

# **EE 533**

## **LAB 1 REPORT**

### **CLIENT–SERVER COMMUNICATION USING SOCKETS**

#### **1. Objective**

The objective of this lab is to set up two Linux virtual machines using VMware and implement client–server communication using TCP socket programming.

#### **2. Tools Used**

- VMware Fusion / Workstation
- Ubuntu Linux
- GCC compiler
- C programming language
- GitHub

#### **3. System Setup**

Two Ubuntu virtual machines were created:

- **Server VM**
- **Client VM**

Both VMs were configured on the same virtual network to enable communication.

#### **4. Network Verification**

Network connectivity between the two VMs was verified using IP configuration and ping tests.

## **5. Implementation Overview**

A TCP socket-based client–server model was implemented.

### **Server**

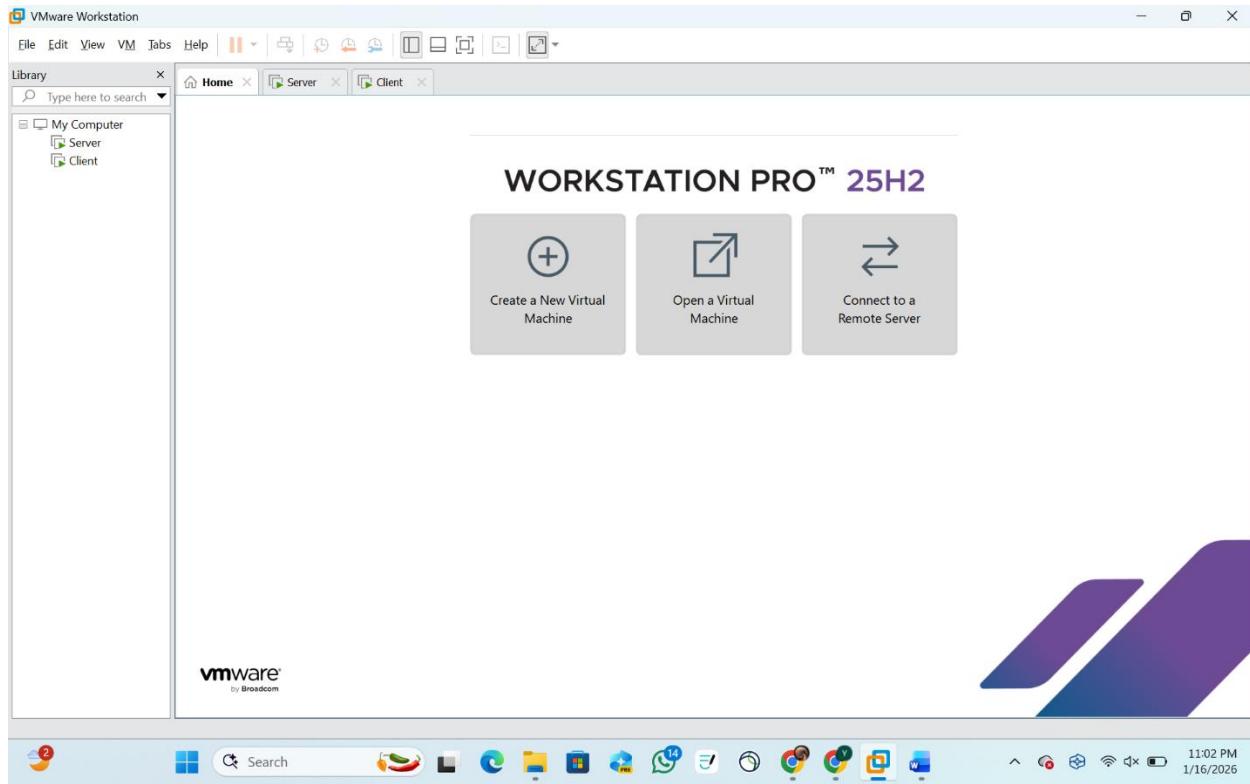
- Creates a socket
- Binds to a port
- Listens and accepts a client connection
- Receives a message and sends an acknowledgment

