

Sistem Programlama Final Raporu

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# Problem Çözümü

*./server <portNumber> <dataFile> <logfile>*

*Server ; .dat dosyasından provider\_pool için gerekli dosyaları okur ve threadleri oluşturur. Threadler senkronizasyon için mutex ve condition variable kullanılmıştır . Her threadin kendine ait mutexi ve condition variable ı vardır. Queue yapısı boş olan provider(thread) blocklanır ve bekler . Node eklenince harekete geçer . Ayrıca her threadin 2 size ında queue yapısı vardır .*

*Client aynı porttan bağlandığında ana process yeni bir thread oluşturur ve yeni clientlar için dinlemeye devam eder . Bu sırada oluşan thread clientın istediği parametrelere göre yeni bir node oluşturup doğru queue ya ekleme yapar. Node un içinde cliente cevap vermek için socketid si de mevcuttur .Eğer ki hiç bir queue da yer yoksa clienta gerekli mesajı iletir .*

*Providerlar queuelardan poll yapıp işlemi yapar ve random olarak sleep yaparlar . Uyandıktan sonra cevap bekleyen clienta islemin sonucunu gönderir.*

*Zamanı biten threadleri öldürmek için programın başında bir thread oluşturulur . Bu thread her 1 saniyede uyur ve count tutar . Count'ın değerine göre vakti gelen providerları öldürür ve en son kendini öldürür . Server açık kalır taki yeni bir client bağlanana kadar yada SIGINT sinyali alıncaya kadar .Ayrıca server ekrana print ettiklerini parametredeki logfile dosyasına yazar .*

*Signal handle durumunda gerekli destroy ve free işlemleri yapılır . Clientlara gerekli mesajlar gönderilir .Queue ların ıcı boşaltılır ve threadler güvenli bir şekilde yok edilir .*

*./client <clientname> <priority> <degree> <ip> <port>  
Cient ; parametredeki önceliğe göre derece değerini işlem  
görmüş halini serverdan bekler.Parametrede ki ip ve port ile  
servera bağlanır . Cevap geldiğinde ise ekrana print ederek  
çıkartır.*

## **Test Edilen Durumlar**

<b>Test Case</b>	<b>Sonuc</b>	<b>Leak,Heap</b>
<b>Bos dosya</b>	<b>Program düzgünce çalıştı ve çıkış yaptı</b>	<b>yok</b>
<b>1 provider(SIGINT ) + 1 provider( süre bitmesi)</b>	<b>Program düzgünce çalıştı ve çıkış yaptı</b>	<b>yok</b>
<b>7 provider(SIGINT , script.sh(15)) + 7 provider(Süre bitmesi,script.sh(15))</b>	<b>Program düzgünce çalıştı ve çıkış yaptı</b>	<b>yok</b>
<b>7 provder(SIGINT,script.sh(30))</b>	<b>Program çalıştı.</b>	<b>var</b>

## SERVER LOG DOSYASI

```
logfile.txt (~/Desktop/buraksworks/cse344/final/clion)
File Edit View Search Tools Documents Help
script.sh x data1.dat x logfile.txt x
Nuray 450 90
Ertan 600 120
Provider Cengiz waiting for tasks
Provider Ayse waiting for tasks
Provider Murat waiting for tasks
Provider Hakan waiting for tasks
Provider Nuray waiting for tasks
Provider Fatma waiting for tasks
Provider Ertan waiting for tasks
Client hileci1 (C 1) connected, forwarded to provider Cengiz
Provider Cengiz is processing task number 0: 1
Client hileci2 (Q 2) connected, forwarded to provider Ayse
Client hileci3 (T 3) connected, forwarded to provider Ayse
Client hileci3 (T 3) connected, forwarded to provider Nuray
Provider Ayse is processing task number 0: 4
Client hileci3 (T 3) connected, forwarded to provider Ayse
Provider Nuray is processing task number 0: 9
Provider Nuray completed task number 0: cos(9)=0.988 in 23.075 seconds.
hileci3's task completed by Nuray in 9 seconds, cos(9)=0.988, cost is 450TL , total time spent 43.994 seconds
Provider Nuray waiting for tasks
Provider Ayse completed task number 0: cos(4)=0.998 in 11.229 seconds.
hileci2's task completed by Ayse in 10 seconds, cos(4)=0.998, cost is 900TL , total time spent 13.010 seconds
Provider Ayse is processing task number 1: 9
Provider Cengiz completed task number 0: cos(1)=1.000 in 16.851 seconds.
hileci1's task completed by Cengiz in 14 seconds, cos(1)=1.000, cost is 75TL , total time spent 19.290 seconds
Provider Cengiz waiting for tasks
Termination signal received
Terminating all cilents
Terminating all providers
Statics
Name Number Served
Ayse 1
Fatma 0
Murat 0
Hakan 0
Cengiz 1
Nuray 1
Ertan 0
Goodbye
Plain Text Tab Width: 4 Ln 15, Col 27 INS
```

