

III B.Tech I Semester

23A05501P	COMPUTER NETWORKS & INTERNET PROTOCOLS LAB	L	T	P	C
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Course Objectives:

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology and
- observe its performance
- To analyze the traffic flow and the contents of protocol frames.
- Familiarize with the applications of Internet.

Course Outcomes:

- To understand the working principle of various communication protocols.
- To understand the network simulator environment and visualize a network topology and
- observe its performance.
- To analyze the traffic flow and the contents of protocol frames.
- Critique the existing routing protocols

List of Experiments:

1. Implement the data link layer framing methods such as character, character-stuffing and bit stuffing.
2. Write a program to compute CRC code for the polynomials CRC-12, CRC-16 and CRC CCIP
3. Develop a simple data link layer that performs the flow control using the sliding window protocol, and loss recovery using the Go-Back-N mechanism.
4. Implement Dijkstra's algorithm to compute the shortest path through a network
5. Take an example subnet of hosts and obtain a broadcast tree for the subnet.
6. Implement distance vector routing algorithm for obtaining routing tables at each node.
7. Implement data encryption and data decryption
8. Write a program for congestion control using Leaky bucket algorithm.
9. Write a program for frame sorting technique used in buffers.
10. Programs using Wireshark
 - i. Packet Capture Using Wire shark
 - ii. Starting Wire shark
 - iii. Viewing Captured Traffic
 - iv. Analysis and Statistics & Filters.
11. How to run Nmap scan
12. Operating System Detection using Nmap
13. Do the following using NS2 Simulator
 - i. NS2 Simulator-Introduction

- ii. Simulate to Find the Number of Packets Dropped
- iii. Simulate to Find the Number of Packets Dropped by TCP/UDP
- iv. Simulate to Find the Number of Packets Dropped due to Congestion
- v. Simulate to Compare Data Rate & Throughput.
- vi. Simulate to Plot Congestion for Different Source/Destination
- vii. Simulate to Determine the Performance with respect to transmission of Packets

Text Books:

1. Andrew S.Tanenbaum, David j.wetherall, Computer Networks, 6th Edition, PEARSON.
2. James F.Kurose, Keith W. Ross, Computer Networking: A Top-Down 6th edition, Pearson, 2019.
2. Computer Networks: A Systems Approach-Bruce Davie, VMware-Larry Peterson, Princeton University-2019.

Reference Books:

- 1.Computer Networks–B. K. MathanNagan, T. Mahalakshmi- Charulatha Publications PrivateLimited-2019.
2. Computer Networks-Dr.Amol V. Dhumane Nitin N. Sakhare-NiraliPrakashan Publishers-2024
3. Data Communications and Networking with TCPIP Protocol Suite-Behrouz A. Forouzan-McGraw Hill-6th Edition