ADVENTIST UNIVERSITY OF CENTRAL AFRICA

FACULTY OF INFORMATION TECHNOLOGY

MODULE: WEB DESIGN

CHAPTER1. INTRODUCTION TO WEB DESIGN

CODE: INSY 8314

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WEB DESIGN AND DEVELOPMENT

Pre-requisite:

- Background of programming languages (C, C++, etc)

Purpose

- This course introduces the basic concepts of web development skills. The students will learn to use tools to create a complete web-based solution.
- Students will bring together all the knowledge gained from programming module and database module to build a database web driven system using HTML,CSS and server side scripting languages.

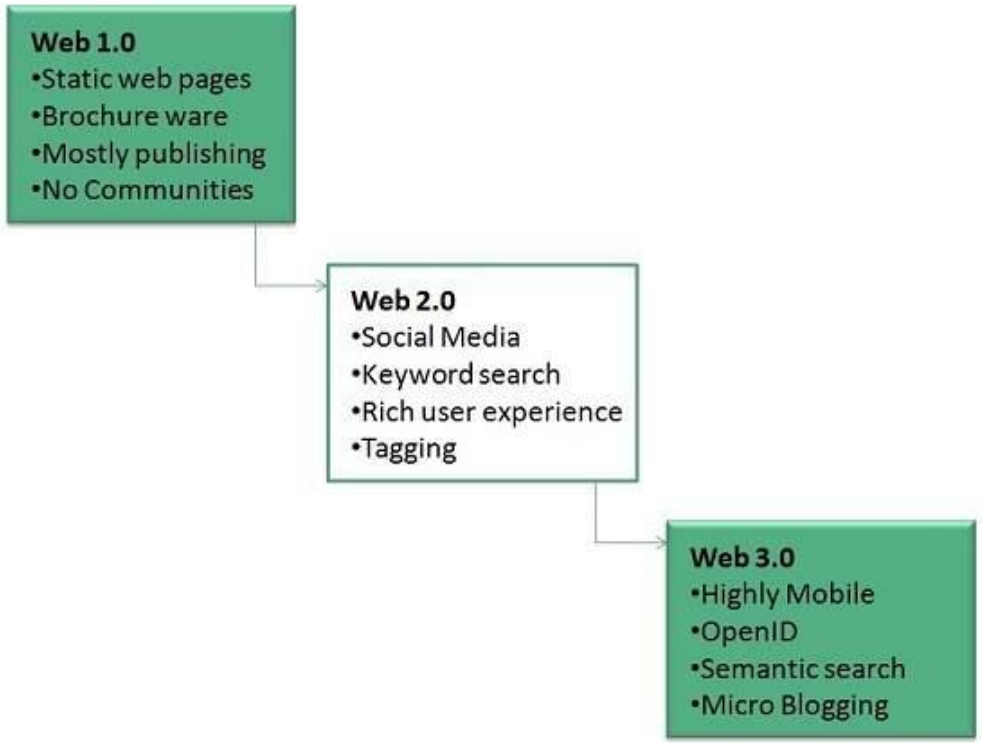
WWW Overview

- **WWW** stands for **World Wide Web.** A technical definition of the World Wide Web is : all the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).
- In simple terms, The World Wide Web is a way of exchanging information between computers on the Internet, tying them together into a vast collection of interactive multimedia resources.
- **Internet** and **Web** is not the same thing: Web uses internet to pass over the information.

