

# **Assignment 1**

## **V.2: Data Communication & Networking**

### **Manual File**

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The requirements according to the assignment are:

1. Send and receive a TEXT from Client machine and receive from the Server machine
2. Sending files and receiving files such as text/images/audio/video.
3. Client Model should have following functions
  - 1) Socket
  - 2) Connect
  - 3) Write
  - 4) Read
  - 5) close
4. Server Model should have following functions
  - 1) Socket
  - 2) Bind
  - 3) listen
  - 4) Accept
  - 5) Read
  - 6) Write
  - 7) close

All the requirements have been fulfilled in the server.c and client.c C program files.

In overview,

A message send and receive application between client and server has been developed using socket programming using TCP protocol.

Also, File(text/image/audio/video) transfer application between client and server has also been developed using socket programming using TCP protocol.

To run the whole application, please follow the following steps:

## **STEP 1:**

### If running on a single computer:

Create two folders named "Client side" and "Server side" and paste the client.c file in client side and server.c in server side. Open two terminals, one with Client side directory and another with Server side directory.

### If running on two machines:

Create the Client side folder on one machine and paste client.c in it and open the terminal with that directory

Create the Server side folder on one machine and paste server.c in it and open the terminal with that directory.

Using the "ipconfig" command(if Linux machine), find the IP address of the server machine and inform it to the client side user.

## **STEP 2:**

### On Server side terminal:

Run "gcc server.c -o server"

### On Client side terminal:

Run "gcc client.c -o client"

These commands will generate the executable files.

## **STEP 3:**

### On Server side terminal:

Run "./server portnumber" (In place of portnumber, enter any unique number between 1024 to 49151. The same number should be used by the client side also to connect with the server)

Using the same port along with the server IP address,

### On Client side terminal:

Run "./client ipaddress portnumber" (In place of ipaddress, enter the IP address of the server side terminal. If the terminals are running on the same machine, Local IP address 127.0.0.1 can be used)

## **STEP 4:**

After running the client side terminal command in step 3, a menu system will appear where user can select between two options from the client side terminal :

1. Send File
2. Chat with server

Users can select any of the operations by entering either "1" or "2" and pressing enter.

If the user selects 1) Send file:

List of options with file types will appear asking the user to select the file type they want to transfer:

1. Text file
2. Image
3. Audio
4. Video

Users can select the file type they want by entering either “1” or “2” or “3” or “4”.

After selecting the desired file type, they should enter the file name along with the extension, example: “example.txt”, “example.png”, “example.mp3”, “example.webm”

NOTE: Here the file should be pasted in the Client side folder for the file to be accessed by client.c and to be transferred to server.c to the Server side folder.

After the file is transferred successfully, a message will appear saying that the file has been sent and the process will be finished.

To repeat the process, repeat from STEP 3 using different port numbers.

If the user select 2) Chat with server:

The chat application will be accessed and the client and server can chat with each other.

First the client will message and then the server will reply and it keeps on going.

The client or server can close the chat and exit anytime by entering “Bye”.