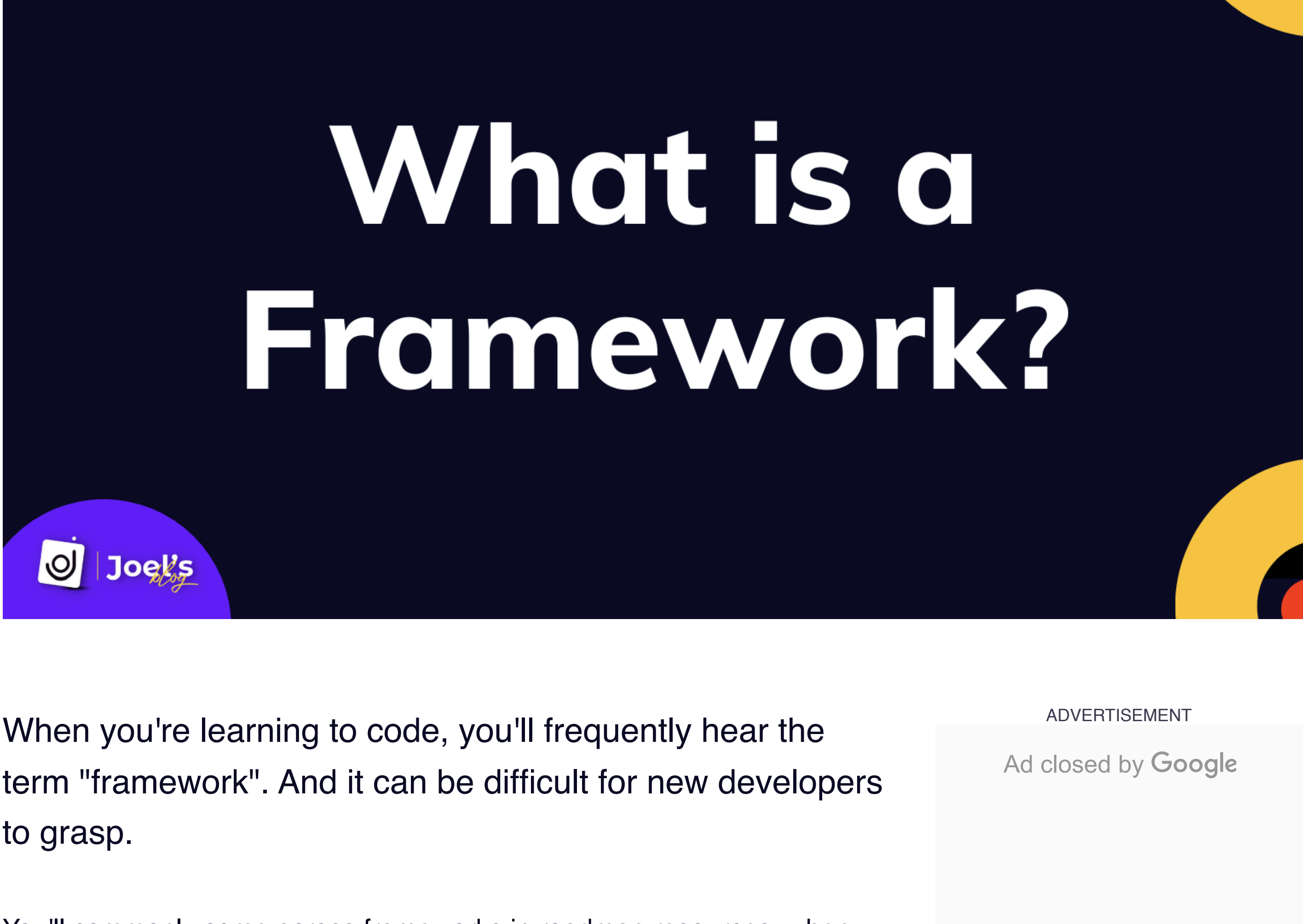


SEPTEMBER 6, 2022 / #BEGINNERS GUIDE

What is a Framework? Software Frameworks Definition



Joel Olawanle



When you're learning to code, you'll frequently hear the term "framework". And it can be difficult for new developers to grasp.

You'll commonly come across frameworks in roadmap resources, when speaking with other developers, when learning about a new coding tool, and many other places.

In this article, you will learn what a framework is in software engineering, why you need frameworks, the different types of frameworks that exist (and examples of them), and how you can get started learning a framework.

What Is a Software Framework?

The term framework can refer to a structure. It could be the structure of a system, a building, a project, or anything else.

You can now apply this definition in software engineering and refer to software frameworks as the structure for your software.

A software framework is a structure that you can use to build software. It acts as a foundation so you don't have to deal with creating unnecessary extra logic from scratch.

A framework is similar to a template in that you can modify it and add certain features and higher functionalities to create a complex and broad project that many people can use.

Note: Software frameworks are typically associated with specific programming languages. They're also appropriate for various tasks depending on the situation.

You also have backend frameworks for backend tasks, frontend frameworks for frontend tasks, mobile frameworks for mobile tasks, and many others.

Why Use Software Frameworks?

