* Socket Programming HW1

GOAL: Write a client socket program that transmits 10-digit student id of yours to the server program. The server program will be provided to you: you can download it from Blackboard.

WHAT TO SUBMIT: Upload your single source code file to BlackBoard by due date. Late submissions are not accepted. The name of the file MUST be of the form "xxxxxxxxxx.c", where xxxxxxxxxx is the 10-digit student ID. For example, if your student ID is 1234567890, your file name MUST be 1234567890.c

WHAT IS PROVIDED: As mentioned above, we will upload an executable file, which is the server program, on the BlackBoard. You can test the correctness of your code in the Ubuntu terminal using the server program as follows:

1) Run a command prompt. Download and run the server executable file on the command prompt.
2) The server program will await connection from **localhost** at port number 47500.
3) Run another command prompt. Compile and run your code. **Your client program should try to connect to the server program using connect() function.**
4) If the connection succeeds, the server program will print "Connect Success!" on the command prompt.
5) After the connection, client program should transmit 10-digit student id to the server using send() function. The **format of student id data must be a null-terminated 11-byte ASCII string**.
6) The server program will print the received message on the command prompt if the format of received data was correct.
7) **The client program should terminate automatically after transmitting data** to the server.

HINT: You may refer to the socket creation & data transmission in the textbook (P41~P44).

1) Compile and run the example codes in the textbook first to test your environment.
2) Include <string.h> and <stdlib.h> in your codes.

GRADING: Assignments will be graded using the following procedure:

1) TA will run server program (same one as uploaded server program for self-test).

2) TA will compile the submitted 20xxxxxxxx.c .

3) TA will run the executable file 20xxxxxxxx .

4) Total is 10 points:

   ① +3 points if the server program prints "Connect Success!" message on the command prompt.

   ② +1 points if the server successfully received any data.

   ③ +1 points if the correct format of data received in ② was a null-terminated 11-byte ASCII string and prints it on the command line prompt..

   ④ +5 points if the printed string and student id of submitted file name is correct. TA will be checked directly.

REQUIREMENTS: Your code must satisfy ALL of the below requirements; if any one is not satisfied, you will get zero grade.

1) Use **c language**. (no C++, JAVA, etc.) TA will use an automated program to compile your code using C compiler. **If your program fails to compile, you will get zero grade.**

2) Your client program code **should not receive any command line arguments**.

3) Submit your c source code by uploading it to BlackBoard by due date. **The name of your file must be your student id.**
   ex) 2016001111.c

4) **The client program should terminate automatically after transmitting data** to the server.

5) Use port number **47500**.

How to install Ubuntu virtual machine

1) Download and install virtual box at https://www.virtualbox.org/wiki/Downloads

2) Download virtual machine at

https://drive.google.com/file/d/0B9vhqEBaJ-ZDUGIxWWlNOGFqZWM/view?usp=sharing

3) Run virtual box

4) Click “file” > “Import Appliance”

5) Select downloaded virtual machine file “hw_vm.ova”

6) Modify settings(optional)

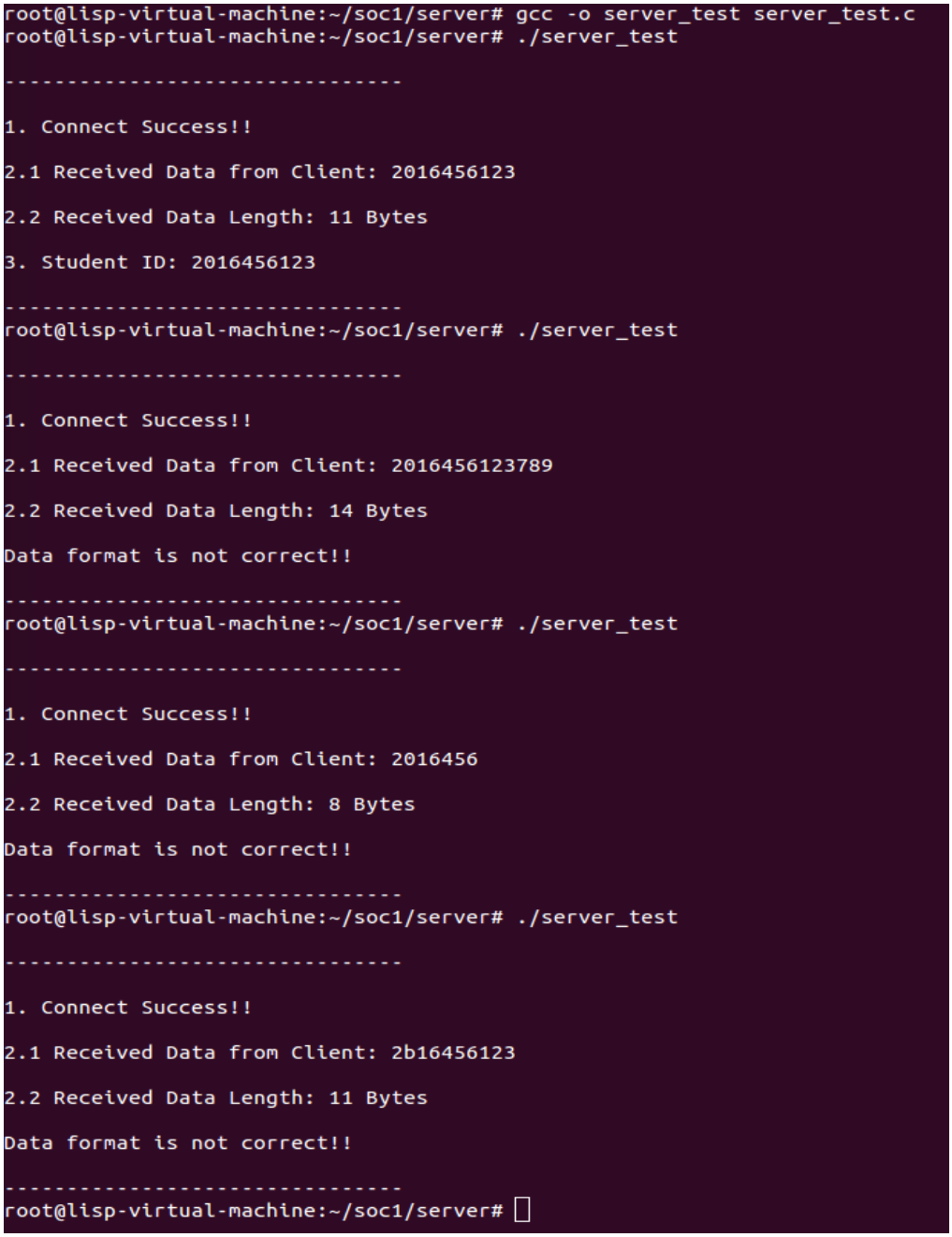
7) Click “import” to install virtual machine

