

**3/4 B.Tech. SECOND SEMESTER
COMPUTER NETWORKS LAB**

CS6L1

Required

Credits: 2

Lecture: --

Internal assessment: 25 marks

Lab: 3 periods/week

Semester end examination: 50 marks

Course context and Overview: The course will cover router and end-system labs in the areas of Single Segment IP Networks, Multiple Segment IP Networks and Static Routing, Dynamic Routing Protocols (RIP, OSPF and BGP), LAN switching, Transport Layer Protocols: UDP and TCP, NAT, DHCP, DNS, and SNMP. The labs are due at a rate of roughly one lab per week. A short pre-lab Q&A, as well as lab writeups, are required for each lab.

Prerequisite: Computer Networks, NS2, Programming Language, Basic Unix practice (User Level)

Objectives:

1. To provide students with a theoretical and practical base in computer networks.
2. To give the basic idea about open source network simulator NS2 and how to download, install and work with NS2 using TCL programming.
3. To Identify and solve the installation errors of NS2.

Learning Outcomes:

1. Understand the network addressing in packet transmission.
2. Analyze the flow of packets using wireshark.
3. Apply different protocols on filters for tracing packet transmissions.

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space LAN Connected
2. Any flavor of Unix / Linux

Socket Programming in C:

1. Implement the following forms of IPC.

a) Pipes
b) FIFO

2. Implement file transfer using Message Queue form of IPC

3. Write a program to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions

4. Design TCP iterative Client and server application to echo the given input sentence

5. Design TCP iterative Client and server application to reverse the given input sentence

6. Design TCP client and server application to transfer file

7. Design UDP Client and server application to reverse the given input sentence

8. Design UDP Client server to transfer a file

Socket Programming in JAVA:

9. Design TCP iterative Client and server application to reverse the given input sentence

10. Design TCP client and server application to transfer file

11. Design UDP Client and server application to reverse the given input sentence

12. Design UDP Client and server to transfer a file

Learning Resources

Reference Books:

1. Advance UNIX Programming Richard Stevens, Second Edition Pearson Education

2. Advance UNIX Programming, N.B. Venkateswarlu, BS Publication.