Web Programming
Module - 1

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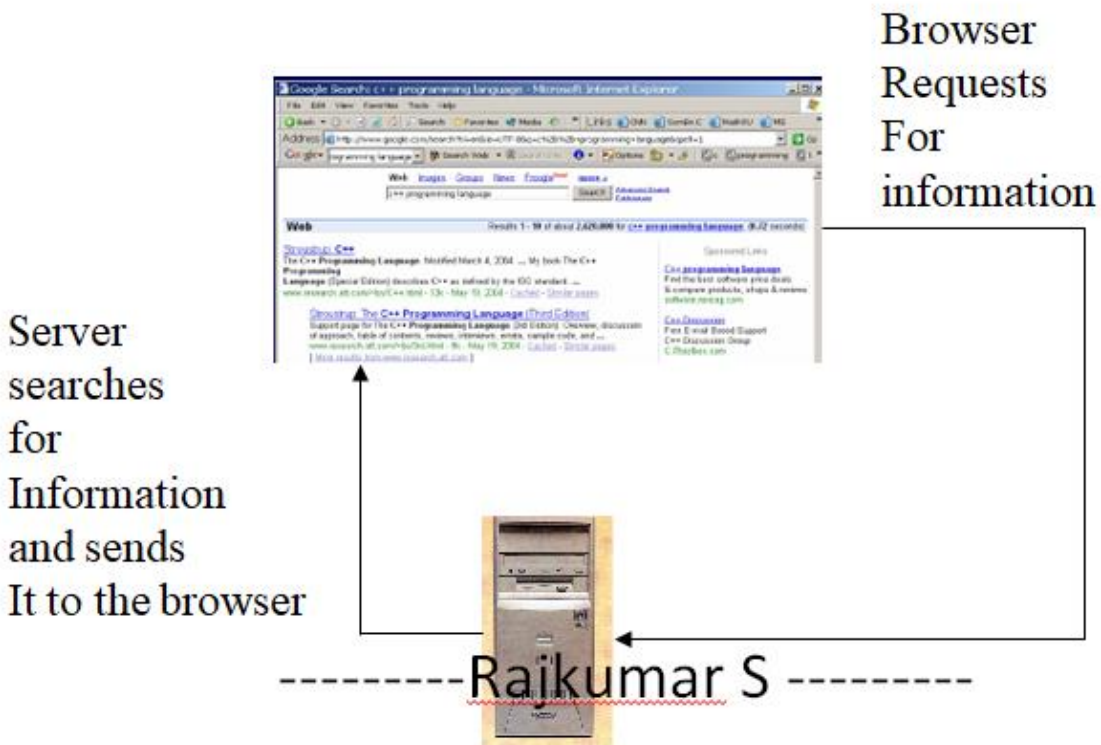
WEB SERVERS

- It is World Wide Web (WWW)
- One of the services accessible via the internet
- Collection of interconnected documents and other resources are linked by hyperlinks and Uniform Resource Locator (URL)



WEB SYSTEM ARCHITECTURE

•An Architecture of web system helps in design, development, implementation, and maintenance of a web and database

•The simplest web system architecture is 1 tier where the Client, Server, and Database all reside on the same machine

•A two-tier architecture is a web architecture in DBMS where presentation layer runs on a client and data is stored on a server

•Three-tier client-server architecture consists of the Presentation layer (PC, Tablet, Mobile, etc.), Application layer (server) and Database Server

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WEB SYSTEM ARCHITECTURE

Single tier web architecture

Single Tier Architecture

•Advantage— Fast for a single user because communication with another system is not necessary.
•Disadvantage— Completely un-scalable. Only one user can access the system at a given time via the local client.

