EXPERIMENT: 29

CREATING THE APPLICATIONS USING TCP ECHO SERVER AND CLIENT IN

C

Aim: To create Applications using TCP ECHO SERVER and CLIENT.

Algorithm :

SERVER:

STEP1:Start

STEP2: Declare the variables for the socket

STEP3: Specify the family, protocol, IP address and port number

STEP4: Create a a socket using socket() function

STEP 5: Bind the IP address and Port number

STEP6: Listen and accept the client's request for the connection

STEP7: Read the client's message

STEP8: Display the client's message

STEP 9: Close the socket

STEP10: Stop

CLIENT:

STEP1:Start

STEP2: Declare the variables for the socket

STEP3: Specify the family, protocol IPaddress and port number

STEP4: Create a socket using socket() function

STEP5: Call the connect() function

STEP6: Read the put message

STEP7: Send the input message to the server

STEP 8: Display the server's echo

STEP 9: Close the socket

STEP 10: Stop

Procedure:

TCP Echo Server-side implementation:

1. Create a TCP socket using the `socket()` function with the `AF_INET` address family and

`SOCK_STREAM` socket type.

2. Set socket options using the `setsockopt()` function to allow reuse of the address and port.

3. Bind the socket to a specific IP address and port using the `bind()` function.

4. Listen for incoming connections using the `listen()` function.

5. Accept a client connection using the `accept()` function, which returns a new socket descriptor for the accepted connection.

6. Receive data from the client using the `recv()` function on the accepted socket descriptor.

7. Process the received data if necessary.

8. Optionally, send a response back to the client using the `send()` function on the accepted socket descriptor.

9. Close the accepted socket descriptor using the `close()` function.

10. Close the server socket descriptor using the `close()` function.

TCP Echo Client-side implementation:

1. Create a TCP socket using the `socket()` function with the `AF_INET` address family and `SOCK_STREAM` socket type.

2. Set the server address and port in a `struct sockaddr_in` structure.

3. Connect to the server using the `connect()` function with the server socket descriptor and the server

address structure.

4. Send data from the client to the server using the `send()` function on the connected socket descriptor.

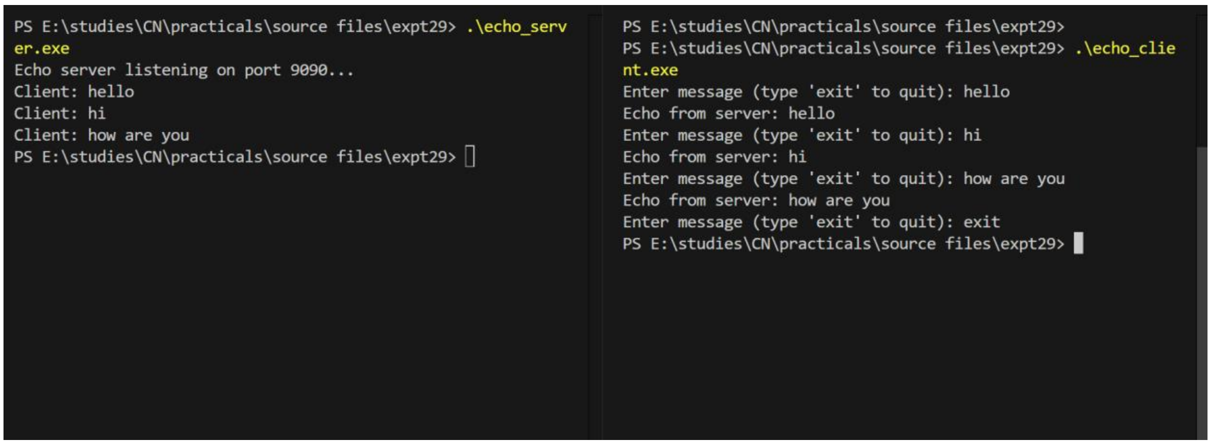
5. Receive the response from the server using the `recv()` function on the connected socket descriptor.

6. Process and display the received data as needed.

7. Close the connected socket descriptor using the `close()` function.

The echo server simply returns back the received data, allowing the client to see the echoed message.

Remember to include the necessary header files (`<stdio.h>`, `<stdlib.h>`, `<string.h>`, `<sys/socket.h>`, `<netinet/in.h>`, etc.) and handle errors appropriately in the code.



```
PS E:\studies\CN\practicals\source files\expt29> .\echo_serv
er.exe
Echo server listening on port 9090...
Client: hello
Client: hi
Client: how are you
PS E:\studies\CN\practicals\source files\expt29>
```

```
PS E:\studies\CN\practicals\source files\expt29>
PS E:\studies\CN\practicals\source files\expt29> .\echo_clie
nt.exe
Enter message (type 'exit' to quit): hello
Echo from server: hello
Enter message (type 'exit' to quit): hi
Echo from server: hi
Enter message (type 'exit' to quit): how are you
Echo from server: how are you
Enter message (type 'exit' to quit): exit
PS E:\studies\CN\practicals\source files\expt29>
```

Result: Thus the Applications using TCP ECHO SERVER AND CLIENT is created successfully