**Implementation of TCP-IP stack from scratch**

**Group-22**

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We have implemented and successfully simulated the TCP-IP stack using C. Our code consists of two files, Clientside.c and Serverside.c. We have incorporated three important considerations in our code:

* Implemented Three-way handshake mechanism of TCP to ensure reliable data transmission and connection establishment.
* Error control at each layer is implemented in the form of checksum in network and transport layers, CRC in Data Link layer. This is also checked on receiver’s side to ensure error-free data transfer.
* Keeping track of Sequence Number and Acknowledgement Number in TCP to identify duplicate packets.

Ensuring that the implementation is transparent, we are printing the data at each layer after adding their respective headers. On the receiver’s side the headers are being decapsulated and similarly at each layer we print out data in different text files.

**Contributions:**

Mohith and Chiranjan took care of implementing **Transport layer** and **network layer functionalities**. It involved the calculation and verification of **checksum**, sequence and acknowledgement numbers for reliable data transfer and designed the data structure for TCP segment.

Priyanshu and Vivek implemented Application and Data Link Layers. It involved CRC calculation and verification, data structures for IPv4 datagram, Ethernet frame, implementation of three-way handshake mechanism for connection establishment.