Evolution of World Wide Web

- **World Wide Web** was created by **Timothy Berners Lee** in 1989 in **Geneva.**
- World Wide Web came into existence as a proposal by him, to allow researchers to work together effectively and efficiently**.**
- Eventually it became **World Wide Web.**

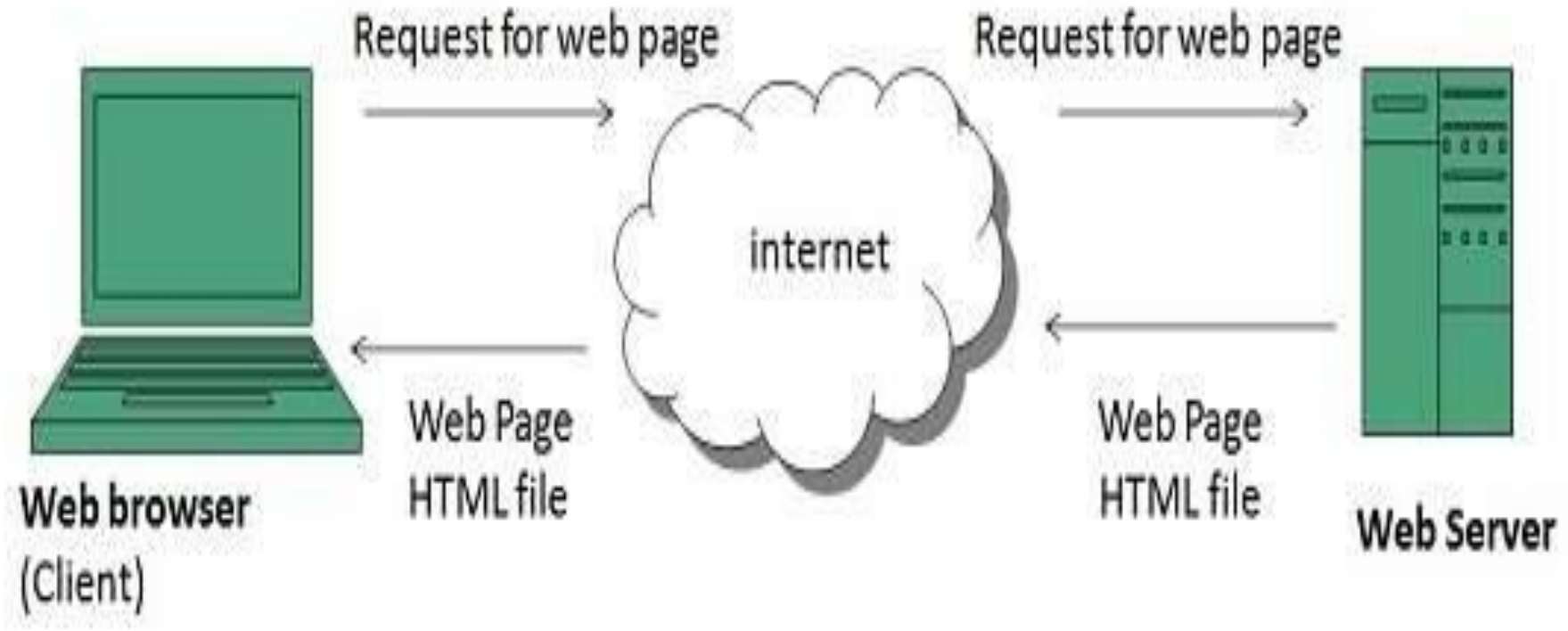
Evolution of World Wide Web



WWW Operation

- **WWW** works on client- server approach. Following steps explain how the web works:
  - User enters the URL (say, **http://www.auca.ac.rw**) of the web page in the address bar of web browser.
  - Then browser requests the Domain Name Server for the IP address corresponding to **www.ulk.ac.rw**.
  - After receiving IP address, browser sends the request for web page to the web server using HTTP protocol which specifies the way the browser and web server communicates.
  - Then web server receives request using HTTP protocol and checks its search for the requested web page. If found it returns it back to the web browser and close the HTTP connection.
  - Now the web browser receives the web page, It interprets it and display the contents of web page in web browser's window.

