ARMY INSTITUTE OF TECHNOLOGY
Department of Computer Engineering
TE Computer Sem I (2020-21)
Computer Networks Laboratory Assignment List

Subject: Computer Networks Lab

Teaching Scheme:	**Credit**	**Examination Scheme:**
PR: 02 Hours/Week	01	TW: 25 Marks PR: 50 Marks

Course Objectives:

- To establish communication among the computing nodes in P2P and Client-Server architecture
- Configure the computing nodes with understanding of protocols and technologies.
- Use different communicating modes and standards for communication
- Use modern tools for network traffic analysis
- To learn network programming.

Course Outcomes:

- On completion of the course, student will be able to–
- Demonstrate LAN and WAN protocol behavior using Modern Tools.
- Analyze data flow between peer to peer in an IP network using Application, Transport and Network Layer Protocols.
- Demonstrate basic configuration of switches and routers.
- Develop Client-Server architectures and prototypes by the means of correct standards and technology.

GROUP A	
1.	**Lab Assignment on Unit I: (Mandatory Assignment)** **Part A:** Setup a wired LAN using Layer 2 Switch and then IP switch of minimum four computers. It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrate the PING packets captured traces using Wireshark Packet Analyzer Tool. **Part B:** Extend the same Assignment for Wireless using Access Point
2.	**Lab Assignment on Unit V: (Mandatory Assignment) (Use C/C++)** Write a program using TCP socket for wired network for following a. Say Hello to Each other (For all students) b. File transfer (For all students) c. Calculator (Arithmetic) (50% students) d. Calculator (Trigonometry) (50% students) Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode.
3.	**Lab Assignment on Unit V: (Mandatory Assignment) (Use C/C++)** Write a program using UDP Sockets to enable file transfer (Script, Text, Audio and Video one file each) between two machines. Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode.
4.	**Lab Assignment on Unit II: (Use C/C++)** Write a program for error detection and correction for 7/8 bits ASCII codes using Hamming Codes or

	CRC. Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode.(50% students will perform Hamming Code and others will perform CRC)
5.	**Lab Assignment on Unit IV: (Use JAVA)** Write a program to simulate the behaviour of link state routing protocol to find suitable path for transmission.
6.	**Lab Assignment on Unit IV: (Use JAVA)** Write a program to demonstrate subnetting and find the subnet masks.
7.	**Lab Assignment on Unit V: (Mandatory Assignment) (Use C/C++)** Write a program to analyze following packet formats captured through Wireshark for wired network. 1. Ethernet 2. IP 3.TCP 4. UDP
8.	**Lab Assignment on Unit VI: (Use JAVA)** Write a program for DNS lookup. Given an IP address input, it should return URL and vice-versa.
GROUP B	
1.	**Lab Assignment on Unit V: (Use JAVA)** Write a program using TCP sockets for wired network to implement a. Peer to Peer Chat b. Multiuser Chat Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode
2.	**Lab Assignment on Unit V: (Use JAVA)** Write a program using UDP sockets for wired network to implement a. Peer to Peer Chat b. Multiuser Chat Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to mode.
3.	**Lab Assignment on Unit V: (Use JAVA)** Write a program to prepare TCP and UDP packets using header files and send the packets to destination machine in peer to peer mode. Demonstrate the packets captured traces using Wireshark Packet Analyzer Tool for peer to peer mode.
4.	**Lab Assignment on Unit IV: (Mandatory Assignment)** Configure RIP/OSPF/BGP using packet Tracer.
5.	**Lab Assignment on Unit IV and Unit V: (Mandatory Assignment)** Use network simulator NS2 to implement: a. Monitoring traffic for the given topology b. Analysis of CSMA and Ethernet protocols c. Network Routing: Shortest path routing, AODV. d. Analysis of congestion control (TCP and UDP).

Ms. Nikita Singhal
(Subject In charge)

Prof. S. R. Dhore
(Head Comp. Department)