JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY
COMPUTER NETWORKS
BTECH 5TH SEM 2019
TUTORIAL-1

1. It has been said that flow control and congestion control are equivalent. Is this true for the Internet's connection-oriented service? Are the objectives of flow control and congestion control the same?
2. Briefly describe how the Internet's connection-oriented service provides reliable transport.
3. What advantage does a circuit-switched network have over a packet-switched network?
4. What advantages does TDM have over FDM in a circuit-switched network?
5. Suppose that between a sending host and a receiving host there is exactly one packet switch. The transmission rates between the sending host and the switch and between the switch and the receiving host are *R1* and *R2*, respectively. Assuming that the router uses store-and-forward packet switching, what is the total end-to-end delay to send a packet of length *L*. (Ignore queuing and propagation delay.)
6. Design and describe an application-level protocol to be used between an Automatic Teller Machine, and a bank's centralized computer. Your protocol should allow a user's card and password to be verified, the account balance (which is maintained at the centralized computer) to be queried, and an account withdrawal (i.e., when money is given to the user) to be made. Your protocol entities should be able to handle the all-too-common case in which there is not enough money in the account to cover the withdrawal. Specify your protocol by listing the messages exchanged, and the action taken by the Automatic Teller Machine or the bank's centralized computer on transmission and receipt of messages. Sketch the operation of your protocol for the case of a simple withdrawal with no errors, using a diagram similar to that in Figure 1.2-1. Explicitly state the assumptions made by your protocol about the underlying end-to-end transport service.

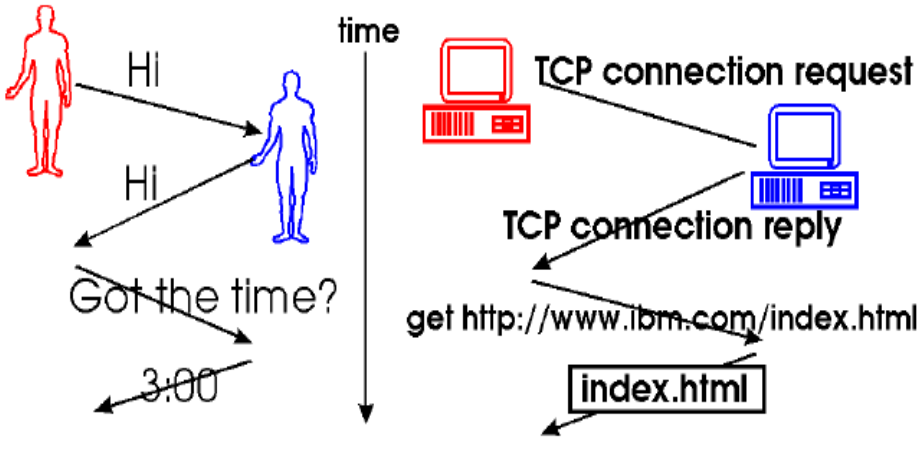

Figure 1.2-1: A human protocol and a computer network protocol