WWW Operation

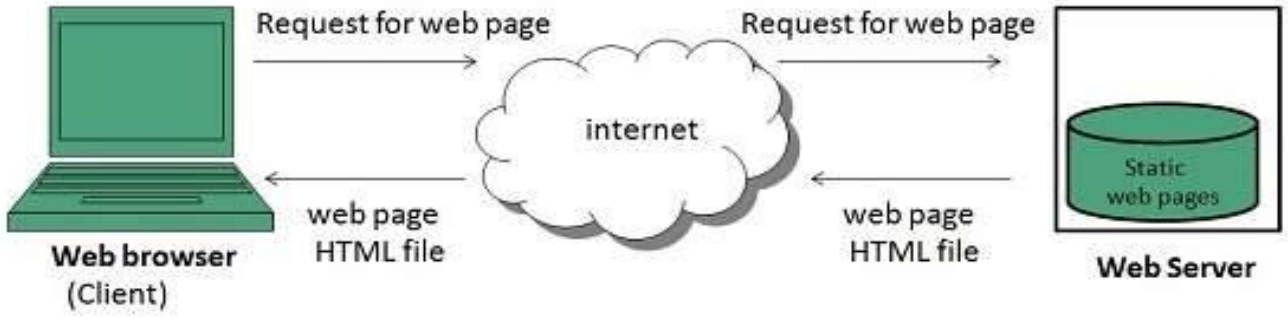


Web Page

- **web page** is a document available on world wide web. Web Pages are stored on web server and can be viewed using a web browser.
- A web page can contain huge information including text, graphics, audio, video and hyper links. These hyper links are the link to other web pages.
- Collection of linked web pages on a web server is known as **website.** There is unique **Uniform Resource Locator (URL)** is associated with each web page.

