Introduction to Web development

What is Web Development ?

is the process of creating websites and web applications that are accessible through the internet

It involves designing, building, and maintaining the various components of a website, including its visual layout, functionality, and interactions

Web development encompasses both frontend development, which focuses on the user-facing aspects of a website, and backend development, which involves managing the server-side processes and data handling.

It involves working with technologies such as HTML, CSS, JavaScript, and frameworks like React, Angular, or Django. Web developers utilize their skills in coding, problem-solving, and creativity to bring ideas to life on the web, ensuring optimal user experience and functionality.

What is Frontend?

Frontend is the process of creating a user interface (UI) for a website or web application. It involves utilizing HTML, CSS, and JavaScript to build the visual aspects of a website that users interact with.

HTML is used to structure the content of a webpage, CSS is used to style the content, and JavaScript is used to add interactivity to the content, such as effects, animations, and dynamic page elements.

What is Backend?

Backend is the process of building the server-side of a website or web application, and ti encompasses everything that users cannot see. It involves writing scripts that communicate with the database, manage the user authentication, and server-side logic.

Backend development is responsible for managing data within the database and serving that data to the frontend to be displayed to the user. It also involves managing the server, application, and database.

So to sum up, frontend is what the user sees and interacts with, and backend is the behind-the-scenes processes that users do not see.

Introduction to Web Servers?

What is a Web Server?

A web server is a computer that runs websites. It's a computer program that distributes web pages as they are requisitioned. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP).

while in the other hand web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.

So let's sum all of this up, a user goes to a web browser and types in a URL, the web browser then sends a request to the web server, the web server then sends back the requested files, and the web browser displays the files to the user. So the web server runs the backend of the website, and the web browser runs the frontend of the website.

To develop a website, we usually use a web framework.

Web Development Frameworks and Libraries?

A web framework is a software tool that provides a way to build and run web applications. It is a collection of libraries and modules that enables web developers to write server-side applications in a programming language. Web frameworks aim to automate the overhead associated with common activities performed in web development.

These web framework can be for frontend or backend, and they can be for a specific programming language or for multiple programming languages.

Some of the most popular web frameworks are:

Frontend:

- React(JavaScript)
- Angular(JavaScript)
- Vue(JavaScript)

Backend:

- Django(Python)
- Flask(Python)
- Express(JavaScript)
- Spring(Java)

There are also some libraries that are used to make web development easier, some of the most popular ones are:

- jQuery(JavaScript)
- Bootstrap(CSS)
- Tailwind(CSS)
- Material UI(JavaScript)

So to sum up, a web framework is a collection of libraries and modules that enables web developers to write server-side applications in a programming language, and a library is a collection of code that can be used to make web development easier.

Developer can use these frameworks and libraries to make web development easier and faster. For example, a developer can use Django to build a backend for a website, and then use React to build the frontend for the website using Bootstrap to make the website responsive.

What is a Database?

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Data is organized into rows, columns and tables, and it is indexed to make it easier to find relevant information.

We have two types of databases:

- Relational databases: store data in tables that are related to each other through a common field. They use Structured Query Language (SQL) to access the database.
- Non-relational databases: store data in documents, key-value pairs, or graphs, and they are also called NoSQL databases.

Some of the most popular databases are:

- MySQL
- PostgreSQL
- MongoDB
- Redis

What is an API?

API is an acronym that stands for Application Programming Interface. An API is a software intermediary that allows two applications to talk to each other. In other words, an API is the messenger that delivers your request to the provider that you're requesting it from and then delivers the response back to you.

An API is a set of programming code that enables data transmission between one software product and another. It also contains the terms of this data exchange.

What is a REST API?

REST is an acronym that stands for Representational State Transfer. It is an architectural style for building APIs, and it is the most common approach to creating web APIs.

REST APIs are stateless, meaning that calls can be made independently of one another, and each call contains all of the data necessary to complete itself successfully.

What does stateless mean? So stateless means that the server does not remember anything about the user who uses the API. So each request is treated as a new request. So the server does not remember anything about the user who uses the API. But this means if the user sends two requests, the server will not know that these two requests are from the same user. To solve this problem, we use tokens or cookies which are stored in database to identify the user. So whenever the server receives a request, it checks the token or cookie to identify the user by checking the database if the token or cookie exists.

We will talk this about more in our course.

What is version control?

So now we are talking about how we are going to build our website. Have you thought about how we are going to build our code in collaboration? or how we can code in a way that we can go back to a previous working version of our code if we made a mistake in our code?

So let me introduce you to version control. Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later. It allows you to revert files back to a previous state, revert the entire project back to a previous state,

compare changes over time, see who last modified something that might be causing a problem, who introduced an issue and when, and more.

To make it easier with simple word is a system that we can stamp our code with some kind of identification so that we can go back to it later or explain what we did to others or even collaborate with others.

So when we talk about Version control it is a concept and to mention how we can use this idea to our code we use the most popular version control system which is Git.

What is the difference between Git and GitHub?

I am sure you all heard about Git and GitHub, but what is the difference between them?

So in a very basic way,

- Git is a version control system that lets you manage and keep track of your source code history.
- GitHub is a cloud-based hosting service that lets you manage Git history remotely.

That's it let's start coding right! But wait, how are we going to write our code? shall we use Notepad or MS Word? or maybe we can use a text editor or an IDE.

So to make our life easier we will use a text editor or an IDE which is specifically designed for writing code.

What is a code editor?

A code editor is a text editor program designed specifically for editing source code of computer programs by programmers. It may be a standalone application or it may be built into an integrated development environment (IDE) or web browser.

Some of the most popular code editors are:

- Visual Studio Code(i am going to use this for this course)
- Sublime Text

- IntelliJ IDEA
- PyCharm

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I think at this point we can start coding.