Web Pages

Last Updated : 23 Jul, 2025

A web page is a single document that is displayed through a web browser. It is a part of a website and can include text, images, videos, links, and interactive elements. Web pages are primarily written in HTML (HyperText Markup Language), styled with CSS (Cascading Style Sheets), and have dynamic elements with JavaScript.

- A web page shows text, images, and videos to provide information.
- It includes elements like forms and buttons that users can click or fill out.
- A web page has links that let users move between different pages or sections.

Types of Web Pages

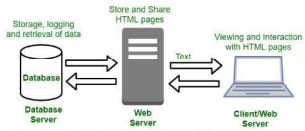
Web pages can be classified based on their functionality. The two main types of web pages are:

1. Static Web Pages

Static web pages are simple and do not contain dynamic content or interactive elements. They are also called flat or stationary web pages. These pages stay the same and show the same content to all users, no matter what actions they take. Static web pages are created using HTML and CSS.

2. Dynamic Web Pages

Dynamic web pages display different content depending on user actions or other factors. They make websites more interactive and engaging. For example, content such as image slideshows, videos, or user-specific data can change each time a page is loaded. **For example:** Social Media websites, E-commerce websites, News websites, etc.



Dynamic web pages connect the client with the web server, which fetches and updates data from the database server to provide real-time content and interaction

Dynamic web pages can be further divided into two categories:

- **Server-Side Scripting:** Server-side scripting involves languages like PHP, ASP.Net, and JSP. It enables web pages to interact with databases, modify their content, and respond to user actions.
- **Client-Side Scripting:** This method involves JavaScript or other languages like Dart to create web pages that can update in real-time based on events such as user clicks, mouse movements, or keyboard presses.

Web Server and Its Types

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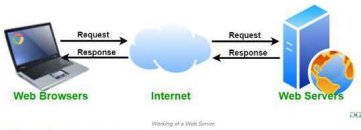
A web server is a system either software, hardware, or both that stores, processes, and delivers web content to users over the Internet using the HTTP or HTTPS protocol. When a user's browser sends a request (like visiting a website), the web server responds by delivering the appropriate resources, such as HTML pages, images, videos, or data.

An HTTP server is a specific type of web server which is responsible for handling HTTP requests and responses. While all HTTP servers are web servers, not all web servers are limited to HTTP. Some web servers may support additional protocols like FTP or SMTP.

How Does a Web Server Work?

When a user accesses a website by entering a URL in their web browser, the browser sends an HTTP request to the web server hosting the website. The web server processes this request and returns the necessary resources to display the page on the user's browser.



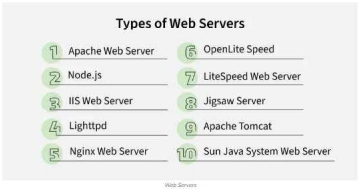
Working of a Web Server

Here is a simplified version of how the process works

- **Client Request:** In the web browser(https://www.example.com/) the user enters a URL.
- **DNS Resolution:** To get the IP address of the requested domain, the browser contacts a Domain Name System (DNS) server.
- **Connecting to the Web Server:** Using the obtained IP address the browser establishes a connection with the web server.

Types of Web Servers

Web servers can be categorized based on their functionality, usage, and implementation. Below are some of the most common types



Web Servers

What is HTTP ?

Last Updated : 01 Apr, 2024

HTTP (Hypertext Transfer Protocol) is a fundamental protocol of the Internet, enabling the transfer of data between a client and a server. It is the foundation of data communication for the World Wide Web.

HTTP provides a standard between a web browser and a web server to establish communication. It is a set of rules for transferring data from one computer to another. Data such as text, images, and other multimedia files are shared on the World Wide Web. Whenever a web user opens their web browser, the user indirectly uses HTTP. It is an application protocol that is used for distributed, collaborative, hypermedia information systems.

History of HTTP

- Tim Berners-Lee and his team at CERN are indeed credited with inventing the original HTTP protocol.
- HTTP version 0.9 was the initial version introduced in 1991.
- HTTP version 1.0 followed in 1996 with the introduction of RFC 1945.
- HTTP version 1.1 was introduced in January 1997 with RFC 2068, later refined in RFC 2616 in June 1999.
- HTTP version 2.0 was specified in RFC 7540 and published on May 14, 2015.
- HTTP version 3.0, also known as HTTP/3, is based on the QUIC protocol and is designed to improve web performance. It was renamed as Hyper-Text Transfer Protocol QUIC (HTTP/3) and developed by Google.