Static Web page

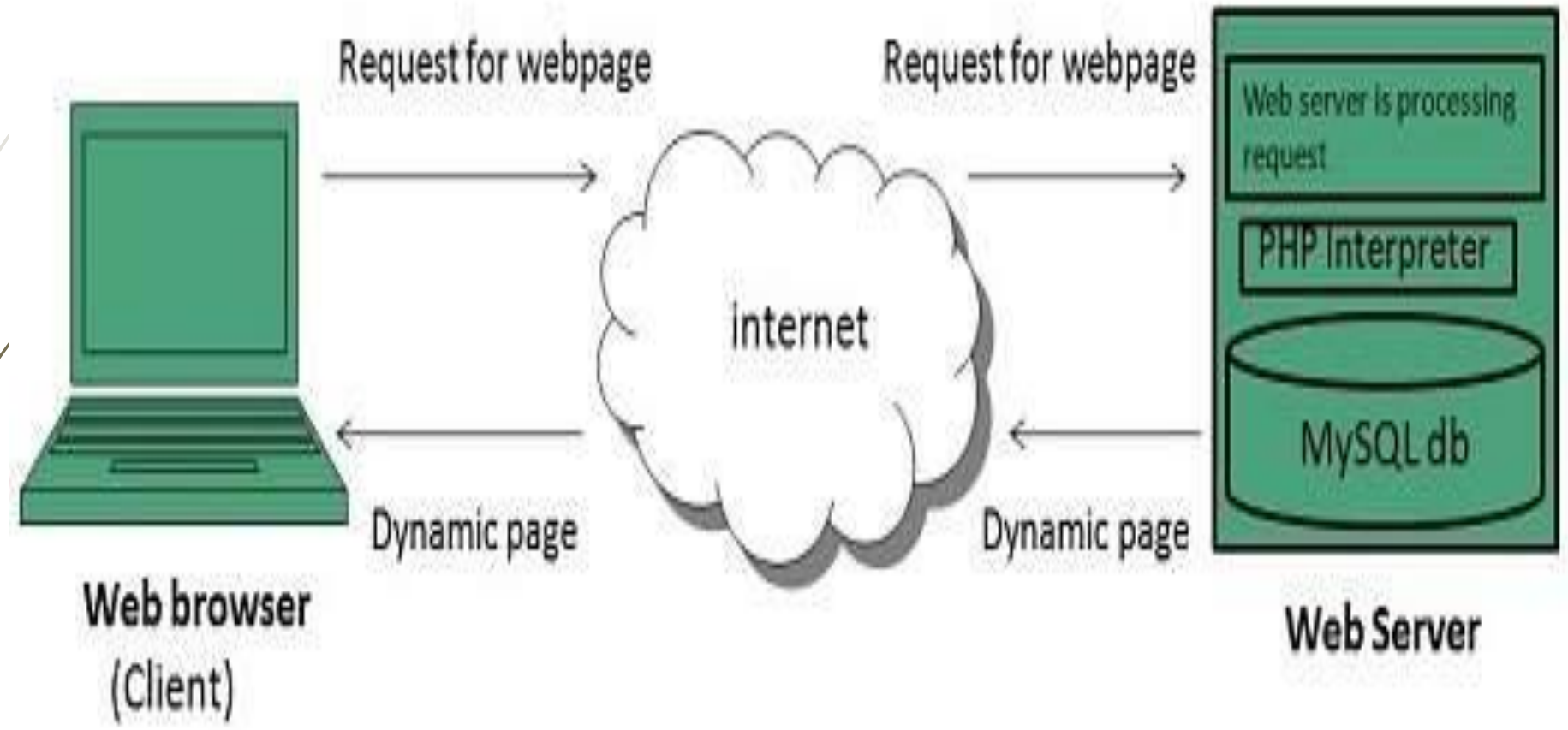
- **Static web pages** are also known as flat or stationary web page. They are loaded on the client's browser as exactly they are stored on the web server. Such web pages contain only static information. User can only read the information but can't do any modification or interact with the information.
- Static web pages are created using only HTML. Static web pages are only used when the information is no more required to be modified.