Client (tier-1): All chunk of applications with database

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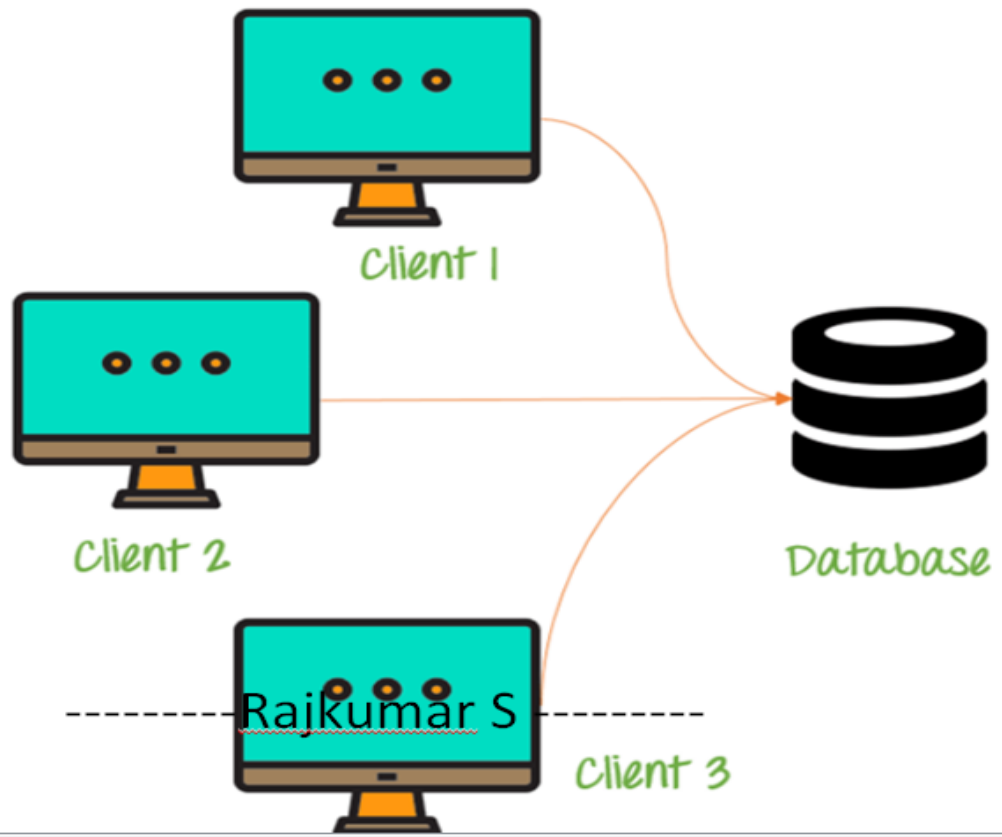
WEB SYSTEM ARCHITECTURE

Client (tier-1): All chunk of presentation applications

Server (tier-2) : Application logic and database server

2-Tier Architecture

A **2 Tier Architecture** where the presentation layer runs on a client (PC, Mobile, Tablet, etc.), and data is stored on a server called the second tier. Two tier architecture provides added security to the DBMS as it is not exposed to the end-user directly. It also provides direct and faster communication.



WEB SYSTEM ARCHITECTURE

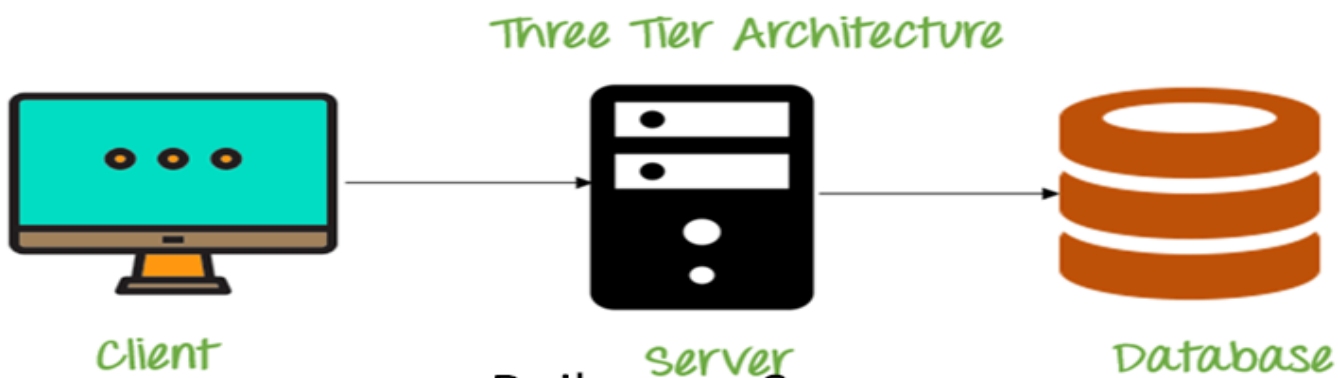
Client (tier-1): All chunk of presentation applications
Server (tier-2) : Application server –All chunk of business applications
Server (tier-3): Database server

3-Tier Architecture

A **3 Tier Architecture** in DBMS is the most popular client server architecture in DBMS in which the development and maintenance of functional processes, logic, data access, data storage, and user interface is done independently as separate modules. Three Tier architecture contains a presentation layer, an application layer, and a database server.

