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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). o 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(). o This allows the server to accept multiple connections.
4. Accept Connections in a Loop: o 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).

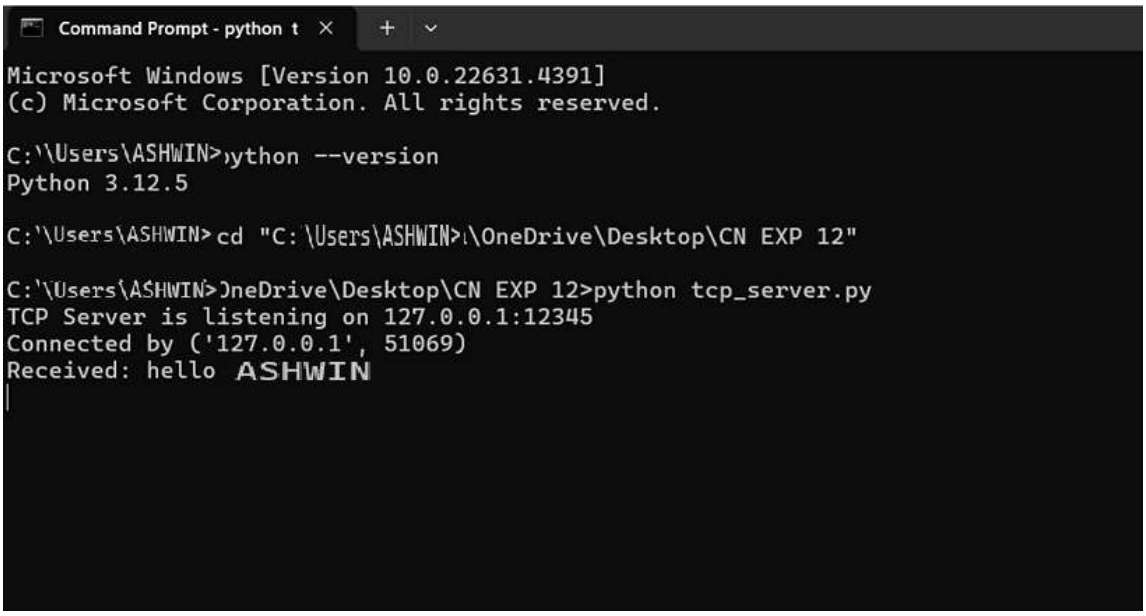
6. Close the Connection:
    - When the client disconnects, close the connection with that client.

    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:


Command Prompt - python t
Microsoft Windows [Version 10.0.22631.4391]
(c) Microsoft Corporation. All rights reserved.
C:\Users\ASHWIN>ython --version
Python 3.12.5
C:\Users\ASHWIN>cd "C:\Users\ASHWIN>\OneDrive\Desktop\CN EXP 12"
C:\Users\ASHWIN>OneDrive\Desktop\CN EXP 12>python tcp_server.py
TCP Server is listening on 127.0.0.1:12345
Connected by ('127.0.0.1', 51069)
Received: hello ASHWIN