Dynamic Web page

- Dynamic web page shows different information at different point of time. It is possible to change a portion of a web page without loading the entire web page. It has been made possible using **Ajax (**"Asynchronous JavaScript and XML")technology.
- **Server-side dynamic web page**
- It is created by using server-side scripting. There are server-side scripting parameters that determine how to assemble a new web page which also include setting up of more client-side processing.
- **Client-side dynamic web page**
- It is processed using client side scripting such as JavaScript. And then passed in to **Document Object Model (DOM).**

Dynamic Web page



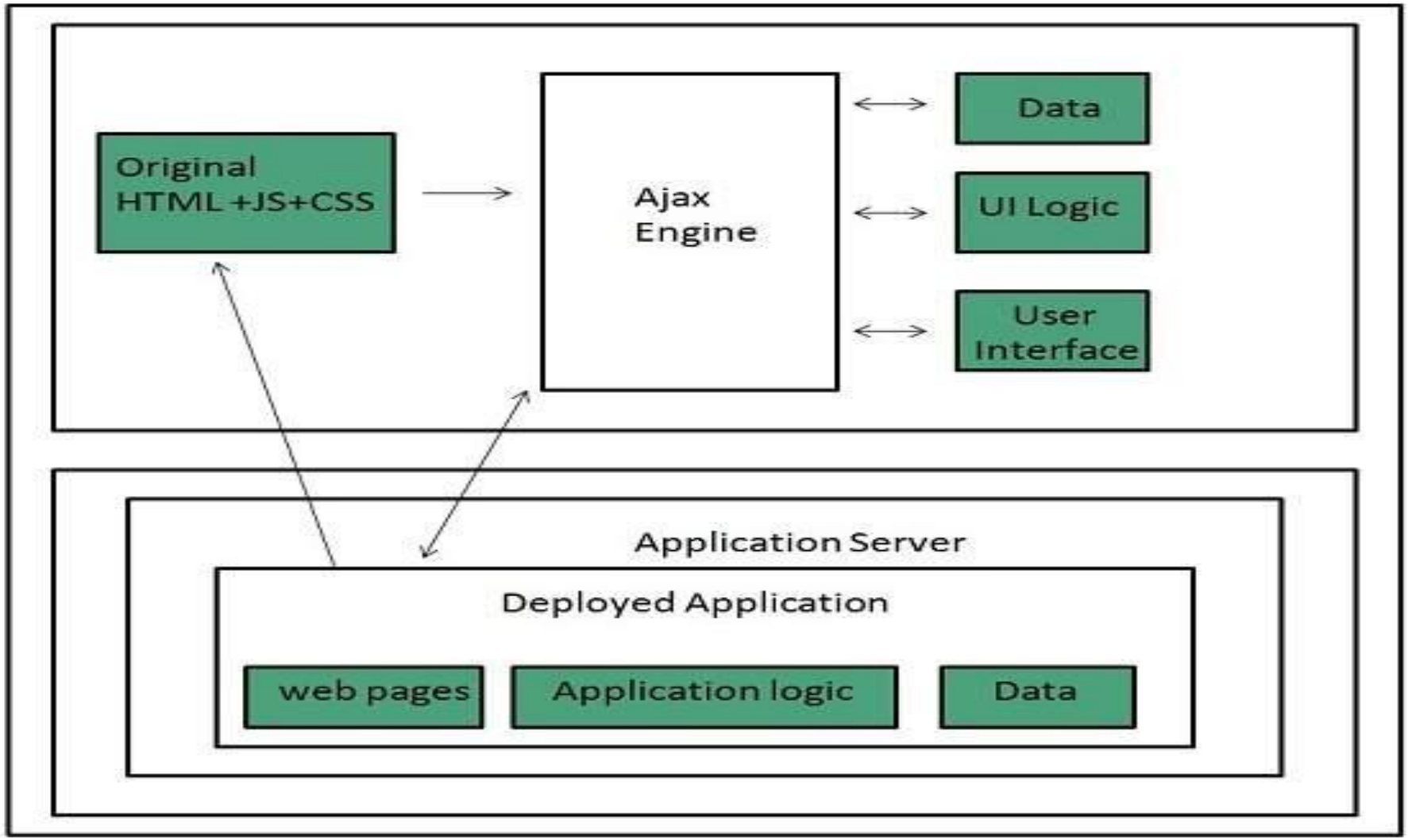
Scripting Languages

- Scripting languages are like programming languages that allow us to write programs in form of script.
- These scripts are interpreted not compiled and executed line by line.
- Scripting language is used to create dynamic web pages.

1. **Client-side Scripting**

- Client-side scripting refers to the programs that are executed on client-side.
- Client-side scripts contains the instruction for the browser to be executed in response to certain user's action.

