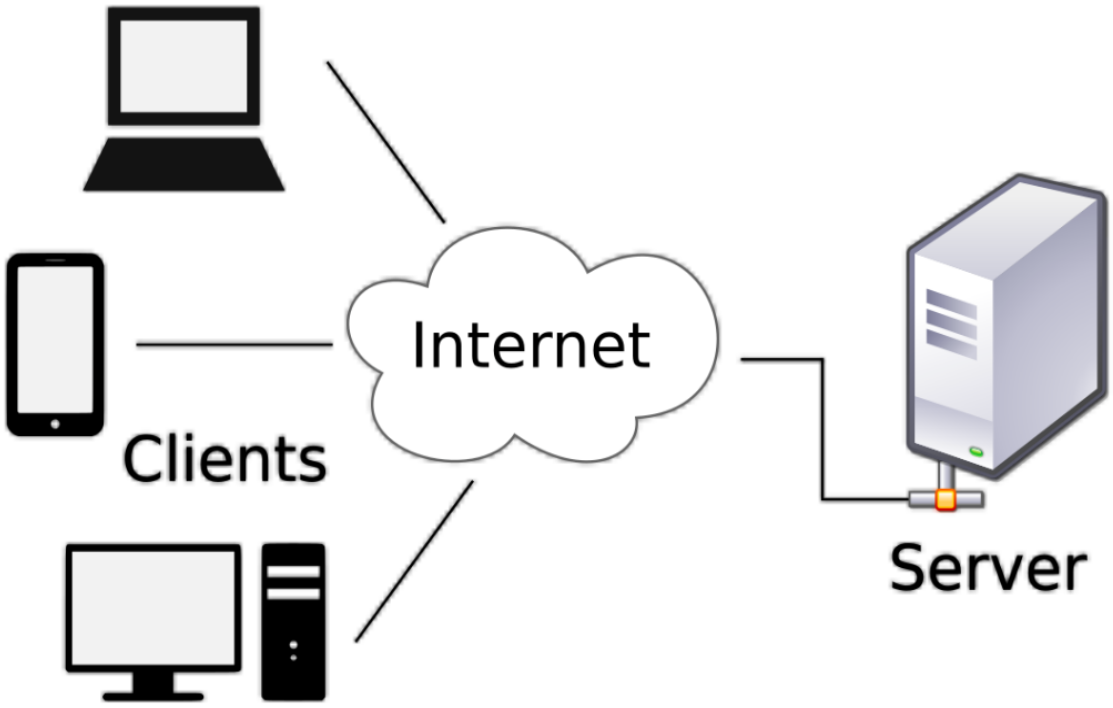
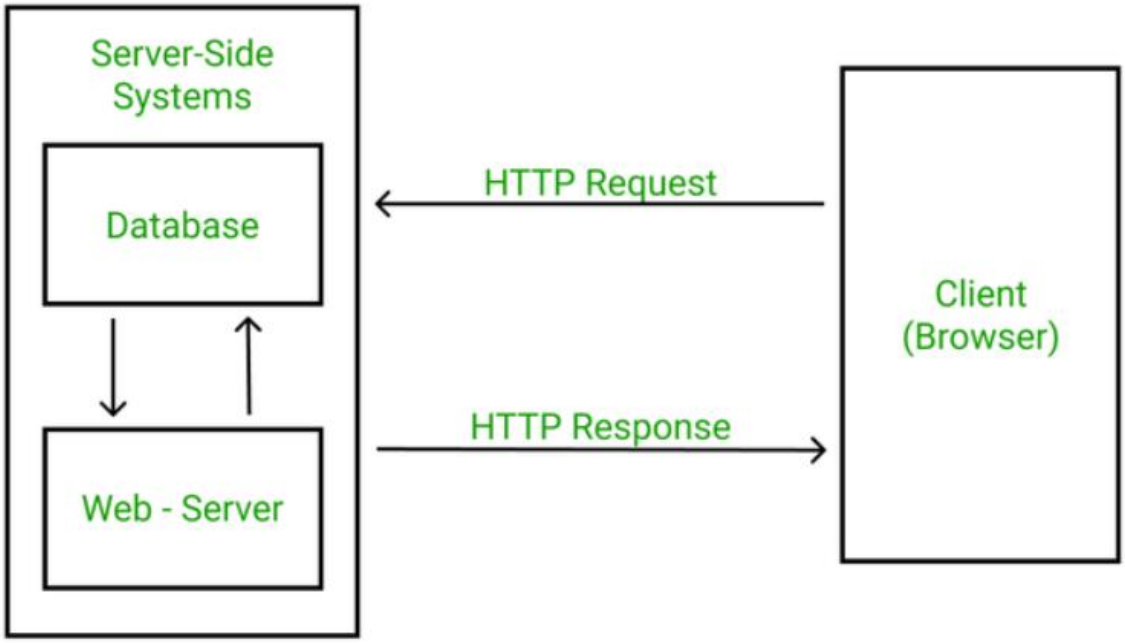
Client-Server Communication Report





The **client-server communication model** is a fundamental networking architecture where two entities interact over a network to share information and services. A **client** is a device or application (such as a web browser) that sends a request for data, while a **server** is a powerful system that stores resources, processes requests, and sends responses back to the client.

Communication works using a **request–response mechanism**:

1. The client sends a request (ex: opening a website)
2. The server receives and processes the request
3. The server sends the appropriate response (ex: webpage)

To ensure devices can locate and talk to each other, every device on a network is assigned a unique **IP address**. This IP address acts like a home address for the device on the Internet. However, since many applications run on the same device, **port numbers** are used to identify specific services.
Example:

- HTTP uses **Port 80**
- SSH uses **Port 22**

Client-server communication follows standardized **network protocols**, which define how data should be formatted and exchanged.
Examples:

- **HTTP/HTTPS** → For web browsing
- **DNS** → Converts website names to IP addresses
- **SSH** → Secure remote access

These protocols operate over **TCP/IP**, the core model of the Internet, which ensures:
✓ Correct addressing and routing of data
✓ Reliable delivery of messages
✓ Security through encryption (e.g., HTTPS)

In summary, the client-server model enables efficient and secure communication on the internet. Clients access services hosted on servers using IP addresses, port numbers, and well-defined protocols that create seamless connectivity in our digital world.