Assignment

Name of Student: **SAP ID:**

Assignment ID (as per the policy guidelines)	Assignment Title	Submission Mode	Assessment Method	Group/ Individual	Weightage	Date of Release	Submission Deadline (Date and time)
A1_CS203_Even2020	Assignment-1	Online	Evaluation (Theory+ Numeric)	Individual	5	06/03/2020	01/04/2020 04.00PM

Instructions (Sample provided below, please change as necessary):

- Assignment must be submitted by the **Due Date and Time** as mentioned above.
- Assignment submitted after **Due Date and Time** and before the next 48 hours will be marked late and will attract a penalty of X marks (out of the overall Y marks, and it will be evaluated out of Y-X marks only). Assignment will not be considered for evaluation subsequently (after 48 hours past due date and time), and a score of zero will be awarded.
- Plagiarism is not allowed by the University for any Academic Document to be submitted by the students for any assessment. In order to avoid plagiarism ensure you always follow good academic practice. This include self- plagiarism i.e. submitting a peace of your own work which has provisionally been presented for examination.
- Submitted assignment must have your Full Name and SAP ID in the space provided above this page in the Header.

Submitting this Assignment

- You will submit (upload) this assignment in Moodle.
- Email/paper submissions will not be accepted (except for UG students who are not yet registered in Moodle).
- Questions must be answered in the given order.
- Submit a pdf version of this document.
- Name this document as A1_CS203_Even2020_Krishna_Kumar.pdf in case your name is Krishna Kumar, and you are submitting Assignment 1 of the course whose code is CS203, and it is offered in the Even Semester of the Year 2020.

DIT UNIVERSITY

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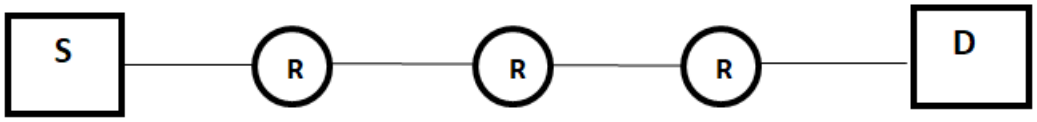
Problems:

1. Assume that source S and destination D are connected through three intermediate routers labeled R. Determine and explain how many times each packet has to visit the network layer and the data link layer during a transmission from S to D.



2. What is the total delay (latency) for a frame of size 5 million bits that is being sent on a link with 10 routers each having a queuing time of 2 µs and a processing time of 1 µs. The length of the link is 2000 Km. The speed of light inside the link is 2 x 10^8 ms. The link has a bandwidth of 5 Mbps. Which component of the total delay is dominant? Which one is negligible?

3. A source node is transmitting a video of size 212 bits to another node on a network with two intermediates routers (R1 and R2) and having three links (L1, L2 and L3). L1 connects first node to R1; L2 connects R1 to R2; and L3 connects R2 to final node. Assume each link's length is 200km. Assume signals speed over link is 10^8 meters per second. Given link bandwidth on each link is 2Mbps. Find the total latency (or delay) for the transmission of file if video is chunked into 2000 packets each of size 2000 bits. (Neglect queuing and processing time)
4. An organization bought a following chunk of IP addresses: 203.248.128.0/20. The organization wants to give half of this chunk of addresses to Branch A, and a quarter to Branch B, while keeping rest with it. What will be the valid allocation of addresses to A and B?

5. Explain the terms:
   a. Internet
   b. Intranet
   c. Extranet
   d. Virtual Private Network