### **Client**

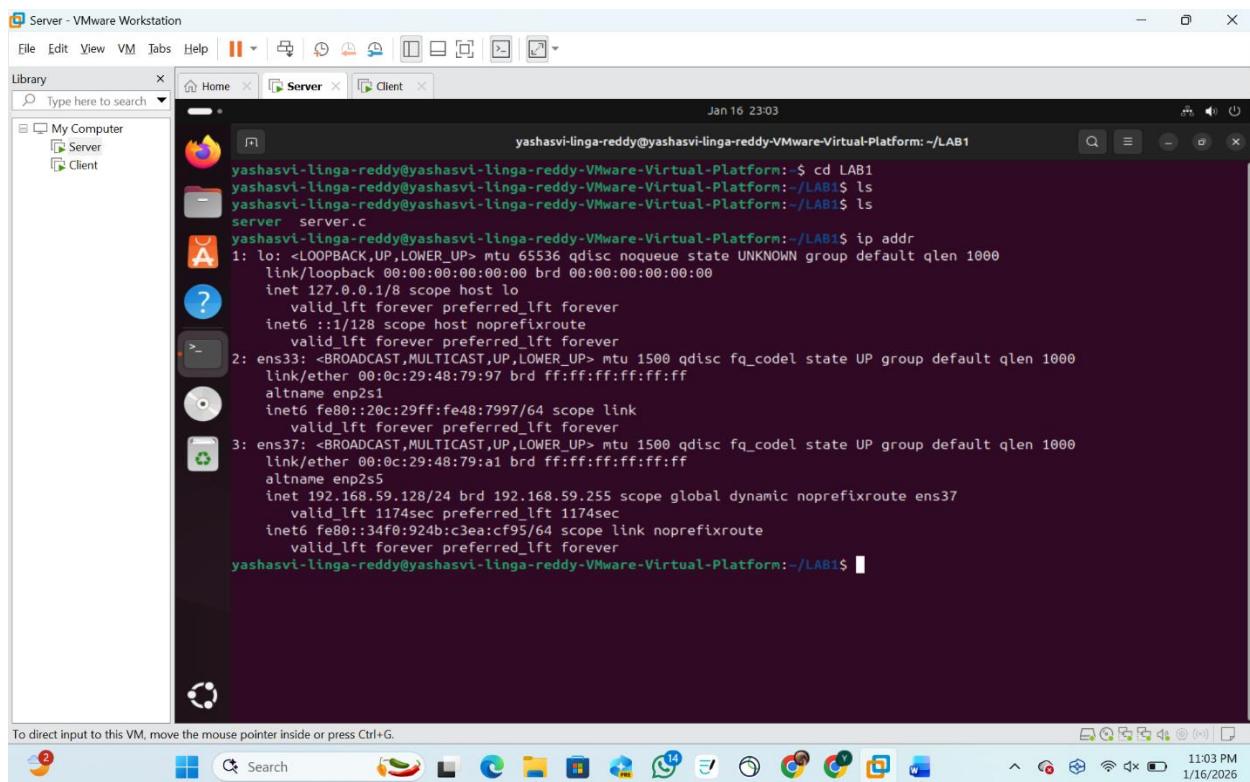
- Creates a socket
- Connects to the server
- Sends a message
- Receives a response