8) Ubuntu password : **hw**

* Example testing results

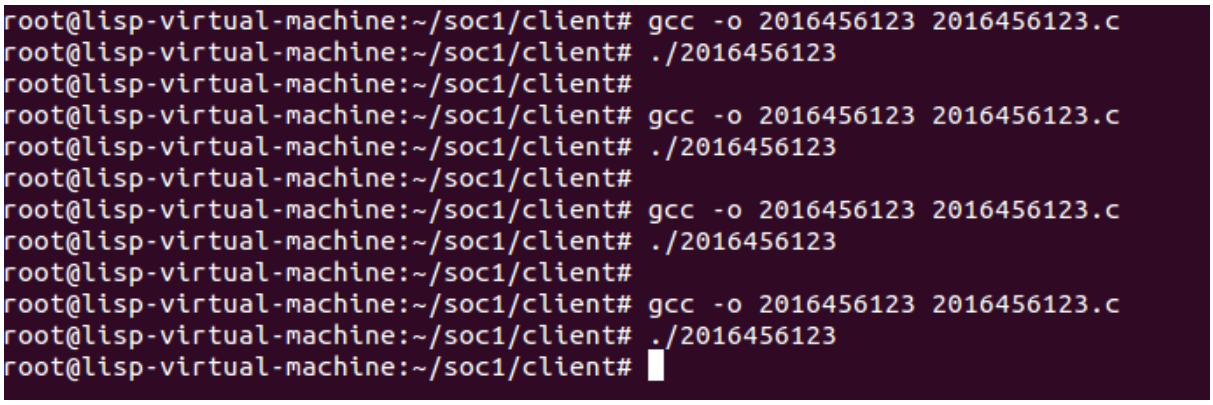
Server

Below is a capture of server-side command prompt. There were four test attempts, and only the first one got full 10 points.



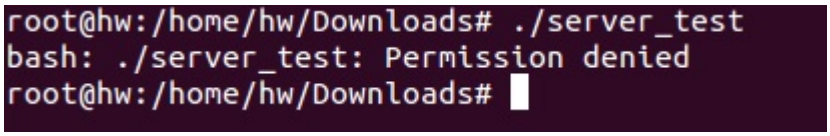
Client

Below is a capture of client-side command prompt. It shows how your client program is compiled and executed. There were four test attempts, as stated above.



* FAQ

1. When I type "./server_test", I get the message "bash: ./server_test: Permission denied".



Answer>

After downloading "server_test" file from BlackBoard, you should do following procedures.

1. Right click "server_test" file you downloaded in Ubuntu.
2. Click properties, go to permissions tab, and check "Allow file executing as program"

2. Can I use Windows "visual C" or Mac's "virtual box" or 32bit version of Linux?

Answer>

The code example in the textbook is based on Linux. Do not use Windows "visual C"; your source code must compile correctly in Linux. If you use windows socket programming, it may not compile.

Some students also asked about the failure of the linux image (Ubuntu) inserted in a Mac's virtualbox. We have no environment using Mac. You should use bootcamp or need to install any other virtual machine based on Windows.

