

Lab Manual

Network Programming Lab



**Department of Computer Science &
Engineering**
College Of Engineering Cherthala , Alappuzha

COLLEGE OF ENGINEERING CHERTHALA, ALAPPUZHA
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Vision:

To evolve into a center of excellence in the field of computer science and engineering providing innovative and quality engineers contributing to the society and nation

Mission:

To impact high quality professional training with emphasis on state of the art technology in computer science and engineering including professional and ethical values in the young minds

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**PROGRAMME OUTCOMES (POs)**

| | |
|------|---|
| PO1 | Apply the knowledge of mathematics, science and engineering fundamentals to solve complex computer science and engineering related problems. |
| PO2 | Identify, formulate, make literature reviews, and analyze complex computer science and engineering problems to reach substantiated conclusions. |
| PO3 | |
| PO4 | |
| PO5 | |
| PO6 | |
| PO7 | |
| PO8 | |
| PO9 | |
| PO10 | |
| PO11 | |
| PO12 | |

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| Syllabus | 5 |
| Course Outcomes | 6 |
| Mapping of course outcomes with program outcomes | 6 |
| Abstract POs defined by National Board of Accreditation | 7 |
| References | 8 |
| Getting started with the basics of network configuration files and networking commands in Linux | 9 |
| To familiarize and understand the use and functioning of system calls used for network programming in Linux. | 12 |
| Implement client-server communication using socket programming and TCP as transport layer protocol | 16 |
| Implement client-server communication using socket programming and UDP as transport layer protocol | 24 |
| Implementation of a multi user chat server using TCP as transport layer protocol. | 29 |

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|--|-----|
| Implementation of concurrent time server using UDP | 35 |
| Simulate sliding window flow control protocols. (Stop and Wait, Go back N, Selective Repeat ARQ protocols) | 41 |
| Implement and simulate algorithms for Distance Vector Routing protocol or Link State Routing protocol. | 64 |
| Implement Simple Mail Transfer Protocol. | 74 |
| Implement File Transfer Protocol. | 86 |
| Implement congestion control using a leaky bucket algorithm. | 94 |
| Understanding the Wireshark tool. | 97 |
| Study of NS2 simulator | 106 |

Syllabus

***Mandatory List of Exercises/ Experiments**

(Note: At least one program from each topic in the syllabus should be completed in the Lab)

1. Getting started with the basics of network configuration files and networking commands in Linux.*
2. To familiarize and understand the use and functioning of system calls used for network programming in Linux.*
3. Implement client-server communication using socket programming and TCP as transport layer protocol*
4. Implement client-server communication using socket programming and UDP as transport layer protocol*
5. Implementation of a multi user chat server using TCP as transport layer protocol.
6. Implementation of concurrent time server using UDP
7. Simulate sliding window flow control protocols.* (Stop and Wait, Go back N, Selective Repeat ARQ protocols)