

## [104-2] Computer Network- HW#2

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**Due: 4.7 (Fri.) 21:00**

1. 本次作業請於期限內至ceiba作業區上傳，格式為單一zip檔，解壓縮後應恰為一個以學號為名的資料夾，資料夾內有一以學號為檔名的pdf檔及二子資料夾，如下例所示。

```
--- inside *.zip
r04942126.pdf
r04942126/src_P1
r04942126/src_P2
```

2. 逾期繳交不予計分，請務必盡早開始，並以自己的努力完成。
3. Problem 1的client最後需與助教於工作站架設的server連線並傳送你的正確資料(注意步驟V之後的操作)，若未完成此步驟將斟酌扣除部份成績。
4. 如有任何相關問題歡迎來信，並預祝作業練習順利！

### Problems:

#### 1. [Socket Programming - TCP]

With a TCP Server provided to you, we're going to construct a client to communicate with it. Fig. 1-1 describes the messages sent between client and server.

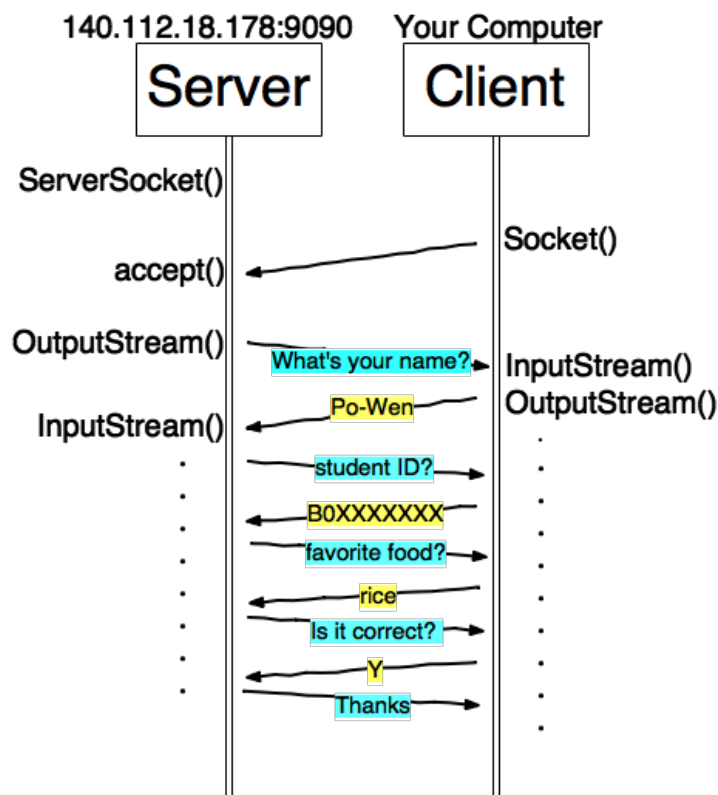
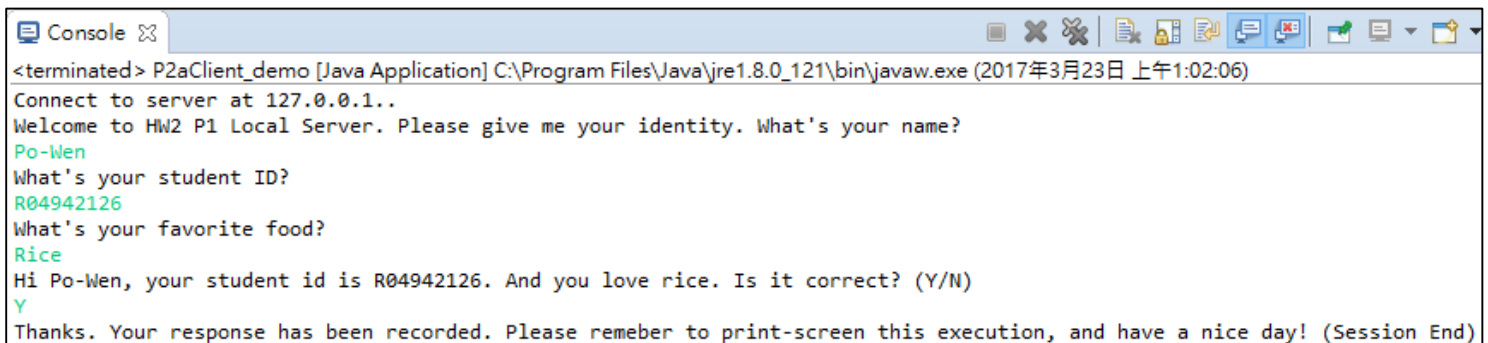


Fig. 1-1 Message flow between server and client

Please refer to the following steps:

