



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CSLR31 – Network Programming Laboratory

B.TECH / CSE (B) – V Semester

Date : 11.09.2020

Regular Lab-1

Duration : 3 Hours

Answer All the Questions

SOCKET PROGRAMMING – TCP and UDP

1. Messages are sent from transmitter A to receiver B. Assume that the channel from A to B is initialized and that there are no messages in transit. Each message from A to B contains a data part and a one-bit sequence number, i.e., a value that is 0 or 1. B has two acknowledge characters that it can send to A: ACK0 and ACK1. Assume that the channel may corrupt a message. There is a way in which A and B can decide whether or not they have received a correct message. When A sends a message, it sends it continuously, with the same sequence number, until it receives an acknowledgment from B that contains the same sequence number. When that happens, A complements (flips) the sequence number and starts transmitting the next message.

When B receives a message that is not corrupted and has sequence number 0, it starts sending ACK0 and keeps doing so until it receives a valid message with number 1. Then it starts sending ACK1, this process continues until A stops sending the message.

This means that A may still receive ACK0 when it is already transmitting messages with sequence number one. (And vice-versa.) It treats such messages as negative-acknowledge characters (NAKs). The simplest behavior is to ignore them all and continue transmitting.

The protocol may be initialized by sending bogus messages and ACKs with sequence number 1. The first message with sequence number 0 is a real message.

Using socket programming (both TCP & UDP) in C, demonstrate the following:

1. Normal transmission
2. Lost or damaged message
3. Lost Acknowledgement
4. Delayed Acknowledgement