Writing code is complex. And writing code that others can understand and manage is even more difficult because you must deal with syntax, declarations, performance, staying consistent, and other issues.

Software frameworks provide a template in which almost all general tasks have been handled. This allows you to focus on the core software development rather than the details of the process. Given that there is a set structure, it is simple to collaborate with others.

It's a good idea to use a software framework rather than re-inventing the wheel from scratch for numerous reasons. And perhaps the most important reason is that you won't have to write everything from scratch. This reduces the possibility of adding errors to your code.

Other reasons to use a framework include:

- It helps you avoid duplicate and redundant code.
- It makes it easier for developers who did not write the code to test and debug it.
- Frameworks are maintained by a group of people who test them so that you can use them with confidence.
- They help you write clean and secure code
- The time required to develop an application is significantly reduced because you can now focus on writing project-specific code.

And a lot more.

Types of Software Frameworks

When you have a project to build or work on, you first decide on the programming language to use. Once you know the programming language, it's always best to look for frameworks that suit your needs.

There are many of these frameworks, each with unique characteristics that set them apart. You can find these frameworks in all areas of software engineering, including web development (frontend and backend), mobile applications, data science, and many others.

Let's look at some of the main types of software frameworks you'll come across in your development journey.

Web Development Frameworks

Web development involves creating a website that runs on the internet. This can be a single-page web application, a static website, a dynamic website, or anything else.

When creating these web pages, you usually have a frontend that the users see and a backend that controls and handles the logic (such as a database, API, and many other things).

Rather than list them all together, let's divide these frameworks into categories, so you know which to use when.

Frontend Development Frameworks

React is a frontend JavaScript framework developed by Meta (previously Facebook). It helps you create user interfaces for websites and web applications. It is a popular framework that millions of developers worldwide use to create single-page applications (SPAs).

React uses Redux for state management and hooks to handle component behavior and logic. It also uses JSX to create HTML and CSS within JavaScript.

There are many helpful resources about React on the internet. You can [learn more about React and how to get started in this guide](#).

Angular is a TypeScript-based framework developed by the Angular Team at Google. It is an open-source framework you can use to create single-page web applications, similar to React and Vue.

It has features such as two-way data binding, which reduces development time, and dependency injection, which makes it easier for different pieces of code to interact.

An enthusiastic community with numerous resources supports Angular. You can [learn more about Angular and get started in this course](#).

Vue is a progressive JavaScript framework for creating user interfaces and single-page applications. It is easy to learn and pleasant to write in. It was built by Evan You, who previously worked at Google, to take the best parts of Angular and build a custom tool around it.

Vue3 is the latest version, which happens to be way faster and lighter than previous versions. It also comes with improved TypeScript support and many other features like the composition API.

You can learn more about [Vue and how to get started in the course](#).

Bootstrap is a framework that makes it easy for developers to build a fully responsive website or web application using a collection of reusable HTML, CSS, and JavaScript code. It has a group of pre-defined codes in a downloadable file or CDN that anyone can access and use.

You can learn more about [Bootstrap and how to use it in this course](#).

There are many other frontend frameworks like Svelte, Semantic UI, and lots more. All these frameworks are used by famous companies like Netflix, Uber, Airbnb, and others.

Backend Development Frameworks

Django is a backend Python web framework that can work with any frontend framework. It helps developers focus on writing and building a significant project rather than re-inventing the wheel.

It's fast, secure, and scalable. You can learn more about [Django and how to get started building websites in this course](#).

Rails is an open-source backend framework like Django, powered by the Ruby language. It provides default structures for databases, web services, and web pages. It is designed to involve less code and repetition and is supported by a large community.

It is also known as Ruby on Rails. You can learn more about [Rails and how to get started in this course](#).

There are many other backend frameworks like Express, Laravel, and lots more. These frameworks are used to build websites and applications by famous companies like Twitter, Shopify, Coinbase, and others.

Mobile Application Frameworks

Flutter is an open-source UI software development kit created by Google. It uses the Dart programming language and a little C/C++. You can use it to develop cross-platform applications for devices such as Android, Windows, Linux, macOS, iOS, the web, and lots more from a single codebase.

It was developed in 2017 and has since been used by big companies like Alibaba, BMW, and many more, as seen in the [Flutter showcase](#) web page. You can learn more and [get started with Flutter in this course](#).

React Native is an open source cross-platform Javascript framework developed by Meta. Cross-platform means that you can use it to develop Android, IOS, and web applications with one code base.

React Native uses the React framework and offers many inbuilt components and APIs. You can [learn more and get started with React Native in this course](#).

There are many other mobile application frameworks like ionic, Xamarin, and lots more. These frameworks are used to build popular applications for famous companies like Discord, Bloomberg, and lots more.

Data Science Frameworks

PyTorch is an open source machine learning framework based on the Python programming language and the Torch library. It is one of the preferred platforms for **deep learning research**. It is built to speed up the process between research prototyping and production deployment.

You can get started and [learn more about using PyTorch for deep learning in this course](#).

TensorFlow is a free and open-source Python library for machine learning and artificial intelligence developed by Google. It has a comprehensive, flexible ecosystem of tools, libraries, and community resources that lets researchers dive into machine learning. Developers can also use it to quickly build and deploy ML-powered applications.

