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Summary:

In this project of phase 2, I build connections between students and health center. Students open their input files and opens a TCP connection with the USC health center to send application.

After USC health center receive the applications from students. It analyzes the data and allocate the students to hospital according to their symptom and interest. I store the messages in the file named “Data” and I create some functions such as `get_data_from_hospital()` to extract the important information from those txt documents so that I can give students replies and give hospitals tasks lately.

Then I create UDP connection to send datagram to students and hospitals in `Healthcenter.cpp`.

The static TCP port number of my Database in the first phase will be $6000+818 = 6818$.

The static UDP port number of my program in the second phase will be as below:

HospitalA:21100+818=21918
HospitalB:21200+818=22018
HospitalC:21300+818=22118
Student1:21300+818=22218
Student2:21400+818=22318
Student3:21500+818=22418
Student4:21600+818=22518
Student5:21700+818=22618

Compilation Steps on terminal:

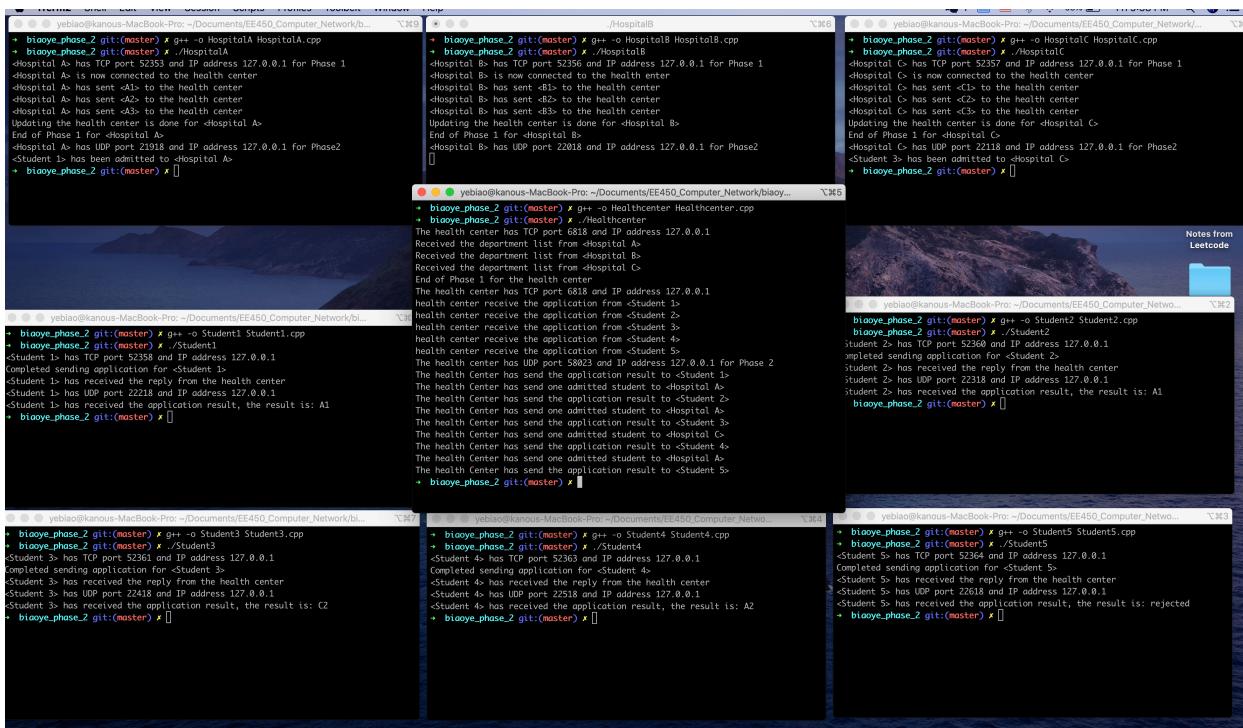
1. `g++ -o Healthcenter Healthcenter.cpp`
2. `g++ -o HospitalA HospitalA.cpp`
3. `g++ -o HospitalB HospitalB.cpp`
4. `g++ -o HospitalC HospitalC.cpp`
5. `g++ -o Student1 Student1.cpp`
6. `g++ -o Student2 Student2.cpp`

