

Practical 12

AIM: - a) Implement echo client server using TCP/UDP sockets.

Algorithm:-

Algorithm for TCP Server

1. Initialize Server Socket:

- Create a TCP socket using `socket.socket(socket.AF_INET, socket.SOCK_STREAM)`.

2. Bind Server to Host and Port:

- Bind the socket to a specified IP address and port using `server_socket.bind((host, port))`.

3. Start Listening:

- Set the server to listen for incoming connections using `server_socket.listen()`.

4. Accept Client Connections:

- Enter an infinite loop to accept connections.
- Accept an incoming client connection with `conn, addr = server_socket.accept()`, where `conn` is the client socket and `addr` is the client's address.
- Print the client's address to confirm the connection.

5. Receive and Echo Data:

- Enter another loop to handle data exchange with the client:
 - Receive data from the client with `data = conn.recv(1024)`.
 - If no data is received (client disconnects), exit the inner loop.
 - Print the received message.
 - Send the same data back to the client to echo it with `conn.sendall(data)`.

6. Close the Connection:

- Once the client has finished, close the connection (`conn.close()`).

Algorithm for TCP Client

1. Initialize Client Socket:

- Create a TCP socket using `socket.socket(socket.AF_INET, socket.SOCK_STREAM)`.

2. Connect to Server:

- Connect the client socket to the server using `client_socket.connect((host, port))`.

3. Send Message to Server:

- Prompt the user for a message to send with `message = input("Enter message to send: ")`.
- Send the encoded message to the server using `client_socket.sendall(message.encode())`.

4. Receive Response from Server:

- Wait to receive the server's response using `data = client_socket.recv(1024)`.
- Print the server's response after decoding it.

5. Close the Client Socket:

- The client socket will close automatically once the with block is exited.

OUTPUT:-

```
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Chandru>cd "C:\Users\Chandru\OneDrive\Desktop\EX-12(a)"

C:\Users\Chandru\OneDrive\Desktop\EX-12(a)>python tcp_client.py
Enter message to send: hello chanddraprakash
Received from server: hello chanddraprakash

C:\Users\Chandru\OneDrive\Desktop\EX-12(a)>|
```

```
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Chandru>python --version
Python 3.10.0

C:\Users\Chandru>cd "C:\Users\Chandru\OneDrive\Desktop\EX-12(a)"

C:\Users\Chandru\OneDrive\Desktop\EX-12(a)>python tcp_server.py
TCP Server is listening on 127.0.0.1:12345
Connected by ('127.0.0.1', 59957)
Received: hello chanddraprakash
```