## **6. Screenshots**

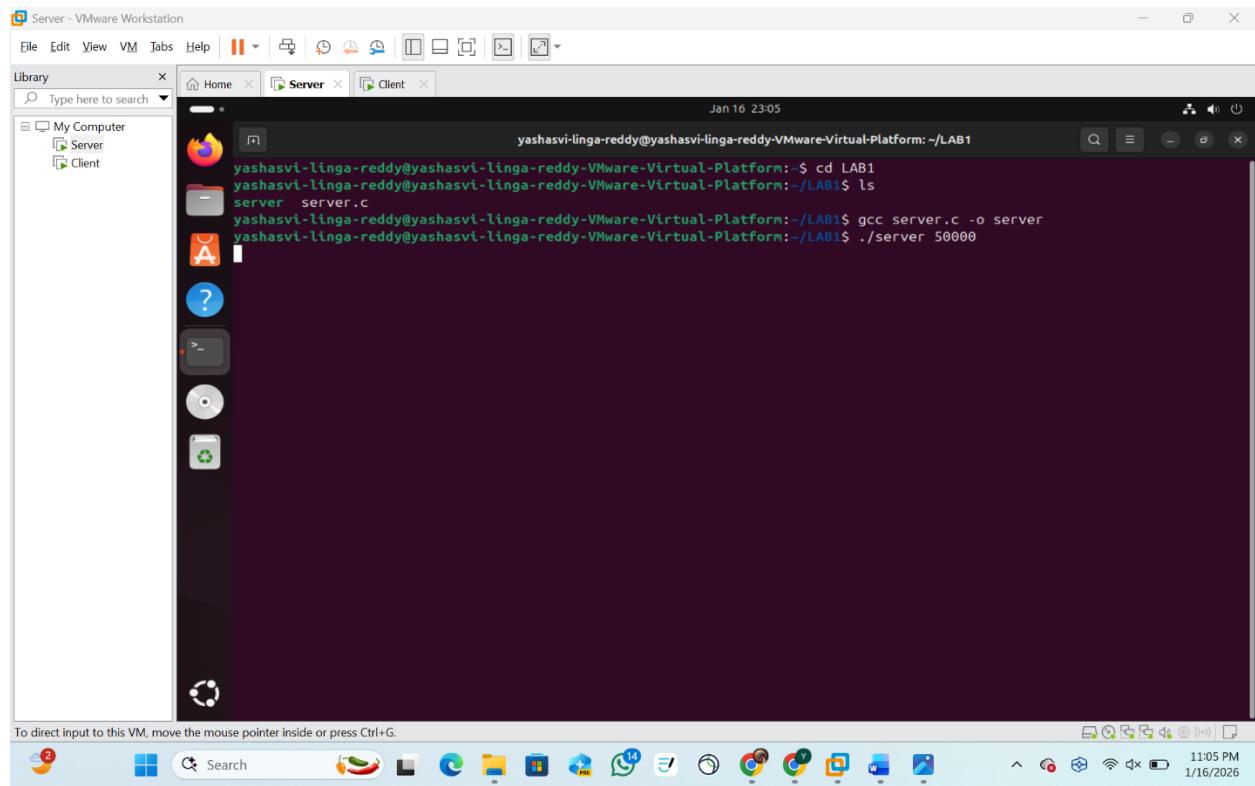
1. VMware showing **both VMs**



## 2. ip addr output on both VMs

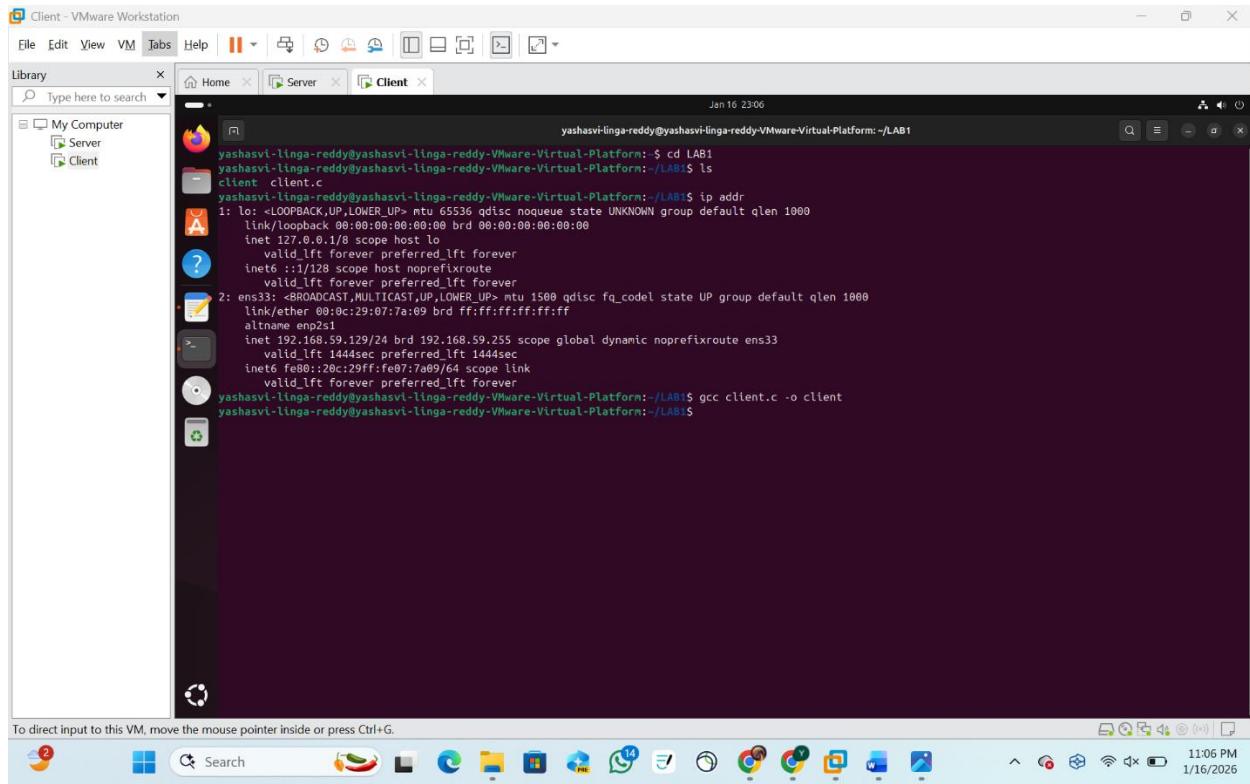


### 3. Server compilation (gcc server.c) & Server running and waiting



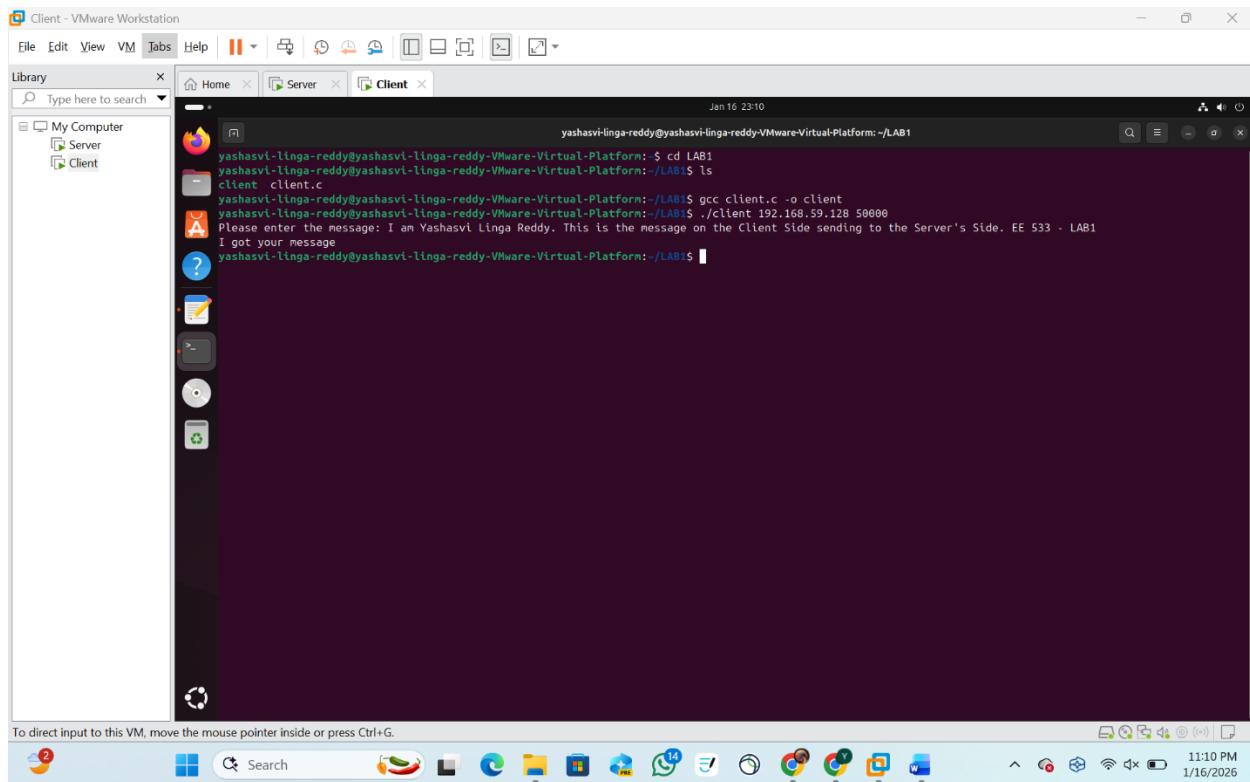
```
yashasvi-linga-reddy@yashasvi-linga-reddy:~/yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ cd LAB1
yashasvi-linga-reddy@yashasvi-linga-reddy:~/yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ ls
server server.c
yashasvi-linga-reddy@yashasvi-linga-reddy:~/yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ gcc server.c -o server
yashasvi-linga-reddy@yashasvi-linga-reddy:~/yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ ./server 50000
```