7. g++ -o Student3 Student3.cpp
8. g++ -o Student4 Student4.cpp
9. g++ -o Student5 Student5.cpp

Executing Steps:

1. ./Healthcenter
2. ./HospitalA
3. ./HospitalB
4. ./HospitalC
5. ./Student1
6. ./Student2
7. ./Student3
8. ./Student4
9. ./Student5

Executing Results:



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o HospitalA HospitalA.cpp
+ biaoye_phase_2 git:(master)* ./HospitalA
Hospital A> has TCP port 52361 and IP address 127.0.0.1 for Phase 1
<Student 1> is admitted to <the health center>
<Hospital A> has sent <A1> to the health center
<Hospital A> has sent <A2> to the health center
<Hospital A> has sent <A3> to the health center
<Hospital A> has sent <A4> to the health center
<Hospital A> has sent <A5> to the health center
Updating the health center is done for <Hospital A>
Updating the health center is done for <Hospital B>
Updating the health center is done for <Hospital C>
End of Phase 1 for <Hospital A>
<Hospital A> has UDP port 22218 and IP address 127.0.0.1 for Phase2
<Student 1> has been admitted to <Hospital A>
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o HospitalB HospitalB.cpp
+ biaoye_phase_2 git:(master)* ./HospitalB
Hospital B> has TCP port 52367 and IP address 127.0.0.1 for Phase 1
<Student 2> is admitted to <the health center>
<Hospital B> has sent <B1> to the health center
<Hospital B> has sent <B2> to the health center
<Hospital B> has sent <B3> to the health center
<Hospital B> has sent <B4> to the health center
<Hospital B> has sent <B5> to the health center
Updating the health center is done for <Hospital B>
End of Phase 1 for <Hospital B>
<Hospital B> has UDP port 22218 and IP address 127.0.0.1 for Phase2
<Student 2> has been admitted to <Hospital B>
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o HospitalC HospitalC.cpp
+ biaoye_phase_2 git:(master)* ./HospitalC
Hospital C> has TCP port 52367 and IP address 127.0.0.1 for Phase 1
<Student 3> is admitted to <the health center>
<Hospital C> has sent <C1> to the health center
<Hospital C> has sent <C2> to the health center
<Hospital C> has sent <C3> to the health center
<Hospital C> has sent <C4> to the health center
<Hospital C> has sent <C5> to the health center
Updating the health center is done for <Hospital C>
End of Phase 1 for <Hospital C>
<Hospital C> has UDP port 22218 and IP address 127.0.0.1 for Phase2
<Student 3> has been admitted to <Hospital C>
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o Student1 Student1.cpp
+ biaoye_phase_2 git:(master)* ./Student1
<Student 1> has TCP port 52368 and IP address 127.0.0.1
Completed sending application for <Student 1>
<Student 1> has received the reply from the health center
<Student 1> has UDP port 22218 and IP address 127.0.0.1
<Student 1> has received the application result, the result is: A1
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o Student2 Student2.cpp
+ biaoye_phase_2 git:(master)* ./Student2
<Student 2> has TCP port 52368 and IP address 127.0.0.1
Completed sending application for <Student 2>
<Student 2> has received the reply from the health center
<Student 2> has UDP port 22218 and IP address 127.0.0.1
<Student 2> has received the application result, the result is: A1
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o Student3 Student3.cpp
+ biaoye_phase_2 git:(master)* ./Student3
<Student 3> has TCP port 52361 and IP address 127.0.0.1
Completed sending application for <Student 3>
<Student 3> has received the reply from the health center
<Student 3> has UDP port 22218 and IP address 127.0.0.1
<Student 3> has received the application result, the result is: C2
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o Student4 Student4.cpp
+ biaoye_phase_2 git:(master)* ./Student4
<Student 4> has TCP port 52363 and IP address 127.0.0.1
Completed sending application for <Student 4>
<Student 4> has received the reply from the health center
<Student 4> has UDP port 22218 and IP address 127.0.0.1
<Student 4> has received the application result, the result is: A2
+ biaoye_phase_2 git:(master)* []

```



