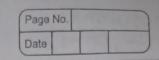
Devanshu 9 103221079	Surana S, PC-12 Page No. Date
	CN
1312	Lab Assignment -8
	a.
11/2 50	Aim: To write a c program for wired network using TCP
32 000	socket to demonstrate i) Chat application ii) Mathematical
	operation.
Rouses and	Objectives: 1 To understand concept of socket programming.
12 /24	Theory
_ i)	Client Server communication
\Rightarrow	server is a process that waits passively for requests from
munic h	clients processes the work specified and returns the result
	to the client that originated the request
3	client is a process that initiates a service request.
	TCP sockets are used for communication bett a server
34 1	and a client process the server's code runs first, which
5/11/1/4	opens a port and istens for incoming connection requests
W. A. J.	from clients. Once a client connects to the same
4	(server) port, the client of server may send a message.
33	Introduction to TCD (Transmission Calab Brokens)
-	TCP is a standard that defines how to establish and
1	maintain a network conservation conversation through
	which application programs can exchange data. TCP works
	with the internet protocol (IP), which defines how computer
Conto	gend data to each other. Clubbed together, TCP and iP are
Andre	the basic rules that define the internet.
dedictory.	Landon to mitted I was not us maken in
m)	TCP segment Header:
100 640	Every TCP segment consists of a 20 byte fixed format header.
	Every TCP segment consists of a 20 byte fixed format header. Header options may follow the fixed header. With a header so, that it can tag up to 65535 data bytes.
	it can tag upto 65535 data bytes.



- iv) TCP Connection Establishment and release:
- => To establish a connection the three way (or 3-step) handshake
 - 1) SYN: The active open is performed by the client sending a SYN to the server. The client sets the segments sequence number to a random value A.
 - 2/84N-ACK: In response the server replies with a SYN-ACK the acknowledgement number is set to one more than the recieved sequence number that the server chooses for the packet is another random number, B.
 - 3) Finally, the client sends on ACK back to the server, the sequence number is set to one more than the recieved sequence number ie B+1.
 - -The steps 1,2 establish the connection parameter for one direction and it is acknowledged
 - The steps 2,3 establish the connection parameter for the other direction and it is acknowledged. With these a full-duplex communication is established.
 - Releasing a TCP connection is symmetric. Fither port can send a TCP segment with the FIN bit set, meaning it has no more information to send when the FIN is acknowledged that direction is shut down. Still, data can cantinue to flow continually in the other direction
- v) Introduction to sockets:
- A socket programming interface provides the routines required for interprocess communication between applications, either on the local system or spread in a distribute TCPIP based network environment. Once a peer-to-peer connection is established, a socket descriptor is used to uniquely. Identify the connection.

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vi)	TCP socket functions:-
Hair La	- The TCP socket is able to listen on the TCP port for
	incoming connections. The TCP socket is able to initiate a
	connection to a remote server.
	- It is able to listen on the TCP port for incoming connection
<u> </u>	and to initiate a connection to a remote server
-	The second of th
Vii	TCP socket flow Description on server and client.
7	The following shows the flow of a TCP connection.
o i	The server creates the listener socket that is waiting for
	remote clients to connect.
11	Client issues the connect () socket function to start
	the TCP handshake CSYNIACK, SYN, ACK). The server issues
\	the accept () socket function to accept the connection request.
(iii)	The client and server issue that read () and write ()
	socket functions to exchange data over the socket.
iv	Either the server or client decides to close the socket
	This causes the TCP closure sequence (FIN's and Ack's)
	to occur.
DV)	The server either closes the listener socket or repeats
	beginning with step 2 to accept another connection from
	a remote client.
Mas 1)	The societased auto one in the social waste
MIO I)	The registered ports are in the range 1024-49161.
	List atleast 5 port.
	server.
	ii) 119-NNTP V) 161-SNMP
	111) 123 - NTP VI) 243 - HTTP
	(V) 143, - IMAP

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ans 2)	If you are exiting an unixes will chose open file descriptors
a start	on exit. If you are not exiting, you can just close it with a
	If you are exiting, an unixes will close open file descriptors on exit. If you are not exiting, you can just close it with a regular close () call.
	The sale and trace I'm sale as existen at subject of the
ans 3)	TCP wraps each data packet with a header containing
	mandatory fields totaling 20 butes. Each header holds
	mation about the connection and the current data being
	sent. The 10 TCP header fields are as follows: source

port - The sending devices port.

Destination port - The recieving devices port,

32 bytes

Source Port Number (Ic bits)

32 bit Sequence number

32 bit Acknowledgement number

Header Reserved U A PRS F Window size

length (6 bits) RCSSYII (16 bits)

(4bits) GKHHNN

TCP Checksum C16 bits) Urgent Pointer (16 bits)

Options (optional)

Douta Coptional)

Good Long