### 4. Client compilation (gcc client.c)



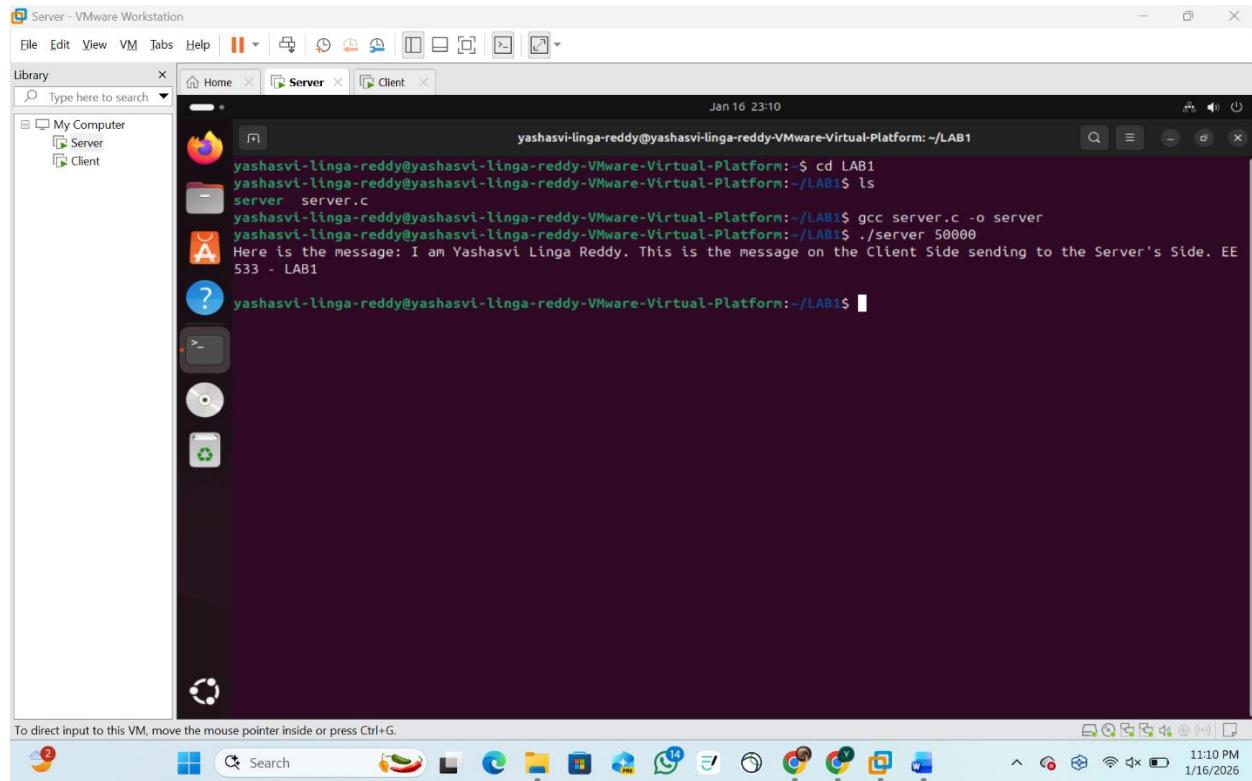
```
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$ ls
client client.c
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd ff:ff:ff:ff:ff:ff
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
            inet6 ::1/128 scope host noprefixroute
                valid_lft forever preferred_lft forever
2: ens3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:07:7a:09 brd ff:ff:ff:ff:ff:ff
        altname enp2s1
        inet 192.168.59.129/24 brd 192.168.59.255 scope global dynamic noprefixroute ens3
            valid_lft 1444sec preferred_lft 1444sec
            inet6 fe80::20c:29ff:fe07:7a09/64 scope link
                valid_lft forever preferred_lft forever
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$ gcc client.c -o client
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$
```

## 5. Client sending message



```
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$ gcc client.c -o client
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$ ./client 192.168.59.128 50000
Please enter the message: I am Yashasvi Linga Reddy. This is the Message on the Client Side sending to the Server's Side. EE 533 - LAB1
I got your message
yashasvi-linga-reddy@yashasvi-lingga-reddy-VMware-Virtual-Platform: ~/LAB1$
```

