CS 558 Assignment 2 Socket Programming

Application # 3 Base64 encoding system using Client-Server socket programming

Group 18

Shubham Agarwal – 214101053

 Sigilipalli Apuroop- 214101054

Souvik Gorai- 214101055

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1. Implemented this application in **C** programming language.

2. Using Structures to give the definition of message used for communication. <Message Type><Message>

> **#define MSG_LEN 256**
> **struct packet {**
>   **int msgType;**
>   **char msg [MSG_LEN];**
> **};**

Different types of messages that can be exchanged between server and client are as follows:

1. Type-1: **1<Message content>** (space between 1 and message content will be considered a part of message). 2. Type-2: **2<ACK>** Acknowledgement message sent by server on successful delivery of the Type-1 message. 3. Type-3: **3<Connection Termination Message>** (Will disconnect the client with the server.)

3. Server IP Address and Server Port Number are passed from command line arguments to the respective server and client programs.

> **Compiling –** gcc -o server server.c   gcc -o client client.c
> > Server's Execution ->**. /server 8989**
> > client's Execution ->**. /client 127.0.0.1 8989**
> **Here server port is 8080 and server IP Address is 127.0.0.1.**

4. using the **SOCK_STREAM** which is reliable, 2-way, connection-based service using TCP sockets.

> **socket (AF_INET, SOCK_STREAM, 0)**

SOCK_STREAM. **Provides sequenced, two-way byte streams with a transmission mechanism for stream data**. This socket type transmits data on a reliable basis. This returns –1 upon failure of creation.

5. When Server establishes the TCP connection with client


```
souvi@DESKTOP-4B5MRCG /cygdrive/d/Assignment/System lab/Assignemnt-4
$ ./server 8989
New connection , socket fd is 4 , ip is : 127.0.0.1 , port : 1461
Adding to list of sockets as 0
```

6. When client send the Type-1 message to the server via TCP port.


```
souvi@DESKTOP-4B5MRCG /cygdrive/d/Assignment/System lab/Assignemnt-4
$ ./client 127.0.0.1 8989
Welcome to team
Please enter the message :
1Hwlcome to IIT Guwahati...
2 Here is the Acknowledgement for your previous msg
Please enter the message :
```

7.Server prints the encoded message received and decode the original message to print. Server send the Type 2 message to the client who sent that message.

```
souvi@DESKTOP-4B5MRCG /cygdrive/d/Assignment/System lab/Assignemnt-4
$ ./server 8989
New connection , socket fd is 4 , ip is : 127.0.0.1 , port : 1461
Adding to list of sockets as 0
Here is the msg : SHdsY29tZSBObyByBJSVQgR3V3YWhhdGkuLi4=
Decoded op: Hwlcome to IIT Guwahati...
```

8. Once the message is transmitted successfully, Client receives the acknowledgement with id =2. The client and server remain in a loop to communicate any number of messages.

9. When client sends message with id =3, Server will close the connection with that client.

```
Please enter the message :
3
```

```
Host disconnected , ip 127.0.0.1 , port 1461
```

10. Concurrent Server can accept connections from multiple clients.