Homework #2: In this program assignment, you will write a TCP echo server that endlessly does the following functions:

1. Receive a string (A) sent from the TCP echo client (for example, “Hello”).
2. Receive another string (B) sent from the same TCP echo client (for example, “World”).
3. Receive student id sent from the same TCP echo client
4. Form a string (C) that is [(A)+(B)+”: ”+ student id], Send back string (C) to the TCP echo client.

   For the above example: string (C) => “Hello World: [M1234567]”
5. Note that before TCP echo client send the string (A) and (B), it checks that string (A) character is between 5 to 10 and string (B) character counts must be even, if string (A) and (B) has pass the check, the TCP echo wait for the student id for 5 seconds, if server receive the student id in 5 seconds, then sent back string (C) to the client, otherwise, send back “Didn’t receive student id” to the client.

In addition, you will write a TCP echo client that endlessly does the following functions:

1. Take input from the keyboard, one line at a time, until the user hits EOF (CTRL+d). When the EOF is entered, it should close the connection to the server.
2. For each input line, send it to the TCP echo server.
3. After sending every lines to the TCP echo server, receive the echo reply string and print it on the screen.
4. Make sure the string (A) and (B) is legal before sending to the echo server. If string (A) or (B) is illegal , print “error” and wait for the new input.

The expected correct result is that the client can correctly output the [(A)+(B)+ “: ”(C)] after sending three input (string (A)、(B) and student id) to the TCP echo server. Furthermore, the TCP echo client should check the string (A) and (B) is legal or not before sending to the echo server, when echo server receive string (A) and (B), then wait for 5 seconds for echo client to send student id, if server receives student id in 5 seconds, send back string (C) to the client, otherwise, send back “Didn’t receive student id” to the client.

No late work is acceptable and we are strict on this rule. Please write the programs on your own and submit your work to http://ilearn2.fcu.edu.tw before **October 5th, 23:59**, 2025. The submitted homework has to be a **compressed file (.zip or .rar) named by your student ID** including the following things:

1. README: a plain text file describes your student id, your name, what are in your homework set, and how to compile and execute your programs. (盡量詳細)
2. The source code with detail comments. (程式碼原檔)
3. Screenshot of the result. (執行結果截圖)

4. Anything that will help us to understand your programs.