Our linux image is 64bit version of Linux. "server_test file" was created on 64 bit version. If you run this file on your 32bit version of linux, it will show an error message. We already tested.

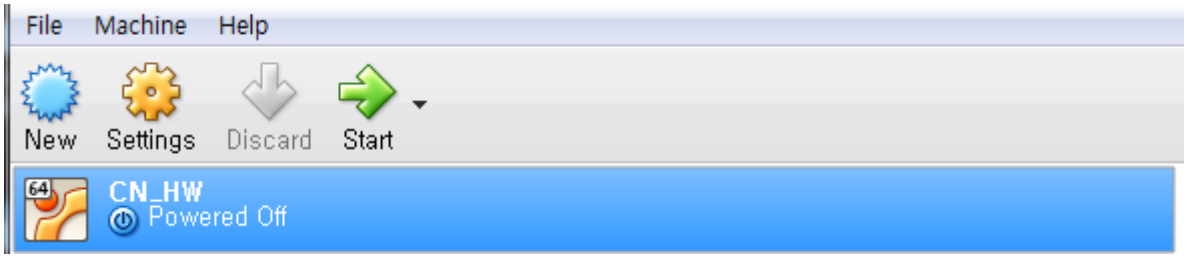
Because of the above problems, we provided a Linux image for virtual box in order to perform in the same environment.

In short, you install the virtualbox on Windows. Then, insert our linux image(Ubuntu) in the virtualbox.

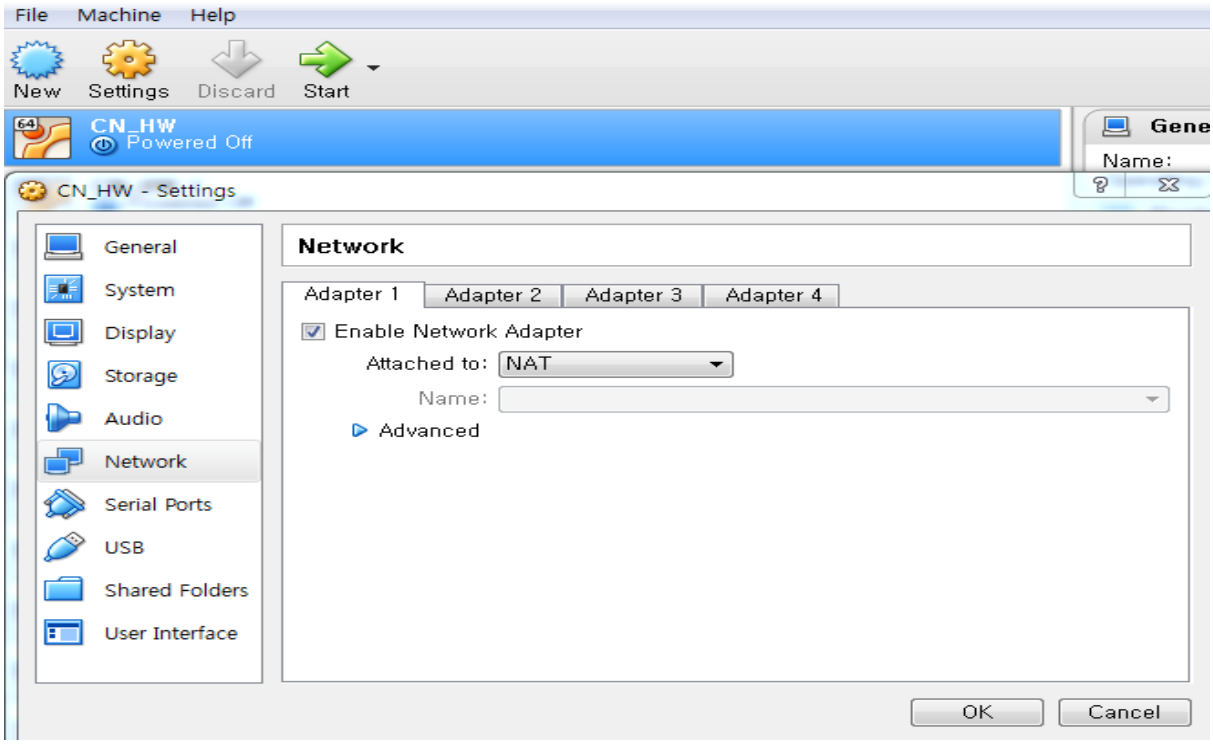
3. How to connect to Internet from virtualbox,

Answer>

Click your virtual machine, go to setting.



In the network, check "**Enable Network Adapter**".



4. How to upload the source file of socket_hw in blackboard ?

Answer>

1. Go to the blackboard -->materials

2. Click "Preview Upload Assignment: Programming Assignment #1 (due 10/07 12:00pm-at lunch time, not midnight!) "
3. Upload and submit your C file.

Just upload and submit your source code with ".c" extension. You don't need to submit compiled file!!