Methods of HTTP

- **GET**: Used to retrieve data from a specified resource. It should have no side effects and is commonly used for fetching web pages, images, etc.
- **POST**: Used to submit data to be processed by a specified resource. It is suitable for form submissions, file uploads, and creating new resources.
- **PUT**: Used to update or create a resource on the server. It replaces the entire resource with the data provided in the request body.
- **PATCH**: Similar to PUT but used for partial modifications to a resource. It updates specific fields of a resource rather than replacing the entire resource.
- **DELETE**: Used to remove a specified resource from the server.
- **HEAD**: Similar to GET but retrieves only the response headers, useful for checking resource properties without transferring the full content.
- **OPTIONS**: Used to retrieve the communication options available for a resource, including supported methods and headers.
- **TRACE**: Used for debugging purposes to echo the received request back to the client, though it's rarely used due to security concerns.
- **CONNECT**: Used to establish a tunnel to the server through an HTTP proxy, commonly used for SSL/TLS connections.

HTTP Request/Response:

HTTP is a request-response protocol, which means that for every request sent by a client (typically a web browser), the server responds with a corresponding response. The basic flow of an HTTP request-response cycle is as follows:

- **Client sends an HTTP request**: The client (usually a web browser) initiates the process by sending an HTTP request to the server. This request includes a request method (GET, POST, PUT, DELETE, etc.), the target URI (Uniform Resource Identifier, e.g., a URL), headers, and an optional request body.
- **Server processes the request**: The server receives the request and processes it based on the requested method and resource. This may involve retrieving data from a database, executing server-side scripts, or performing other operations.
- **Server sends an HTTP response:** After processing the request, the server sends an HTTP response back to the client. The response includes a status code (e.g., 200 OK, 404 Not Found), response headers, and an optional response body containing the requested data or content.

CSS Introduction

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CSS (Cascading Style Sheets) is a language designed to simplify the process of making web pages presentable.

- It allows you to apply styles to HTML documents by prescribing colors, fonts, spacing, and positioning.
- The main advantages are the separation of content (in HTML) and styling (in CSS) and the same CSS rules can be used across all pages and not have to be rewritten.
- HTML uses tags, and CSS uses rule sets.
- CSS styles are applied to the HTML element using selectors.

Why CSS?

- **Saves Time:** Write CSS once and reuse it across multiple HTML pages.
- **Easy Maintenance:** Change the style globally with a single modification.
- **Search Engine Friendly:** Clean coding technique that improves readability for search engines.
- **Superior Styles:** Offers a wider array of attributes compared to HTML.
- **Offline Browsing:** CSS can store web applications locally using an offline cache, allowing offline viewing.

CSS Syntax

CSS consists of style rules that are interpreted by the browser and applied to the corresponding elements. A style rule set includes a **selector** and a **declaration** block.

- **Selector:** Targets specific HTML elements to apply styles.
- **Declaration:** Combination of a property and its corresponding value.

```
// HTML Element
<h1>GeeksforGeeks</h1>
```

```
// CSS Style
h1 {
    color: blue; font-size: 12px;
}
```

The CSS code targets the `h1` element with the selector `h1`. The declaration `{ color: blue; font-size: 12px; }` sets the text color to blue and the font size to 12 pixels.

- The selector points to the HTML element that you want to style.
- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.

Difference Between the Internet and WWW

INTERNET	WWW
The Internet is a global network of interconnected systems	WWW stands for World wide Web.
Internet is a means of connecting a computer to any other computer anywhere in the world.	World Wide Web which is a collection of information which is accessed via the Internet.
Internet is infrastructure.	WWW is service on top of that infrastructure.
Internet can be viewed as a big book-store.	Web can be viewed as collection of books on that store.
At an advanced level, the Internet can be thought of as hardware.	At some advanced level, to understand we can think of the WWW as software.
Internet is primarily hardware-based.	WWW is more software-oriented as compared to the Internet.
It originated in the late 1960s.	English scientist Tim Berners-Lee invented the World Wide Web in 1989.
Internet is superset of WWW.	WWW is a subset of the Internet.
The first version of the Internet was known as ARPANET. Initially, the WWW was known as NSFNET.	In the beginning WWW was known as NSFNET.
Internet uses IP address.	WWW uses HTTP.