

**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE PILANI,
HYDERABAD CAMPUS**



FIRST SEMESTER 2020-21

CS F303

COMPUTER NETWORKS

ASSIGNMENT-2

PHASE -I

GROUP-1

AKSHIT- 2018A7PS0187H

BHAVISH PAHWA- 2018A7PS0168H

HRITIK SINGH KUSHWAH- 2018A7PS0323H

SHUBHAM ASOPA- 2018A7PS0101H

SMIKET BARODIA- 2018A7PS0231H

GROUP-2

ADITYA SHARMA- 2018A7PS0315H

ARPIT ADLAKHA- 2018A7PS0250H

SAKSHAM PANDEY- 2018A7PS0259H

SURINDERPAL SINGH VIRK- 2018A7PS0234H

VANSHAJ AGGARWAL- 2018A7PS0309H

GROUP-3

HARDIK JAIN- 2017B3A71113H

SATVIK ARORA- 2017B5A71671H

SHIVALI RATRA- 2017B4A71707H

VATSAYAYN BINAY- 2018A7PS0305H

VIRAJ SINGH- 2017B3A71099H

Assumptions

1. The transport layer protocol used is unreliable.
2. Each client knows the IP and port number of the server.
3. Before the file transmission starts there is no actual packet loss happening. Therefore, our protocol handles the packet loss once the File Transfer is started

Working

1. The server and client processes are made to transfer data over the network.
2. The knowledge of server IP and port number is known to all clients.
3. Client requests the server to send the list of all files available.
4. Server sends the list of file names.
5. Client sends the name of the file that he wants to download.
6. If the file is available, the server opens that file and starts the process to transmit it else if not present send error stating file not present.
7. Server keeps reading data from the file and writing it to a buffer whenever space is available.
8. Every packet is assigned a sequence number and the window size is at most half of the maximum sequence number to avoid complications.
9. Server keeps transmitting data within the current window and starts a timer for each packet sent.
10. Whenever it receives an ACK, it shifts the window base to the next lowest unACKed packet location.
11. Whenever there is a timeout for a packet, it is retransmitted and the timer is restarted.
12. At the client side whenever the packet is received in order, it is forwarded to the application layer, but if it's out of order then it is stored in the buffer.
13. If a packet received is damaged, then a NAK is sent to the receiver and the packet is resent without timeout happening.

Packet Loss and time delay

1. In case of a packet loss, packets are received out of order. Then an ACK is sent for the packet received and that packet is stored in a buffer. In case of a timeout, that packet is resent and when data is again in order, it is transferred to the application to the layer.
2. In case there is a timeout, the server sends the packet again. If the packet was already received but ACK was lost then a duplicate ACK is sent. And if the packet was lost then it is stored and ACK is sent.

Error Checking

If a packet received is damaged, a NAK is sent with the sequence number of the packet to the server so that it can be resent. Whether a packet is damaged or not is checked with the help of checksum.

Problems solved by reliability protocol

Packet loss, damaged packets and packet transfer delays. Packets are sent to the application layer in order over an unreliable transport layer.