```

yebiao@kanous-MacBook-Pro:~/Documents/EE450_Computer_Network/biaoye_phase_2 git:(master)* g++ -o Student5 Student5.cpp
+ biaoye_phase_2 git:(master)* ./Student5
<Student 5> has TCP port 52368 and IP address 127.0.0.1
Completed sending application for <Student 5>
<Student 5> has received the reply from the health center
<Student 5> has UDP port 22218 and IP address 127.0.0.1
<Student 5> has received the application result, the result is: rejected
+ biaoye_phase_2 git:(master)* []

```

```
● ● ● yebiao@kanous-MacBook-Pro: ~/Documents/EE450_Computer_Network/b... ⌂⌘9
→ biaoye_phase_2 git:(master) ✘ g++ -o HospitalA HospitalA.cpp
→ biaoye_phase_2 git:(master) ✘ ./HospitalA
<Hospital A> has TCP port 52353 and IP address 127.0.0.1 for Phase 1
<Hospital A> is now connected to the health center
<Hospital A> has sent <A1> to the health center
<Hospital A> has sent <A2> to the health center
<Hospital A> has sent <A3> to the health center
Updating the health center is done for <Hospital A>
End of Phase 1 for <Hospital A>
<Hospital A> has UDP port 21918 and IP address 127.0.0.1 for Phase2
<Student 1> has been admitted to <Hospital A>
→ biaoye_phase_2 git:(master) ✘
```

```
● ● ● yebiao@kanous-MacBook-Pro: ~/Documents/EE450_Computer_Network/bi... ⌂⌘8
→ biaoye_phase_2 git:(master) ✘ g++ -o Student1 Student1.cpp
→ biaoye_phase_2 git:(master) ✘ ./Student1
<Student 1> has TCP port 52358 and IP address 127.0.0.1
Completed sending application for <Student 1>
<Student 1> has received the reply from the health center
<Student 1> has UDP port 22218 and IP address 127.0.0.1
<Student 1> has received the application result, the result is: A1
→ biaoye_phase_2 git:(master) ✘
```

```
● ● ● yebiao@kanous-MacBook-Pro: ~/Documents/EE450_Computer_Network/biaoy... ⌂⌘5
→ biaoye_phase_2 git:(master) ✘ g++ -o Healthcenter Healthcenter.cpp
→ biaoye_phase_2 git:(master) ✘ ./Healthcenter
The health center has TCP port 6818 and IP address 127.0.0.1
Received the department list from <Hospital A>
Received the department list from <Hospital B>
Received the department list from <Hospital C>
End of Phase 1 for the health center
The health center has TCP port 6818 and IP address 127.0.0.1
health center receive the application from <Student 1>
health center receive the application from <Student 2>
health center receive the application from <Student 3>
health center receive the application from <Student 4>
health center receive the application from <Student 5>
The health center has UDP port 58023 and IP address 127.0.0.1 for Phase 2
The health Center has send the application result to <Student 1>
The health Center has send one admitted student to <Hospital A>
The health Center has send the application result to <Student 2>
The health Center has send one admitted student to <Hospital A>
The health Center has send the application result to <Student 3>
The health Center has send one admitted student to <Hospital C>
The health Center has send the application result to <Student 4>
The health Center has send one admitted student to <Hospital A>
The health Center has send the application result to <Student 5>
→ biaoye_phase_2 git:(master) ✘
```