
72 Nuray     2
73 Ertan     2
74 Goodbye.

bedo@bedo-X550JK: ~/Desktop/system_final
Socket created
Socket created
Connected
Connected
Connected
Connected
Connected
Connected
Connected
Connected
Connected
Connected
Server reply : NO PROVIDER IS AVAILABLE //total time spent 1.868 seconds.
Server reply : NO PROVIDER IS AVAILABLE total time spent 1.868 seconds.
Server reply : Hileci's task completed by Cengiz in 12.903 seconds, cos(5)=0.996, cost is 75TL,total time spent 12.634 seconds.
Server reply : Hileci's task completed by Cengiz in 12.625 seconds, cos(15)=0.966, cost is 75TL,total time spent 24.634 seconds.
Server reply : Hileci's task completed by Fatma in 7.863 seconds, cos(30)=0.866, cost is 500TL,total time spent 31.632 seconds.
Server reply : Hileci's task completed by Fatma in 7.674 seconds, cos(110)=-0.342, cost is 500TL,total time spent 38.630 seconds.
Server reply : Hileci's task completed by Ertan in 11.149 seconds, cos(42)=0.743, cost is 600TL,total time spent 49.631 seconds.
Server reply : Hileci's task completed by Ertan in 10.629 seconds, cos(32)=0.848, cost is 600TL,total time spent 59.631 seconds.
Server reply : Hileci's task completed by Murat in 11.326 seconds, cos(140)=-0.766, cost is 200TL,total time spent 70.635 seconds.
Server reply : Hileci's task completed by Murat in 10.705 seconds, cos(2)=0.999, cost is 200TL,total time spent 80.634 seconds.
Server reply : Hileci's task completed by Hakan in 8.415 seconds, cos(60)=0.500, cost is 750TL,total time spent 88.631 seconds.
Server reply : Hileci's task completed by Hakan in 8.151 seconds, cos(45)=0.707, cost is 750TL,total time spent 96.632 seconds.
Server reply : Hileci's task completed by Ayse in 9.393 seconds, cos(130)=-0.643, cost is 900TL,total time spent 105.637 seconds.
Server reply : Hileci's task completed by Ayse in 9.233 seconds, cos(120)=-0.500, cost is 900TL,total time spent 114.633 seconds.
Server reply : Hileci's task completed by Nuray in 10.425 seconds, cos(52)=0.616, cost is 450TL,total time spent 124.635 seconds.

```

Case7 : Clientların servera bağlanarak işlem sonucunu beklediği biranda serverın kapatılması durumu, 5 clientdan 2 sinin işlemi tamamlandıktan sonra SIGINT sinyali gönderilirdi (Scripte andlenerek çalıştırıldı).

Terminal

Open Save

	test.sh	log.dat	client.c	server.c
4 Ayse	5	900	60	
5 Fatma	3	500	180	
6 Murat	2	200	360	
7 Hakan	4	750	240	
8 Cengiz	1	75	600	
9 Nuray	3	450	90	
10 Ertan	4	600	120	
11 Provider Ayse waiting for tasks				
12 Provider Fatma waiting for tasks				
13 Provider Murat waiting for tasks				
14 Provider Hakan waiting for tasks				
15 Provider Cengiz waiting for tasks				
16 Provider Nuray waiting for tasks				
17 Provider Ertan waiting for tasks				
18 Server is waiting for client connections at port 5555				
19 Client Hileci5 (Q 45) connected, forwarded to provider Ayse				
20 Client Hileci4 (T 30) connected, forwarded to provider Fatma				
21 Client Hileci3 (C 15) connected, forwarded to provider Cengiz				
22 Client Hileci2 (C 5) connected, forwarded to provider Cengiz				
23 Client Hileci1 (C 0) connected, forwarded to provider Murat				
24 Provider Ayse is processing task number 1: 45				
25 Provider Ayse completed task number 1: cos(45)=0.707 in 10.838 seconds				
26 Provider Murat is processing task number 1: 0				
27 Provider Murat completed task number 1: cos(0)=1.000 in 8.536 seconds.				
28				
29 Termination signal received				
30 Terminating all clients				
31 Terminating all providers				
32 Statistics				
33 Name	Number of clients served			
34 Ayse	1			
35 Fatma	0			
36 Murat	1			
37 Hakan	0			
38 Cengiz	0			
39 Nuray	0			
40 Ertan	0			
41 Goodbye.				

bedo@bedo-X550JK: ~/Desktop/system_final

bedo@bedo-X550JK:~/Desktop/system_final\$./test.sh

Socket created

Socket created

Connected

Socket created

Connected

Connected

Socket created

Connected

Connected

Socket created

Connected

Server reply : Hileci's task completed by Ayse in 10.838 seconds, cos(45)=0.707, cost is 900TL, total time spent 10.633 seconds.

bedo@bedo-X550JK:~/Desktop/system_final\$ Server reply : Hileci's task completed by Murat in 8.536 seconds, cos(0)=1.000, cost is 200TL, total time spent 18.631 seconds.

Server reply : SERVER SHUTDOWN Good Bye...!!! total time spent 20.139 seconds.

Server reply : SERVER SHUTDOWN Good Bye...!!! total time spent 20.139 seconds.

Server reply : SERVER SHUTDOWN Good Bye...!!! /total time spent 20.138 seconds.

bedo@bedo-X550JK:~/Desktop/system_final\$

bedo@bedo-X550JK:~/Desktop/system_final\$

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