1. Client-side Scripting

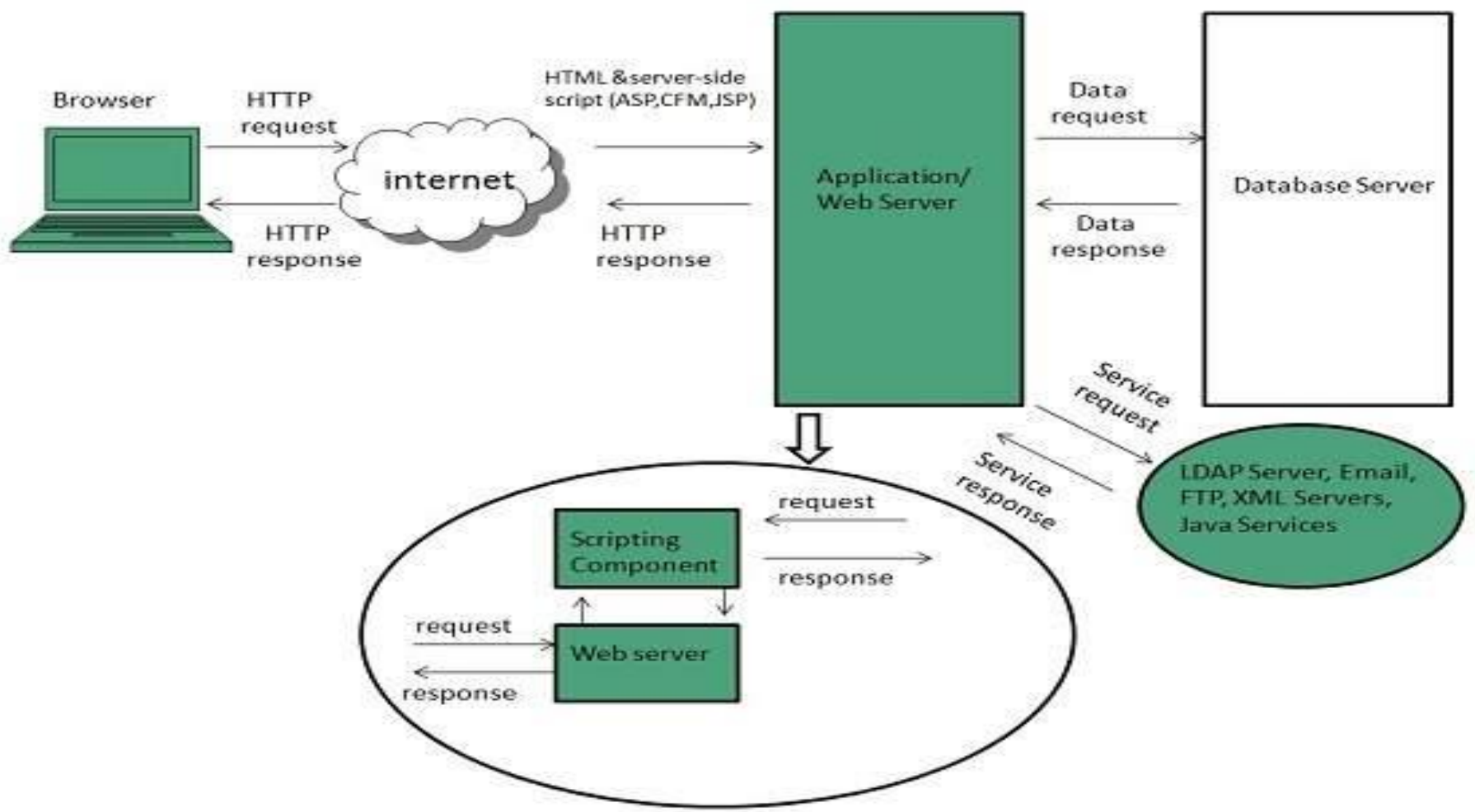


Scripting Languages

2. Server-side Scripting

- Sever-side scripting acts as an interface for the client and also limit the user access the resources on web server.
- It can also collects the user's characteristics in order to customize response.

2. Server-side Scripting



HTML –OVERVIEW

- HTML stands for **H**yper**t**ext **M**arkup **L**anguage, and it is the most widely used language to write Web Pages.
- **Hypertext** refers to the way in which Web pages (HTML documents) are linked together. Thus, the link available on a webpage is called Hypertext.
- As its name suggests, HTML is a **Markup Language** which means you use HTML to simply "mark-up" a text document with tags that tell a Web browser how to structure it to display.
- Originally, HTML was developed with the intent of defining the structure of documents and so forth to facilitate the sharing of scientific information between researchers.

GETTING READY TO CREATE A DYNAMIC WEBSITE

- You can create your web site off line using a standard text editor, an HTML web browser, or a HTML graphics editor. I recommend using an HTML text editor which lets you see the HTML tags in a different color which makes them easier to see.

HTML Structure

- HTML uses tags that are encased in brackets like the following:

< >

- HTML documents consist of **elements** which are constructed with **tags**. For instance, a paragraph is considered to be an html element constructed with the tags <P> and </P>.

