MANIPAL INSTITUTE OF TECHNOLOGY
BENGALURU
(A constituent unit of MAHE, Manipal)

V Semester MINI PROJECT
Computer Networks Lab (IT_3162)

Mini Project Submission for Computer Networks Lab

Dear Students,

As part of your Lab Experimentations for Computer Networks, you are required to complete a mini project. Below are three project topics from which you must choose one. You are expected to implement the chosen project and submit the following:

- A detailed project report of 10 pages covering the problem statement, implementation (source code of your project), and conclusions. The report should be submitted in PDF format on or before 28th October 2024 in Microsoft Teams.

1. **HTTP Web Server Implementation**

- **Objective**: Create a simple HTTP web server.
- **Description**: Develop a basic web server capable of serving static web pages. The server should handle HTTP GET and POST requests. You can extend the project by adding functionalities like multi-threading to handle multiple client requests simultaneously.
- **Technologies**: Python/Java, Sockets

2. **Firewall Simulation with Packet Filtering**

- **Objective**: Simulate a firewall that filters network traffic based on rules.
- **Description**: Implement a firewall simulator where you can set rules to allow or block traffic based on IP addresses, ports, and protocols. The tool will monitor packets and decide which to drop or pass through based on predefined rules.

- **Technologies**: Python, Linux iptables, Scapy.

3. **Load Balancer**

- **Description**: Develop a simple load balancer that distributes incoming network requests across multiple servers.
- **Features**:
    - Implement different load balancing algorithms (round-robin, least connections).
    - Manage multiple backend servers.
    - Measure the performance of different algorithms.
- **Technologies**: Python, Java, or C/C++ (socket programming)