Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2024-25

Class:	TE	Semester:	V
Course Code:	CSC501	Course Name:	CN

Name of Student:	Sainath Khot
Roll No. :	20
Assignment No.:	4
Title of Assignment:	TCP Layer & Protocol
Date of Submission:	
Date of Correction:	

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Completeness	5	04
Demonstrated Knowledge	3	02
Legibility	2	02
Total	10	08

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Completeness	5	3-4	1-2
Demonstrated Knowledge Legibility	3	2	1
Legibility	2	1	0

Checked by

Name of Faculty : Miss Sneha Yadav

Signature :

Date : 18/10/24

CN Assignment 4

Q1 In a real time messaging application implement a sliding window protocol to manage message delivery between clients & ensure the way messages are delivered in order and the no of messages are lost.

=) Sliding window protocol is a method used in network communication to ensure that data is delivered reliably in the correct order and without loss, it manages the flow of messages between a sender & a receiver by maintaining between a sender & a message can be sent before ending an acknowledgement.

1. Window size - The window represent a sequence of message frames that can be sent without waiting for acknowledgment. If window size is N, the sender can send upto N messages at a time.
2. Message sequence number - Each message is assigned a sequence number. This numbers helps the receiver identify the order of message & detect any missing message.
3. Acknowledgement - After receiving a message the receiver sends an acknowledgement back to the sender indicating message has been received
4. Retransmission: - If an acknowledgement is not received for a message within a certain period. The sender will retransmit the message.

5. Flow control - The sliding window also handles flow control, ensuring that senders don't overwhelm receiver with too many messages.

Working of sliding window Protocol in Real time messaging.

Sender Slide :-
- Sender maintains a window of N, it can send N messages without waiting for an acknowledgment.
- Each message is tagged with a sequence number.
- After sending each message the sender starts a timer for each message the sender starts a wait.
- If the timer expires without receiving an acknowledgment the sender retransmits the message.

Receiver side
- The receiver checks the sequence number of each incoming message
- If the messages are in order, the receiver sends an acknowledgment.
- If a message is out of order, it may either buffer the message & wait for the missing message, and request a retransmission from the sender

Q2 Below is an hexadecimal dump of an UDP datagram captured.

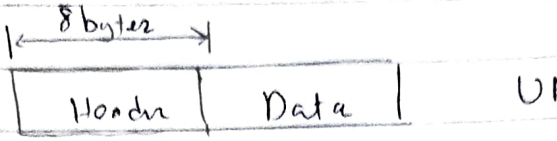
e2 a7 00 00 00 20 74 ae 0e ff 00 00 00 01 00 02
00 00 00 00 06 69 73 61 74 61 70 00 00 01 00 01

i) What is source port number?
ii) What is destination port number?
iii) What is total length of user datagram?
iv) What is total length of data?
v) Is packet directed from client to server or vice versa

=>

Following is the UDP datagram structure

1) Source port number = $(F2A7)_{16}$
2) Destination port number = $(00ae)_{16}$
3) Total length of the user datagram
   $= (0020)_{16} = (32)_{10}$ bytes
4) Total length of data = Total length - header length
   $= 32 - 8$
   $= 24$ bytes



UDP datagram