Assignment - 12

Title : TCP / UDP sockets

Problem Statement :

Write a program ~~to~~ using TCP / UDP sockets for wired network. to implement:

a. peer to peer chat
b. multiuser chat.

Demonstrate the packets captured. using Wireshark.

Objectives:

- To ~~impl~~ study about TCP and UDP sockets.
- To implement ~~comm~~ peer to peer communicatio using sockets.
- To implement multichat communication using sockets.

Outcomes:

- Students will be implement communication using sockets in java.

Requirements:

Text editor, & JDK

Theory:

TCP (Transmission Control Protocol) is a standard that defines how to establish and maintain a network conversation through which application programs can exchange data. TCP works with the Internet Protocol which ~~allows~~ defines how computer sends packets of data to each other. Together TCP and IP are the basic rules defining the internet

TCP is a connection oriented protocol, which means a connection is established and maintained until the application programs at each end have finished exchanging messages. It determines how to break application data into packets ~~that~~ networks can deliver, sends packets to and accepts packets from the network layer, manages flow control and -- because it is meant to provide error-free data data transmission -- handles retransmission of dropped or garbled packets and ~~a~~ acknowledges all the packets that arrive.

UDP (User Datagram Protocol) is a Transport Layer protocol. It is part of ~~Ba~~ IP suite ~~ref~~ referred as UDP / IP suite. Unlike TCP, it is unreliable and connectionless protocol. So, there is no need to establish connection prior to data transfer.

TCP is more widely used but ~~has~~ comes with additional overhead and latency. Here UDP comes into picture. For realtime services like computer gaming, voice or video communication, live conferences, etc, we need UDP since high performance is needed.

TCP Header:

Source Port					Destination Port			
Sequence Number								
Acknowledgement Number								
Header length (4bits)	Reserved bits (6bits)	U R G	A C K	P S H	R S T	S Y N	F I N	Window Size
Check Sum				Urgent Pointer				
Options (0-40 bytes)								
Data (Optional)								

FOR EDUCATIONAL USE

UDP Header:

Source Port	Destination Port
Length	Checksum
Data	

Conclusion:

Thus we have successfully implemented peer to peer and multichat server in java using TCP sockets.