# COE768
Lab 3: File download Application based on TCP

In this lab, a file download application based on TCP will be implemented. This application allows a client to download one file, specified by the user, from the server.

I. General Approach

After establishing a TCP connection between the client and the server, the user on the client side enters the filename to the terminal, the client retrieves the filename and sends the name to the server. When the server receives the filename, it will try to open the requested file. If the file opening is successful, the server will send the file to the client; if it is not successful, the server will send back an error message. Note that since the file size may be greater than the packet size, the server may need to send multiple packets until all the data are sent. The server closes the TCP connection after the transmission of the file or error message. On the client side, the client must call *read* repeatedly until the end of transmission. To the client, the closing of the TCP connection marks the end of the transmission. The following Figure illustrates the case where the download is successful.
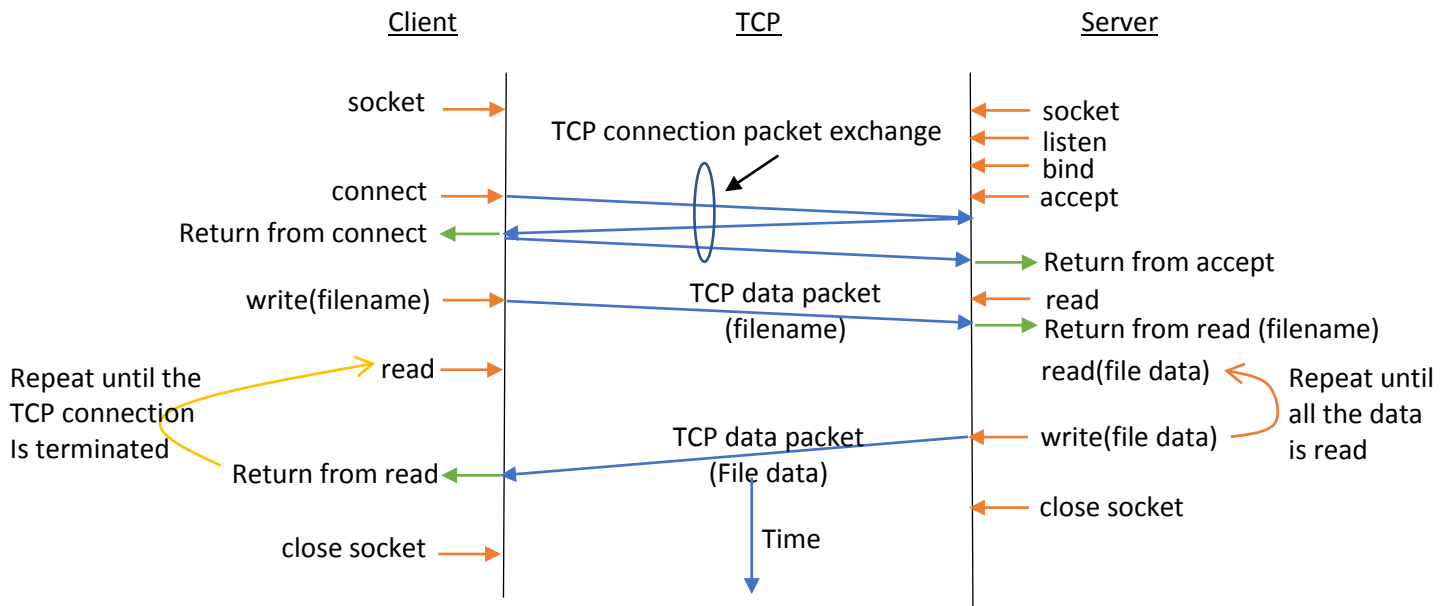
II. Additional Requirements

1. The maximum number of bytes carried by a packet is 100;

2. The file size must be greater than 100 bytes;

3. The client saves the file data into a local file while displays the error message in the terminal window. To distinguish file data from error message, the server can insert different characters in the first byte position. When the client receives the first batch of

data, it examines the first byte to determine if the rest of the data is file data or error message.

What you needed to demonstrate to your TA

1. Show that your client program can download a file from the server;

2. Show that your client program receives and display an error message if the requested file cannot be found or opened by the server.

3. Go over your programs, locate and explain the parts of the code that deal with the following implementations:

   - How the server transfers the data from the file to the client.
   - The condition that the server stops transmitting and terminates the connection.
   - The condition that the client stops receiving and exits.