Explain Client Server Architecture along with the diagram.

Client-server architecture is a network structure where clients (users or devices) request services, and servers (centralized resources) provide them. This model allows for resource sharing, efficient data management, and scalability.

Key Components:

1. **Client**: The client is the requesting machine or software. It initiates communication with the server, requesting services or resources. Examples include web browsers, email clients, and mobile apps.
2. **Server**: The server is the responding machine or software. It provides services or resources to the client. Servers can be categorized by the services they provide, such as web servers, database servers, and file servers.

How It Works:

1. **Request-Response Cycle**: The client sends a request to the server for specific data or services.
2. **Processing**: The server processes the request, which may involve querying a database, running an application, or retrieving data.
3. **Response**: The server sends the requested data or the result of the processing back to the client.

Advantages:

- **Centralized Resources**: Simplifies data management and resource allocation.
- **Scalability**: Easy to add more clients or servers to handle increased load.
- **Security**: Centralized control can enhance security measures.
- **Maintenance**: Easier to maintain and update the system as the server side can be managed centrally.

Disadvantages:

- **Single Point of Failure**: If the server goes down, clients cannot access services.
- **Performance Bottlenecks**: High demand can overwhelm the server, leading to slow responses.
- **Cost**: Initial setup and maintenance of server infrastructure can be costly.

Diagram:

Below is a simplified diagram of client-server architecture:

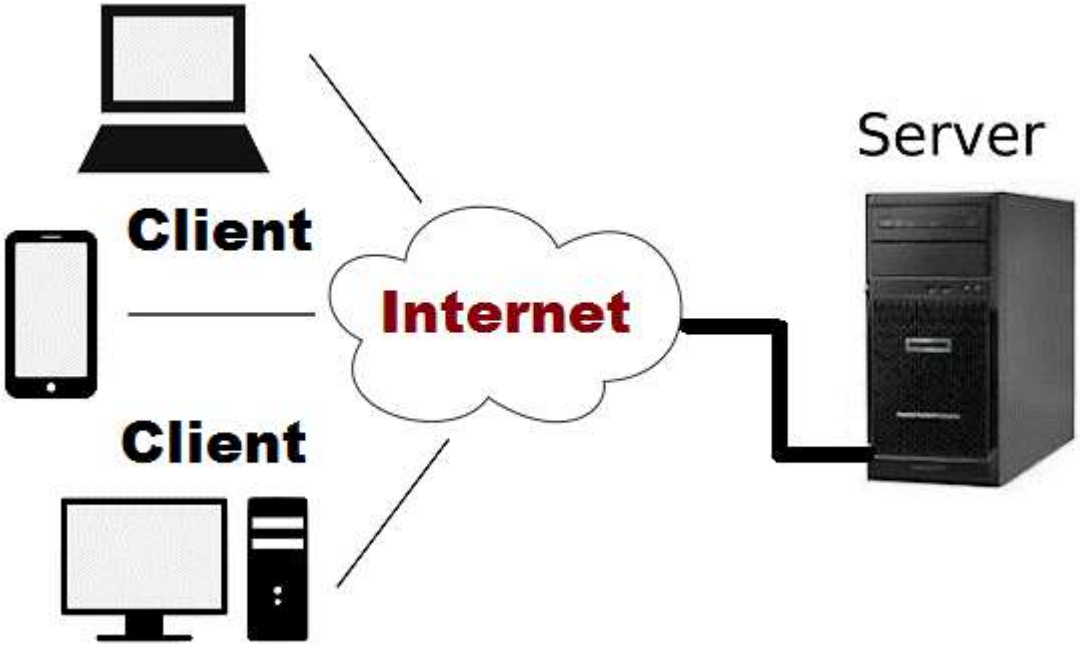

Figure: Client-Server Framework