In this lab, we'll make python programs for clients and servers using UDP and TCP.

In the first 2 parts of this Lab., we'll make this client-server **"ToUpper"** distributed application for UDP and TCP respectively:

1. The client reads a line of characters (data) from its keyboard and sends the data to the server.
2. The server receives the data and converts the characters to uppercase.
3. The server sends the modified data to the client.
4. The client receives the modified data and displays the line on its screen.

Hint: Look at the python code examples in the book, page 186-194.

For each part of the Lab., you may run the server on a friend's computer and the client on your own computer and document the result by screenshots of the outcome.

Find your friends IP-number by executing the ipconfig (Windows) or ifconfig/ ip addr (Linux) command on his machine. Choose an appropriate port number for your application.

If you don't have a friend or if you experience prohibitive network restrictions, you can run both the server and the client on your own computer and use 'localhost' as the IP address.

Part 1. Socket Programming with UDP

Make Python programs for the client and the server to implement the **ToUpper** application using UDP.

Part 2. Socket Programming with TCP

Make Python programs for the client and the server to implement the **ToUpper** application using TCP.

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Part 3. Change the application.

Change the functionality of one of your network applications (UDP or TCP). For example, instead of converting all the letters to uppercase, the server could count the number of characters in the received data and return this number. Or come up with an interesting change yourself.

What to put in the journal

The journal should contain all the python code and printouts from execution of the programs.

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