## 6. Server receiving message & client acknowledgment



```
yashasvi-linga-reddy@yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ cd LAB1
yashasvi-linga-reddy@yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ ls
server server.c
yashasvi-linga-reddy@yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ gcc server.c -o server
yashasvi-linga-reddy@yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$ ./server 50000
Here is the message: I am Yashasvi Linga Reddy. This is the message on the Client Side sending to the Server's Side. EE
533 - LAB1
yashasvi-linga-reddy@yashasvi-linga-reddy-VMware-Virtual-Platform:~/LAB1$
```

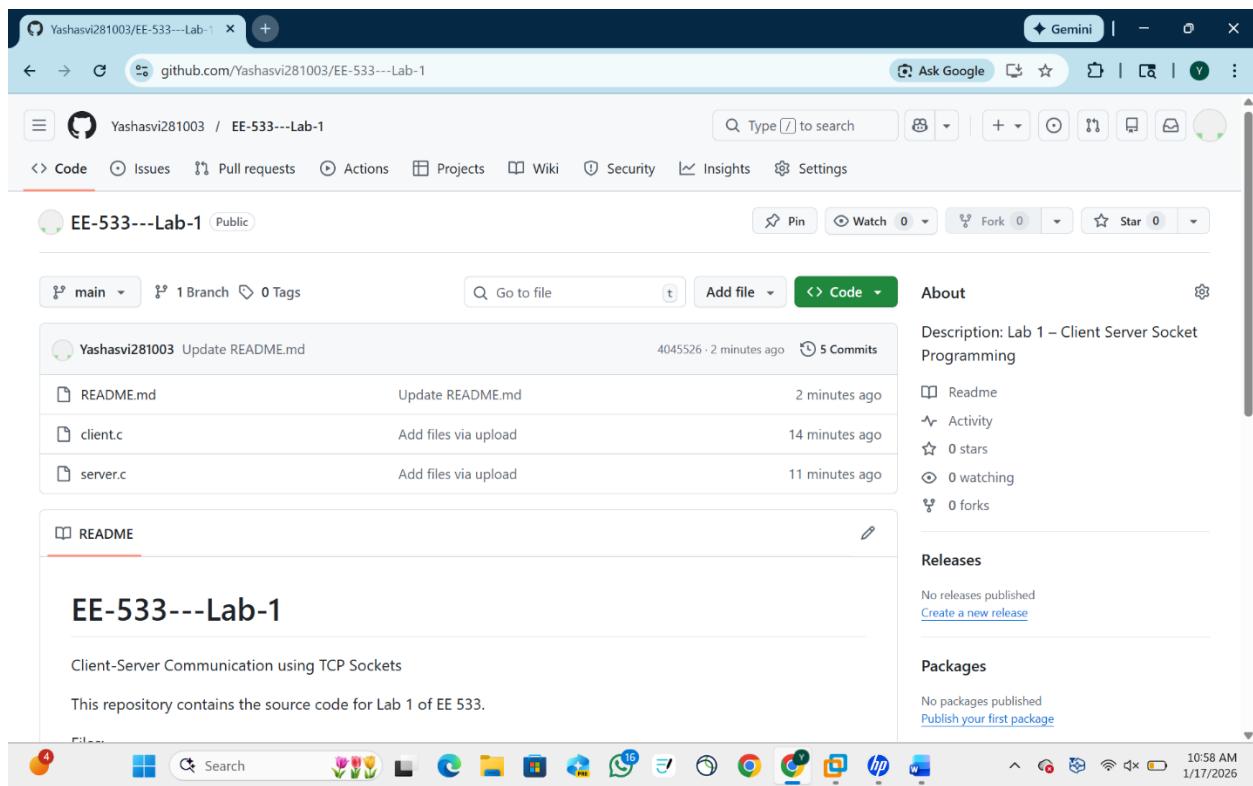
## 7. Result

The client successfully sent a message to the server, and the server returned an acknowledgment, confirming correct TCP communication.

## 8. GitHub

<https://github.com/Yashasvi281003/EE-533---Lab-1>

All source code and reports were stored in a GitHub repository with regular commits.



## 9. Conclusion

This lab demonstrated successful client–server communication using TCP sockets between two virtual machines.