3-Tier database Architecture design is an extension of the 2-tier client-server architecture. A 3-tier architecture has the following layers:

1. Presentation layer (your PC, Tablet, Mobile, etc.)
2. Application layer (server)
3. Database Server



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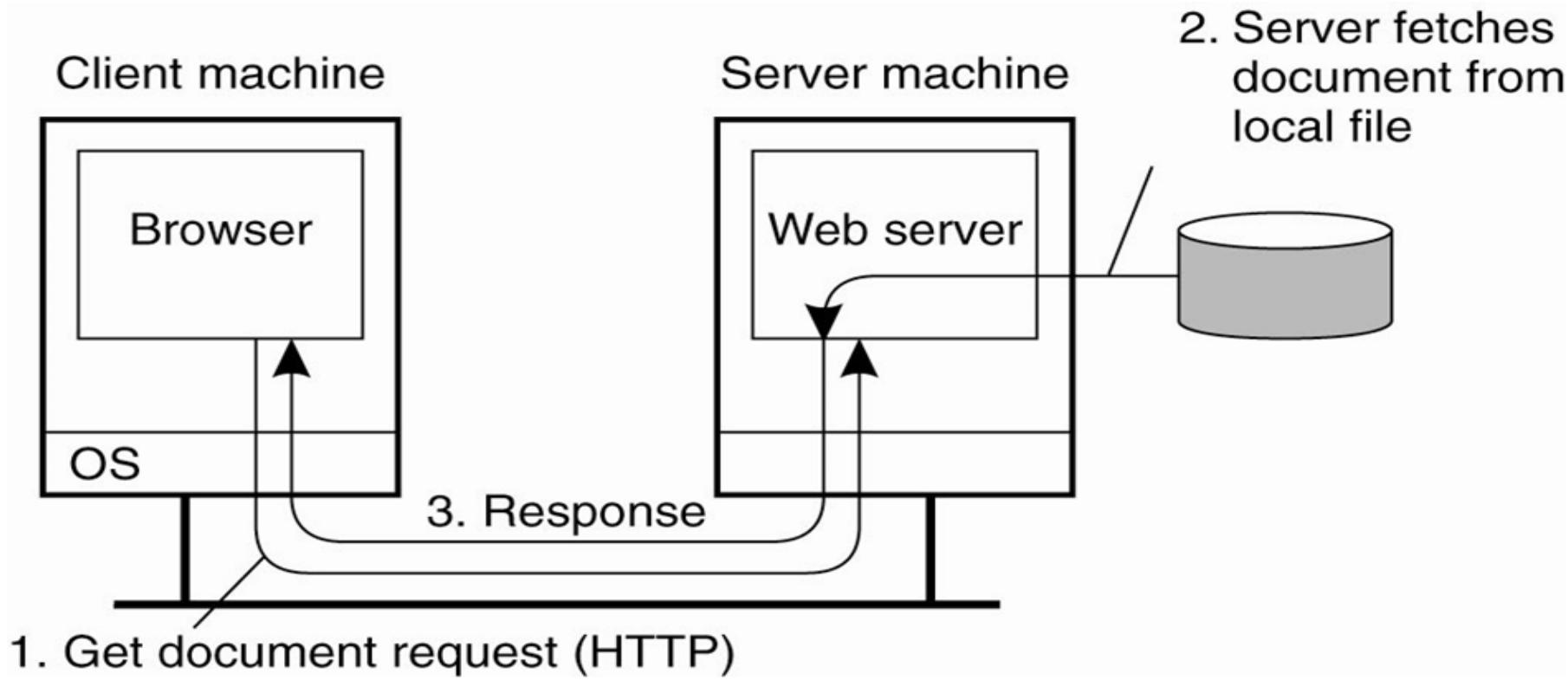
WEB SYSTEM ARCHITECTURE

- Many Web-based systems are still organized as simple client-server architectures.



