

WELCOME

Introduction to Web Development

Web Development

What is a website?

A website is a collection of related web pages hosted on a server and accessed through a web browser using a specific domain name (like `www.example.com`).

It can include text, images, videos, links, and interactive features. Websites are used for various purposes like sharing information, offering services, selling products, or entertainment.



What is Web Development?

Definition

Web development is the process of creating and maintaining websites or web applications accessed through the internet. It involves a combination of programming, designing, and managing web content to build functional and visually appealing online experiences.

Categories

Web development is broadly divided into three main categories:

- **Front-end Development** (Client-side)
- **Back-end Development** (Server-side)
- **Full-stack Development** (Both)

Types of Web Development



Front-end

Focuses on the visual elements that users see and interact with in the browser.



Back-end

Focuses on the server-side logic, databases, and application architecture.



Full-stack

Combines both front-end and back-end skills to build complete web solutions.

Front-end Development

Client-side code runs on the user's browser. It handles the UI, UX, and visual elements.





Key Technologies:

- **Languages:** HTML, CSS, JavaScript
- **Frameworks:** React, Angular, Vue.js
- **Tools:** Bootstrap, Tailwind CSS, Webpack
- ✓ Responsible for displaying the UI & Interactivity.



Back-end Development

Back-end development focuses on how a website works behind the scenes.

-  **Data Management:** Handle database & server logic.
-  **Security:** User validation & secure storage.
-  **API Integration:** Communication bridges.
-  **Server Operations:** Hosting & configs.



Client-Server Model

The Restaurant Analogy

Customer (Client)

Places an order (Sends a Request).

Waiter (API)

Forwards the order and serves the food.

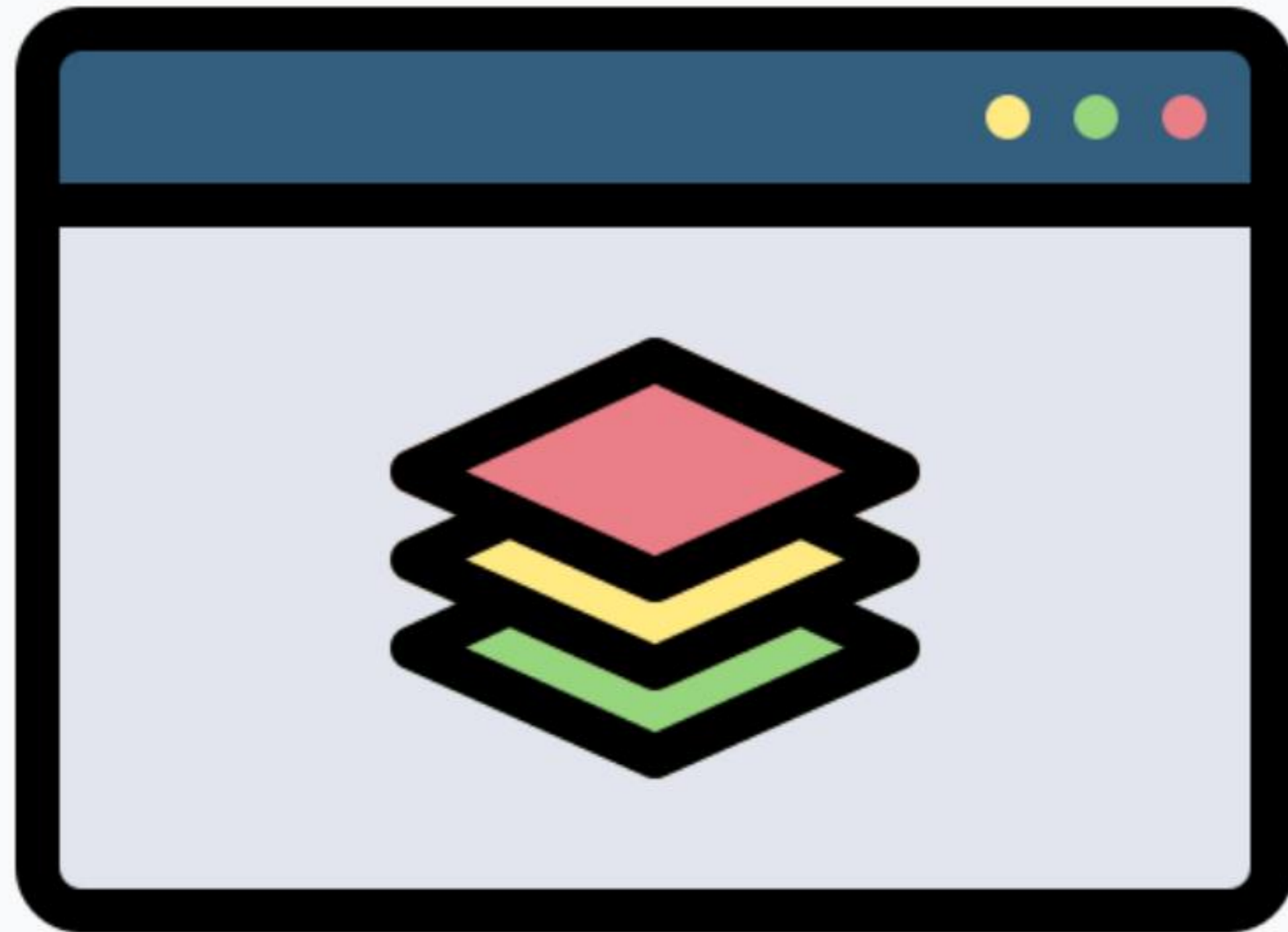
Chef (Server)