## EKRAN CIKTI LARI

```
burak@burak ~/Desktop/buraksworks/cse344/final/clion
File Edit View Search Terminal Help
Provider Cengiz waiting for tasks
hileci2 Q 2: Success
hileci3 T 3: Success
Client hileci2 (Q 2) connected, forwarded to provider Ayse
Client hileci3 (T 3) connected, forwarded to provider Nuray
hileci3 T 3: Success
hileci1 C 1: Success
Client hileci3 (T 3) connected, forwarded to provider Nuray
Client hileci1 (C 1) connected, forwarded to provider Cengiz
hileci3 T 3: Success
Provider Cengiz is processing task number 0: 1
Provider Ayse is processing task number 0: 4
Provider Nuray is processing task number 0: 9
Client hileci3 (T 3) connected, forwarded to provider Nuray
Nuray is dead
Provider Ayse completed task number 0: cos(4)=0.998 in 21.863 seconds.
Cengiz is dead
Ayse is dead
Murat is dead
Hakan is dead
Fatma is dead
^CTermination signal received
Terminating all cilents
Terminating all providers
Statics
Name Number Served
Ayse 1
Fatma 0
Murat 0
Hakan 0
Cengiz 0
Nuray 0
Ertan 0
Goodbye
==19941==
==19941== HEAP SUMMARY:
==19941== in use at exit: 0 bytes in 0 blocks
==19941== total heap usage: 56 allocs, 56 frees, 29,810 bytes allocated
==19941==
==19941== All heap blocks were freed -- no leaks are possible
==19941==
==19941== For counts of detected and suppressed errors, rerun with: -v
==19941== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
burak@burak ~/Desktop/buraksworks/cse344/final/clion $

burak@burak ~/Desktop/buraksworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
SERVER SHUTDOWN
burak@burak ~/Desktop/buraksworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
SERVER SHUTDOWN
burak@burak ~/Desktop/buraksworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
hileci3's task completed by Nuray in 5 seconds, cos(9)=0.988, cost is 450TL , total
time spent 5.313 seconds
burak@burak ~/Desktop/buraksworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Provider is killed by SIGNAL
burak@burak ~/Desktop/buraksworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Provider is killed by SIGNAL
burak@burak ~/Desktop/buraksworks/cse344/final/clion $

data1.dat (~/Desktop/buraksworks/cse344/final/clion)
File Edit View Search Tools Documents Help
script.sh x data1.dat x
Name Performance Price Duration
Ayse 5 900 10
Fatma 3 500 15
Murat 2 200 12
Hakan 4 750 14
Cengiz 1 75 8
Nuray 3 450 6
Ertan 4 600 20
Plain Text Tab Width: 4 Ln 8, Col 15 INS
```