You can learn more about [TensorFlow and how it works with computer vision in this course](#).

There are many other data science frameworks like Apache Spark, Scikit-learn, and lots more. Big companies like Microsoft, Cisco, Amazon, and others use these frameworks.

How to Get Started Learning a Software Framework

So far, when discussing these frameworks, you will notice we also talk about specific programming languages. This should tell you that each framework relies heavily on a particular programming language.

You should have a solid understanding of the programming language a framework uses before learning that framework.

For example, if you want to learn React, you must first understand [JavaScript and some of its key concepts](#). This is also true for other frameworks.

Finally, the better you understand a programming language, the more straightforward it'll be for you to grasp how frameworks function. Programming languages provide a solid foundation for many tech career paths and are critical for understanding a framework.

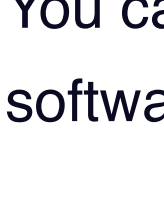
Wrapping Up

In this article, you've learned what a software framework is, how they work, and how to get started learning any of them.

It is important to note that these are only a few of the many frameworks available. Almost every programming language has a framework designed to make using that language much more straightforward that'll allow you to focus on building your project.

It is always best to research which framework best suits your needs before beginning to build or write code.

Have fun coding!



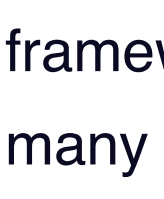
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



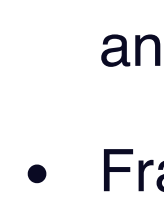
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



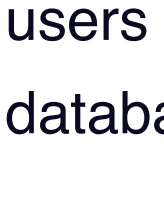
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



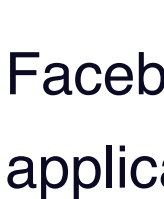
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



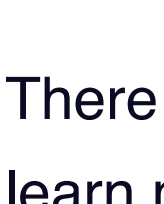
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



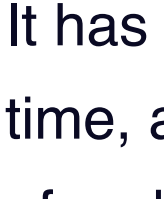
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



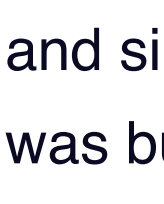
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



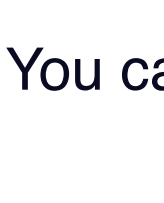
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



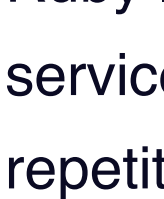
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



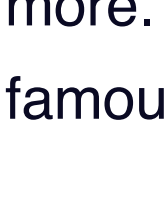
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



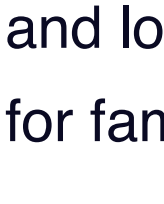
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



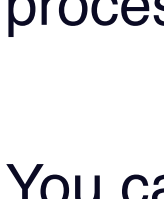
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



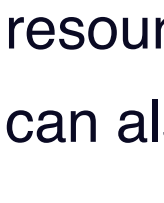
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



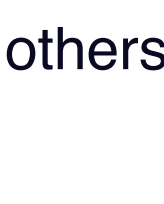
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



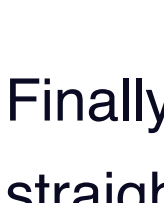
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



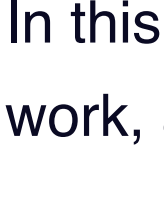
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



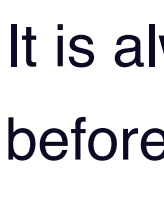
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



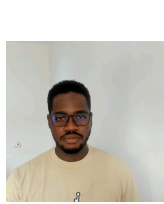
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



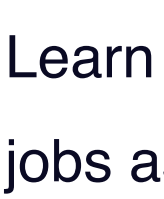
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



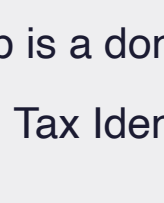
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



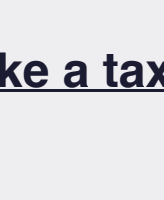
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



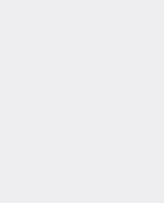
Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer



Joel Olawanle

Joel Olawanle is a Software Engineer & Technical Writer

ADVERTISEMENT

Ad closed by Google

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

ADVERTISEMENT

Ads by Google

Stop seeing this ad

Why this ad? ⓘ

Trending Books and Handbooks

- | | |
|------------------------------|--------------------------------|
| Build a Static Blog | Build an AI Chatbot |
| Python Code Examples | Open Source for Devs |
| Write React Unit Tests | Learn Algorithms in JS |
| Learn PHP | Learn Java |
| Learn Golang | Learn Node.js |
| Learn Solidity | Learn Express.js |
| Learn Apache Kafka | REST API Best Practices |
| Learn to Build REST APIs | Intermediate TS and React |
| Intro to Operating Systems | Learn to Build GraphQL APIs |
| Distributed Systems Patterns | Software Architecture Patterns |

Mobile App