Prepares the order (Processes Response).

 Client server diagram



Full-stack Development



Full-stack developers are skilled in both designing user interfaces (HTML, CSS, JS) and managing server-side operations (Python, PHP, Node.js).

Benefits:

- Flexibility in development.
- Faster development cycles.
- Better coordination between front-end and back-end.
- Ideal for startups and small teams.

Web Performance Optimization (WPO)

Practices to improve speed and efficiency for better user experience.

Technique	Description
Minification	Remove unnecessary characters (spaces, comments) from code files.
Compression	Use Gzip or Brotli to compress files sent from server to browser.
Caching	Store resources locally to avoid repeated downloads.
Lazy Loading	Load images and content only when needed as the user scrolls.
Image Optimization	Resize, compress, and serve images in modern formats (WebP).

Why use Python?



Rapid Development

Simple, readable syntax allows for quick prototyping and MVPs.



Powerful Web Frameworks

Includes robust tools like Django (Full-stack) and Flask (Microframework).



Rich Ecosystem

Huge libraries for database access, authentication, and more.



Strong Community Support

Extensive tutorials, documentation, and secure modules.



AI/ML Integration

Easily integrates with data science and automation tools.

Bootstrap Framework

Introduction

Bootstrap is a free and open-source front-end framework developed by Twitter.

Key Benefits

It facilitates the creation of responsive and mobile-first websites by providing a collection of pre-designed components.

Result: Consistent and visually appealing web interfaces built efficiently.



Python Framework - Django

The Django logo is displayed in a dark green, lowercase, sans-serif font. It is centered within a white circular area that has a subtle drop shadow, giving it a 3D effect. The background of the slide features a light blue abstract graphic in the top right corner.

What is Django?

A high-level Python web framework that helps you build secure, scalable, and maintainable web applications fast.

Key Advantages

- ✓ **Fast:** Moves from concept to completion quickly.
- 🛡️ **Secure:** Prevents common security mistakes.
- 📦 **Scalable:** Handles heavy traffic easily.
- 🏠 **Versatile:** Works for any type of website.

Questions?

Thank you for listening.

Image Sources



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Source: www.vecteezy.com



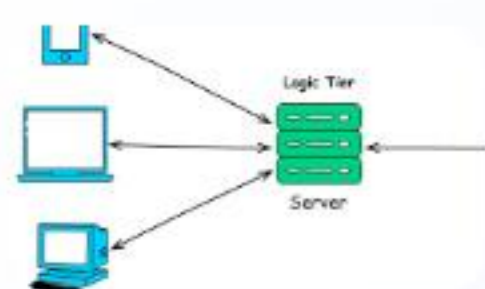
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Image Sources



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