Providerların süresi kısa ve bi kaç biterken SIGINT atılmış durumda .Clientlar script ile çalıştırıldı.

```
burak@burak ~/Desktop/burakswor/cse344/final/clion
File Edit View Search Terminal Help
Client hileci2 (Q 2) connected, forwarded to provider Ayse
hileci1 C 1: Success
Client hileci1 (C 1) connected, forwarded to provider Cengiz
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Ayse
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Hakan
Provider Cengiz is processing task number 0: 1
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Hakan
Provider Hakan is processing task number 0: 9
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Hakan
Provider Hakan completed task number 0: cos(9)=0.988 in 24.963 seconds.
Provider Hakan is processing task number 1: 9
Provider Cengiz completed task number 0: cos(1)=1.000 in 9.434 seconds.
Provider Cengiz waiting for tasks
Provider Ayse completed task number 0: cos(9)=0.988 in 14.191 seconds.
Provider Ayse is processing task number 1: 4
Provider Ayse completed task number 1: cos(4)=0.998 in 9.821 seconds.
Provider Ayse is processing task number 2: 9
Provider Hakan completed task number 1: cos(9)=0.988 in 12.663 seconds.
Provider Hakan is processing task number 2: 9
Provider Hakan completed task number 2: cos(9)=0.988 in 11.809 seconds.
Provider Hakan waiting for tasks
Provider Ayse completed task number 2: cos(9)=0.988 in 14.417 seconds.
Provider Ayse waiting for tasks
^CTermination signal received
Terminating all cilents
Terminating all providers
Statics
Name      Number Served
Ayse      3
Fatma     0
Murat     0
Hakan     3
Cengiz    1
Nuray     0
Ertan     0
Goodbye
==8856==
==8856== HEAP SUMMARY:
==8856==   in use at exit: 0 bytes in 0 blocks
==8856==   total heap usage: 60 allocs, 60 frees, 32,482 bytes allocated
==8856==
```

Clientlar tek tek el ile baglandı.Program SIGINT ile sonlandı .

```
burak@burak ~/Desktop/burakswor/cse344/final/clion
File Edit View Search Terminal Help
Nuray      3      450      90
Ertan      4      600      120
Provider Ayse waiting for tasks
Provider Murat waiting for tasks
Provider Cengiz waiting for tasks
Provider Hakan waiting for tasks
Provider Nuray waiting for tasks
Provider Ertan waiting for tasks
Provider Fatma waiting for tasks
Server is waiting for client connections at port 5555
hileci1 C 1: Success
Client hileci1 (C 1) connected, forwarded to provider Cengiz
Provider Cengiz is processing task number 0: 1
hileci2 Q 2: Success
Client hileci2 (Q 2) connected, forwarded to provider Ayse
Provider Ayse is processing task number 0: 4
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Ayse
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Ayse
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Nuray
Provider Nuray is processing task number 0: 9
Provider Nuray completed task number 0: cos(9)=0.988 in 5.252 seconds.
Provider Nuray waiting for tasks
Provider Ayse completed task number 0: cos(4)=0.998 in 9.201 seconds.
Provider Ayse is processing task number 1: 9
Provider Cengiz completed task number 0: cos(1)=1.000 in 13.201 seconds.
Provider Cengiz waiting for tasks
Provider Ayse completed task number 1: cos(9)=0.988 in 9.197 seconds.
Provider Ayse is processing task number 2: 9
^CTermination signal received
Terminating all cilents
Terminating all providers
Statics
Name      Number Served
Ayse      2
Fatma     0
Murat     0
Hakan     0
Cengiz    1
Nuray     1
Ertan     0
Goodbye
burak@burak ~/Desktop/burakswor/cse344/final/clion $
```

```
burak@burak ~/Desktop/burakswor/cse344/final/clion
File Edit View Search Terminal Help
burak@burak ~/Desktop/burakswor/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
hileci3's task completed by Fatma in 7 seconds, cos(9)=0.988, cost is 500TL , total time spent 7.243 seconds
burak@burak ~/Desktop/burakswor/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
SERVER SHUTDOWN
burak@burak ~/Desktop/burakswor/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
hileci3's task completed by Nuray in 5 seconds, cos(9)=0.988, cost is 450TL , total time spent 5.313 seconds
burak@burak ~/Desktop/burakswor/cse344/final/clion $
```

```
script.sh (-/Desktop/burakswor/cse344/final/clion)
File Edit View Search Tools Documents Help
./client hileci1 C 1 127.0.0.1 5555
./client hileci2 Q 2 127.0.0.1 5555
./client hileci3 T 3 127.0.0.1 5555
./client hileci3 T 3 127.0.0.1 5555
./client hileci3 T 3 127.0.0.1 5555
```

