Reg.No.: 2116220701058

Practical 12

AIM:

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

ALGORITHM:

TCP Server Algorithm

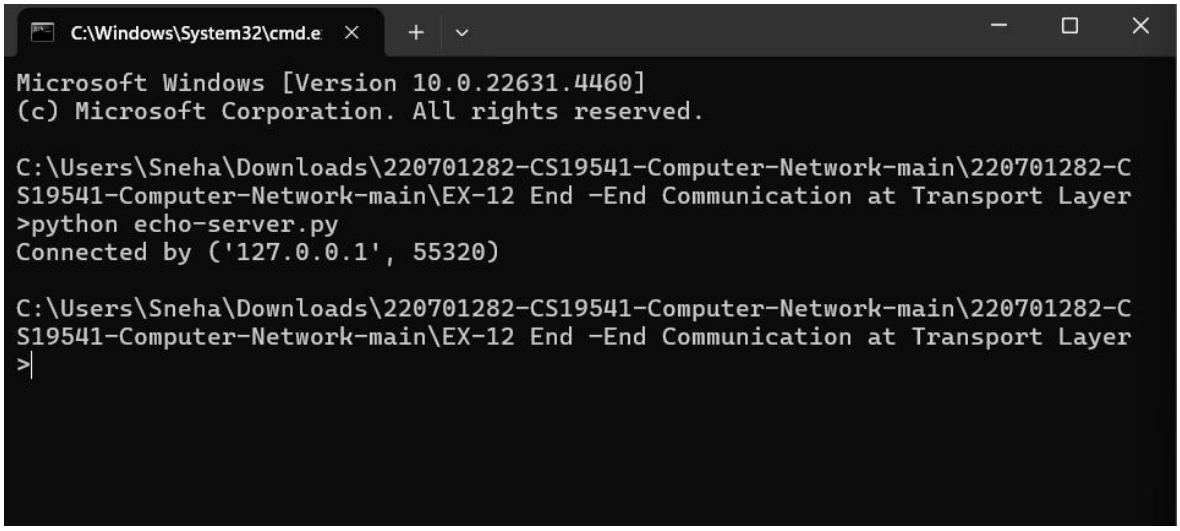
1. **Initialize the Server**:
    - Create a TCP socket using socket.socket(socket.AF_INET, socket.SOCK_STREAM).
2. **Bind the Server**:
    - Bind the server socket to a specific IP address (127.0.0.1) and port (12345).
    - This will allow the server to listen for incoming connections on that IP and port.
3. **Listen for Connections**:
    - Set the server socket to listen mode using .listen().
    - This allows the server to accept multiple connections.
4. **Accept Connections in a Loop**:
    - Start an infinite loop to continuously accept client connections.
    - For each connection:
        - Use .accept() to accept the incoming connection from a client.
        - Retrieve the client's address and the socket for the connection.
5. **Handle Client Communication**:
    - Inside another loop, handle the communication with the connected client:
        - Receive data from the client using .recv(1024).

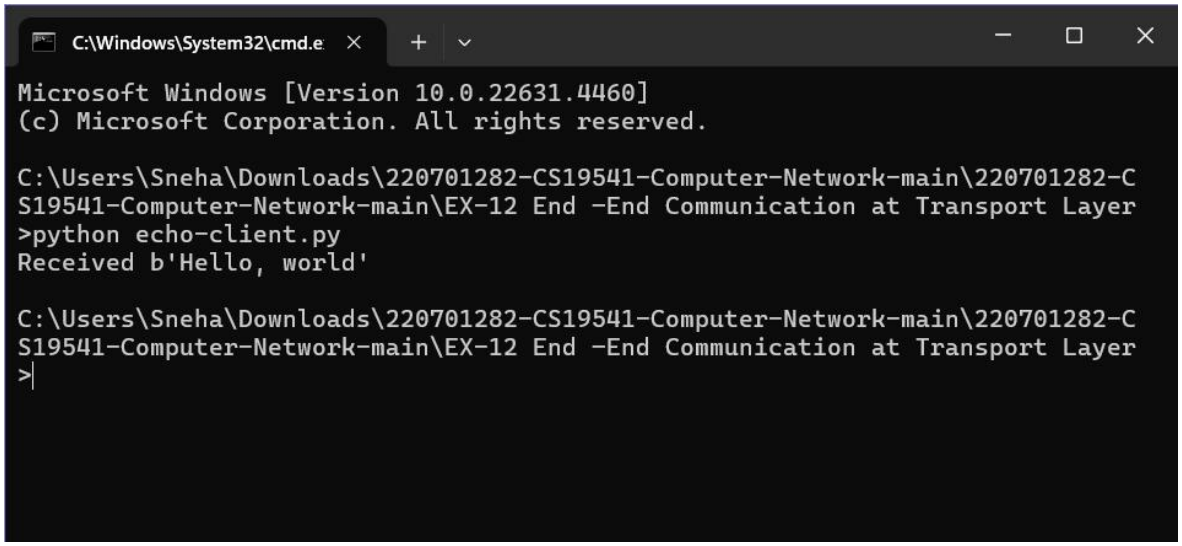
        - If no data is received, break the loop (indicating the client has disconnected).
        - Print the received data.
        - Send the received data back to the client using .sendall(data) (echo the message).
6. **Close the Connection**:
    - When the client disconnects, close the connection with that client.
    - The server continues running, ready to accept new connections.

TCP Client Algorithm

1. **Initialize the Client**:
    - Create a TCP socket using socket.socket(socket.AF_INET, socket.SOCK_STREAM).
2. **Connect to the Server**:
    - Connect the client socket to the server using .connect((host, port)), with host set to 127.0.0.1 and port set to 12345.
3. **Send Data to Server**:
    - Prompt the user to enter a message.
    - Encode the message and send it to the server using .sendall(message.encode()).
4. **Receive Data from Server**:
    - Wait for the server to send back data using .recv(1024).
    - Decode the received data and print it.
5. **Close the Connection**:
    - After receiving the echoed message, the client program will end, automatically closing the connection.

OUTPUT:


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.4460]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Sneha\Downloads\220701282-CS19541-Computer-Network-main\220701282-C
S19541-Computer-Network-main\EX-12 End -End Communication at Transport Layer
>python echo-server.py
Connected by ('127.0.0.1', 55320)
C:\Users\Sneha\Downloads\220701282-CS19541-Computer-Network-main\220701282-C
S19541-Computer-Network-main\EX-12 End -End Communication at Transport Layer
>


C:\Windows\System32\cmd.e
Microsoft Windows [Version 10.0.22631.4460]
(c) Microsoft Corporation. All rights reserved.
C:\Users\Sneha\Downloads\220701282-CS19541-Computer-Network-main\220701282-C
S19541-Computer-Network-main\EX-12 End -End Communication at Transport Layer
>python echo-client.py
Received b'Hello, world'
C:\Users\Sneha\Downloads\220701282-CS19541-Computer-Network-main\220701282-C
S19541-Computer-Network-main\EX-12 End -End Communication at Transport Layer
>