HTML Tags

- **Tag** is a command that tells the web browser how to display the text, audio, graphics or video on a web page.
- **Key Points:**
  - They start with a less than (<) character and end with a greater than (>) character.
  - The tag name is specified between the angle brackets.
  - Most of the tags usually occur in pair: the start tag and the closing tag.
  - The start tag is simply the tag name is enclosed in angle bracket whereas the closing tag is specified including a forward slash (/).

HTML Tags (Contd....)

- **Key Points:**
  - Some tags are the empty i.e. they don't have the closing tag.
  - Tags are not case sensitive.
  - The starting and closing tag name must be the same. For example <b> hello </i> is invalid as both are different.
  - If you don't specify the angle brackets (<>) for a tag, the browser will treat the tag name as a simple text.
  - The tag can also have attributes to provide additional information about the tag to the browser.

GETTING READY TO CREATE A DYNAMIC WEBSITE

- Not all tags have a tag for ending the element such as the line break,
 tag.
- The HTML document is begun with the <html> tag and ended with the </html> tag.
- Elements of an HTML document include the HEAD, BODY, paragraphs, lists, tables, and more. Elements may be embedded within each other.
- Also some elements have **attributes** embedded in the tag that define characteristics of the element such as the placing of text, size of text, source of an image, and other characteristics depending on the element.
- ***An HTML document is structured with two main elements:***
  - ✓ HEAD
  - ✓ BODY

HTML Document Structure

```
Document declaration tag
<html>
    <head>
        Document header related tags
    </head>

    <body>
        Document body related tags
    </body>
</html>
```

GETTING READY TO CREATE A DYNAMIC WEBSITE

- **Example:**

```
<! DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
 <html>
   <head>
      <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
      <meta name="GENERATOR" content="Arachnophilia 3.9">
       <meta name="description" content="Comprehensive Documentation and     information about HTML.">
      <meta name="keywords" content="HTML, tags, commands"> <title>The CTDP    HTML Guide</title>
      <link href="style.css" rel="stylesheet" type="text/css">
      <!-- Background white, links blue (unvisited), navy (visited), red (active) -->
  </head>
      <body>
          <h1>HTML Document Structure</h1>
<p>This is a sample HTML file. </p>
       </body>
</html>
```

HTML Header

- The header contains several notable items which include:

- ✓ **doctype -** This gives a description of the type of HTML document this is.
- ✓ **meta name**="description" - This gives a description of the page for search engines.
- ✓ **meta name="**keywords" - This line sets keywords which search engines may use to find your page.
- ✓ **Title**= Defines the name of your document for your browser.

Elements in the Header

- Elements allowed in the HTML 4.0 strict HEAD element are:

- ✓ **BASE** - Defines the base location for resources in the current HTML document. Supports the TARGET attribute in frame and transitional document type definitions.
- ✓ **LINK** - Used to set relationships of other documents with this document.
- ✓ **META** - Used to set specific characteristics of the web page and provide information to readers and search engines.
- ✓ **SCRIPT** - Used to embed script in the header of an HTML document.
- ✓ **STYLE** - Used to embed a style sheet in the HTML document.
- ✓ **TITLE** - Sets the document title.

HTML Tags

- As told earlier, HTML is a markup language and makes use of various tags to format the content.
- These tags are enclosed within angle braces **<Tag Name>**.
- Except few tags, most of the tags have their corresponding closing tags.
- For example, **<html>** has its closing tag**</html>** and **<body>** tag has its closing tag **</body>** tag etc.

HTML Tags

Tag	Description
<!DOCTYPE...>	This tag defines the document type and HTML version.
<html>	This tag encloses the complete HTML document and mainly comprises of document header which is represented by <head>...</head> and document body which is represented by <body>...</body> tags.
<head>	This tag represents the document's header which can keep other HTML tags like <title>, <link> etc.
<title>	The <title> tag is used inside the <head> tag to mention the document title.
<body>	This tag represents the document's body which keeps other HTML tags like <h1>, , <p> etc.
<h1>	This tag represents the heading.
<p>	This tag represents a paragraph.