Assignment - V

Aim :- Write a program using UDP sockets to enable file transfer (script, text, Audio & video one each file) between two machines Demonstrate the packets captured traces using Wireshark packet Analyzer tool for peer to peer mode.

Requirements :-

Fedora OS, Wireshark packet analyzer tool.

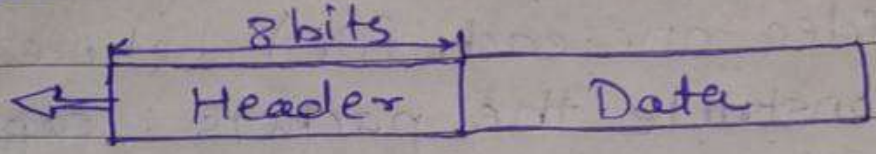
Theory :-

The user datagram protocol (UDP) is called connectionless, unreliable transport protocol. It does not add anything to services of IP except to provide process-to-process communication instead of host-to-host communication.

UDP features :-

1. Suitable for processess which require simple request response communication with little concern of error & flow of control.
2. Suitable for process with internal & flow control.

③ Suitable for multitasking
④ Used for management processes such as SNMP.
⑤ Used for some routing updating protocol such as routing information protocol.



Source port no. 16 bits	Destinat^{n} Port 16 bits
Total length 16 bits	checksum 16 bits

1. User Datagram format

UDP packets, called user datagram have a fixed size header of 8 bytes Figure 1 shows the format of a user datagram.

The field as follows :-

① Source port Number :-

This port number used by the process running on the source host. It is 16 bits long, which mean that the port number can range from 0 to 65535. If the source

host is the client, the port number, in most cases, is an ephemeral port number requested by the process & chosen by the UDP software running on the source host.

(2) Destination port number :-
This is the port number used by the process running on the destination host. It is also 16 bits long.

(3) Length : It is 16 bit field.

(4) Checksum :- This field is used to detect errors over the entire user datagram.

Socket Programming :-

(1) public DatagramSocket(int port) throws SocketException
// constructs a datagram socket & binds it to the specified port on the local host machine.

(2) DatagramSocket(int port, InetAddress) // create a datagram socket, bound to the specified local address

③ public final class DatagramPacket
// This class represents a datagram packet. Datagram packets are used to implement a connectionless packet delievery service. Each message is routed from one machine to another based solely on information contained within that packet

④ DatagramPacket(byte[] buf, int length, InetAddress address, int port)
// constructs a datagram packet for sending packets of length to the specified port number on specified host.

⑤ bind(SocketAddress addr)
// Binds this DatagramSocket to a specific address & port.

⑥ void close()
// closes this datagram socket

⑦ void connect(InetAddress addr, int port)
// connects the socket to a remote address for this socket.

⑧ void connect(SocketAddress addr)
// connects this socket to remote socket address (IP addr & portno).

⑨ void disconnect()
// disconnet the socket.

(10) Commonly used methods of Inet address class

Method	Description
String getHostName()	It returns host name of IP addr
String getHostAddr()	It returns address (IP) in string format.
public static InetAddress getByName (String host) throws UnknownHostException.	It returns Instance of InetAddress containing local host IP & name.

Conclusion :-

We successfully implement the UDP sockets to enable file transfer beth two machines