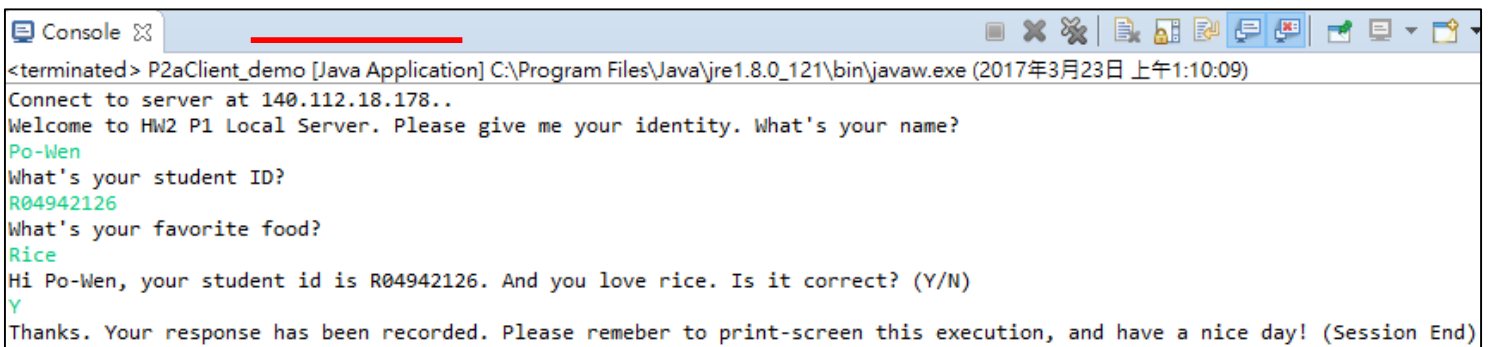
- I. Read the source code of **P1Server.java**, try your best to understand it. (Hint: don't bother with the exception handling, please just skip any code inside the "catch" blocks or related to exception.)
- II. Open **P1Client.java**, finish it such that it can 1) read the message sent from server and 2) send the user-input message to the server. There will be 5 messages from server and 4 messages sent to the server alternatively like Fig 1-1.
- III. Compile and run the P1Server first, and then run P1Client.
- IV. Test it under your local machine. If you do every correct, the execution should be like Fig. 1-2. Make sure your program runs successfully before jumping to the next step.



```
<terminated> P2aClient_demo [Java Application] C:\Program Files\Java\jre1.8.0_121\bin\javaw.exe (2017年3月23日 上午1:02:06)
Connect to server at 127.0.0.1..
Welcome to HW2 P1 Local Server. Please give me your identity. What's your name?
Po-Wen
What's your student ID?
R04942126
What's your favorite food?
Rice
Hi Po-Wen, your student id is R04942126. And you love rice. Is it correct? (Y/N)
Y
Thanks. Your response has been recorded. Please remeber to print-screen this execution, and have a nice day! (Session End)
```

Fig. 1-2 Connect to server on local machine(127.0.0.1)

- V. In P1Client.java, change the serverAddress to "140.112.18.178." Execute it, and input your real identity information. After you get similar results like Fig. 1-3, please **print-screen it and attach it into your submitted \*.pdf**. And check the result is recorded on <http://140.112.18.178:9091>.



```
<terminated> P2aClient_demo [Java Application] C:\Program Files\Java\jre1.8.0_121\bin\javaw.exe (2017年3月23日 上午1:10:09)
Connect to server at 140.112.18.178..
Welcome to HW2 P1 Local Server. Please give me your identity. What's your name?
Po-Wen
What's your student ID?
R04942126
What's your favorite food?
Rice
Hi Po-Wen, your student id is R04942126. And you love rice. Is it correct? (Y/N)
Y
Thanks. Your response has been recorded. Please remeber to print-screen this execution, and have a nice day! (Session End)
```

Fig. 1-3 Connect to our online server

- VI. Please **put your source code under [student\_id]/src\_P1**. Congratulation!

## 2. [Socket Programming - UDP]

a. Consider a UDP server and a UDP client. If the client sends 10000 packets back to back to the server (i.e. continually send 10000 packets), how many packets will the server receive? And how many of them are lost? Please design an experiment running on your local machine.

b. **(Bonus)** Make your client and server run on different machine as far as you can (through wireless transmission will be better). Compare with the result with both client and server running on your local machine.

Please answer the above questions based on your own result on the \*.pdf, and comment on it. Please also print-screen your execution and attach it to \*.pdf. Finally, put your source code under [student\_id]/src\_P2.

## 3. [Application Layer Protocol]

請參考課本第二章或第七章，選擇一項應用層通訊協定並研讀之（但不限於課本提及者）。研讀後請簡述該協定運作方式，並試舉一例作解釋。

本題請以中文作答於 pdf 檔，並參考下列評分指標。如果有，請附上參考資料來源。

評分指標	比重	備註
描述是否正確、精準	50%	
呈現方式是否清楚	35%	必要時可輔以圖文說明
協定本身深度或難易度	15%	鼓勵研讀較具挑戰性的協定