Clientlar scirpt ile baglandı . Çalışma durumu başarılı

```
burak@burak ~/Desktop/burakworks/cse344/final/clion
File Edit View Search Terminal Help
Ertan 4 600 120
Provider Nuray waiting for tasks
Server is waiting for client connections at port 5555
Provider Ertan waiting for tasks
Provider Cengiz waiting for tasks
Provider Fatma waiting for tasks
Provider Ayse waiting for tasks
Provider Hakan waiting for tasks
Provider Murat waiting for tasks
hileci2 Q 2: Success
hileci3 T 3: Success
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Ayse
Provider Ayse is processing task number 0: 9
Client hileci2 (Q 2) connected, forwarded to provider Ayse
hileci3 T 3: Success
Client hileci3 (T 3) connected, forwarded to provider Ayse
Client hileci3 (T 3) connected, forwarded to provider Nuray
Provider Nuray is processing task number 0: 9
hileci1 C 1: Success
Client hileci1 (C 1) connected, forwarded to provider Cengiz
Provider Cengiz is processing task number 0: 1
^CTermination signal received
Terminating all cilents
Terminating all providers
Statics
Name Number Served
Ayse 0
Fatma 0
Murat 0
Hakan 0
Cengiz 0
Nuray 0
Ertan 0
Goodbye
==18241==
==18241== HEAP SUMMARY:
==18241== in use at exit: 0 bytes in 0 blocks
==18241== total heap usage: 56 allocs, 56 frees, 29,810 bytes allocated
==18241==
==18241== All heap blocks were freed -- no leaks are possible
==18241==
==18241== For counts of detected and suppressed errors, rerun with: -v
==18241== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
burak@burak ~/Desktop/burakworks/cse344/final/clion $
```

```
burak@burak ~/Desktop/burakworks/cse344/final/clion
File Edit View Search Terminal Help
hileci3's task completed by Fatma in 7 seconds, cos(9)=0.988, cost is 500TL , total
time spent 7.243 seconds
burak@burak ~/Desktop/burakworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
^Cburak@burak ~/Desktop/burakworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
^Cburak@burak ~/Desktop/burakworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
hileci3's task completed by Nuray in 5 seconds, cos(9)=0.988, cost is 450TL , total
time spent 5.313 seconds
burak@burak ~/Desktop/burakworks/cse344/final/clion $ ./script.sh
Client hileci3 is requesting T 3 from server 127.0.0.1:5555
hileci3's task completed by Nuray in 5 seconds, cos(9)=0.988, cost is 450TL , total
time spent 5.313 seconds
burak@burak ~/Desktop/burakworks/cse344/final/clion $
```

```
script.sh (~Desktop/burakworks/cse344/final/clion)
File Edit View Search Tools Documents Help
. client hileci1 C 1 127.0.0.1 5555
. client hileci2 Q 2 127.0.0.1 5555
. client hileci3 T 3 127.0.0.1 5555
. client hileci3 T 3 127.0.0.1 5555
. client hileci3 T 3 127.0.0.1 5555
```

Clientlar scipt ile baglanır baglanmaz SIGINT sinyali gonderildi . Valgrind testi .

## Programlar Hakkında

- \* Programlar yukarıda ki test caseler ile denendi.
- \* program çalıştırılırken bazen bind durumunda hata veriyor . Bilgisayarın dosyası silmesini bekliyorum.
- \* ilk durumda çalıştırılırken genelde çalışıyo.
- Log dosyası server için olusturuldu.