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WEB SYSTEM ARCHITECTURE

- Web documents can be built in two ways:
  - Static – locates and returns the object identified in the request. Static objects include predefined HTML pages and JPEG or GIF files. does not require web servers to communication with any server-side application.
  - Dynamic – the request is forwarded to an application system where the reply is generated dynamically, i.e. data is generated through a server-side program execution.

- Although Web started as simple two-tiered client-server architecture for static Web documents, this architecture has been extended to support advanced type of documents.
- Many Web sites are now organized as three-tiered architectures consisting of a Web server, an application server, and a database server.

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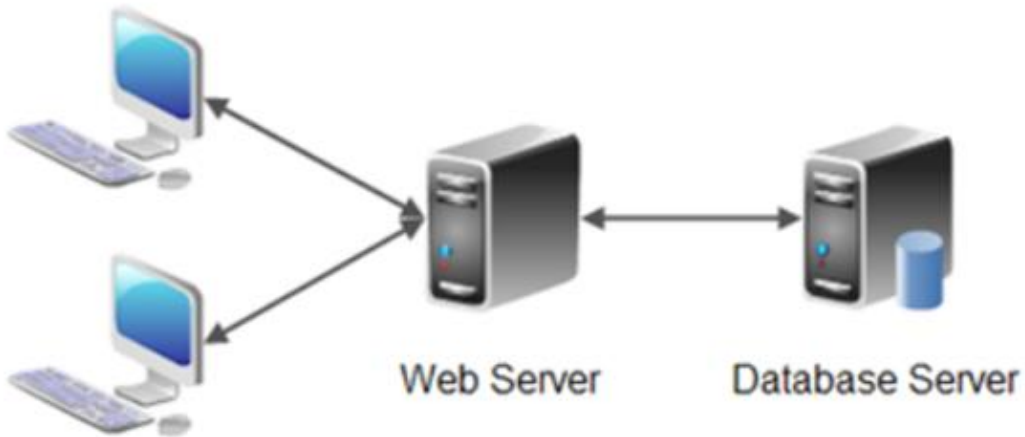
WEB SYSTEM ARCHITECTURE

Web applications are very common examples of 3-tier applications:

1. The presentation tier consists of HTML, CSS and JavaScript
2. The application logic tier runs on a web server in form of Java Servlets, JSP, ASP.NET, PHP, Ruby, Python etc.,
3. and the data tier consists of a database of some kind (mysql, postgresql, a noSQL database etc.). Here is a diagram of a typical 3 tier web application



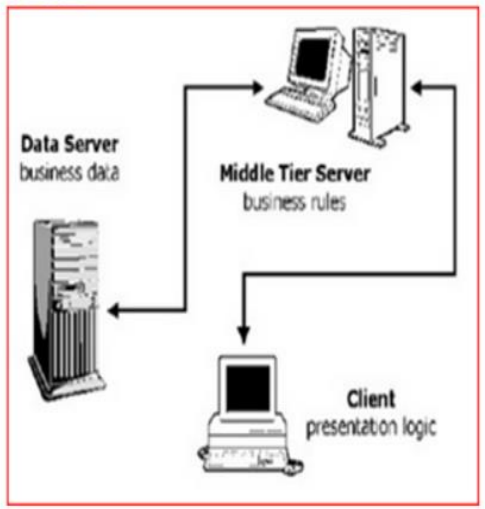
Web Browser

WEB SYSTEM ARCHITECTURE

1.Presentation

2.Application

3.Data



What is 3-tier Architecture?

- A three-way interaction in a client/Server environment
  - The User Interface is stored in the Client.
  - The Business Application Logic is Stored in one or more Servers.
  - The Data is Stored in a Database Server.

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The Application layer resides between the user and the DBMS, which is responsible for communicating the user's request to the DBMS system and send the response from the DBMS to the user. The application layer(business logic layer) also processes functional logic, constraint, and rules before passing data to the user or down to the DBMS.

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WEB SYSTEM ARCHITECTURE

- More security

  The middle tier can sure that only valid data is allowed to be updated in the database

  The client does not have direct access to the database

  By enabling more fine grained authorization on the server

- Easy to manage and deploy on the network
- Separate the user applications and physical database

WEB BROWSER

- A client interacts with Web servers through a special application known as browser.
- What's the key function of a browser?
  - Responsible for displaying documents.
- Mozila Firefox, Edge, Opera , Safari (apple), Chrome and lynx (text based browser)