

PLOT 09/2023

Programming Languages of
Tomorrow



Purpose of These Slides

The world of programming is evolving every year. It is enriched with new languages, new libraries, new technologies that make yesterday's used look old.

These slides aim to be an overview of what the world of programming is today and what the world of programming will be tomorrow, starting from the point of view of languages and the perspectives they can give us in the world of work.

TIOBE index

The TIOBE Programming Community index is an indicator of the popularity of programming languages. The index is updated once a month. The ratings are based on the number of skilled engineers worldwide, courses and third-party vendors. Popular search engines such as Google, Bing, Yahoo!, Wikipedia, Amazon, YouTube and Baidu are used to calculate the ratings. It is important to note that the TIOBE index is not about the best programming language or the language in which most lines of code have been written.

TIOBE index - 2023

Sep 2023	Programming Language		Ratings	Change
1		Python	14.16%	-1.58%
2		C	11.27%	-2.70%
3		C++	10.65%	+0.90%
4		Java	9.49%	-2.23%
5		C#	7.31%	+2.42%
6		JavaScript	3.30%	+0.48%
7		Visual Basic	2.22%	-2.18%
8		PHP	1.55%	-0.13%
9		Assembly language	1.53%	-0.96%
10		SQL	1.44%	-0.57%

Is TIOBE a starting point or an end point?

Does TIOBE's popularity of a language truly give a real index of how much a language is paid?

Let's try to add other information from job search portals to these data.

Remoteok

RemoteOK is a portal for searching remote jobs: let's look at its stats.

Tweet

💰

Highest paying remote jobs in 2023

#	Job	Min	Median	Hourly	Max
▼ 1	💎 <u>Ruby</u>	\$70K	\$88K	\$41/hr	\$105K
▲ 2	🚀 <u>Startup</u>	\$60K	\$85K	\$40/hr	\$110K
▼ 3	🔗 <u>Node</u>	\$60K	\$85K	\$40/hr	\$110K
▲ 4	👤 <u>Full Stack</u>	\$60K	\$85K	\$40/hr	\$110K
▼ 5	☁️ <u>AWS</u>	\$60K	\$85K	\$40/hr	\$110K
▼ 6	☕ <u>JavaScript</u>	\$60K	\$85K	\$40/hr	\$100K
▼ 7	❄️ <u>React</u>	\$60K	\$85K	\$40/hr	\$110K

▼ 8	🐍 <u>Python</u>	\$60K	\$85K	\$40/hr	\$110K
▼ 9	📘 <u>Typescript</u>	\$60K	\$83K	\$39/hr	\$100K
▼ 10	🍑 <u>Backend</u>	\$50K	\$80K	\$38/hr	\$120K
▼ 11	🎨 <u>Front End</u>	\$60K	\$80K	\$38/hr	\$100K
▼ 12	🐘 <u>PHP</u>	\$60K	\$78K	\$37/hr	\$95K
▼ 13	🎨 <u>Design</u>	\$55K	\$73K	\$34/hr	\$95K
▼ 14	♥️ <u>Vue</u>	\$60K	\$70K	\$33/hr	\$80K
▲ 15	🎧 <u>Customer Support</u>	\$30K	\$40K	\$19/hr	\$50K

<https://remoteok.com/remote-work-statistics>

Remoteok - conclusion?

Ruby appears to be the highest paid language and PHP the lowest paid, but let's not be distracted by these data: the difference is only 10%.

Stack Overflow survey

The Stack Overflow survey is an annual survey conducted by Stack Overflow, one of the largest online communities for developers. It aims to gather insights into the coding community, including their preferences, experiences, and opinions on various aspects of their work and career.

The survey covers a wide range of topics, including programming languages, frameworks, tools, job satisfaction, salary, education, and demographics. It provides valuable data that can help developers understand industry trends, make informed career decisions, and allow companies to gain insights into the needs and interests of developers.

<https://survey.stackoverflow.co/2023>

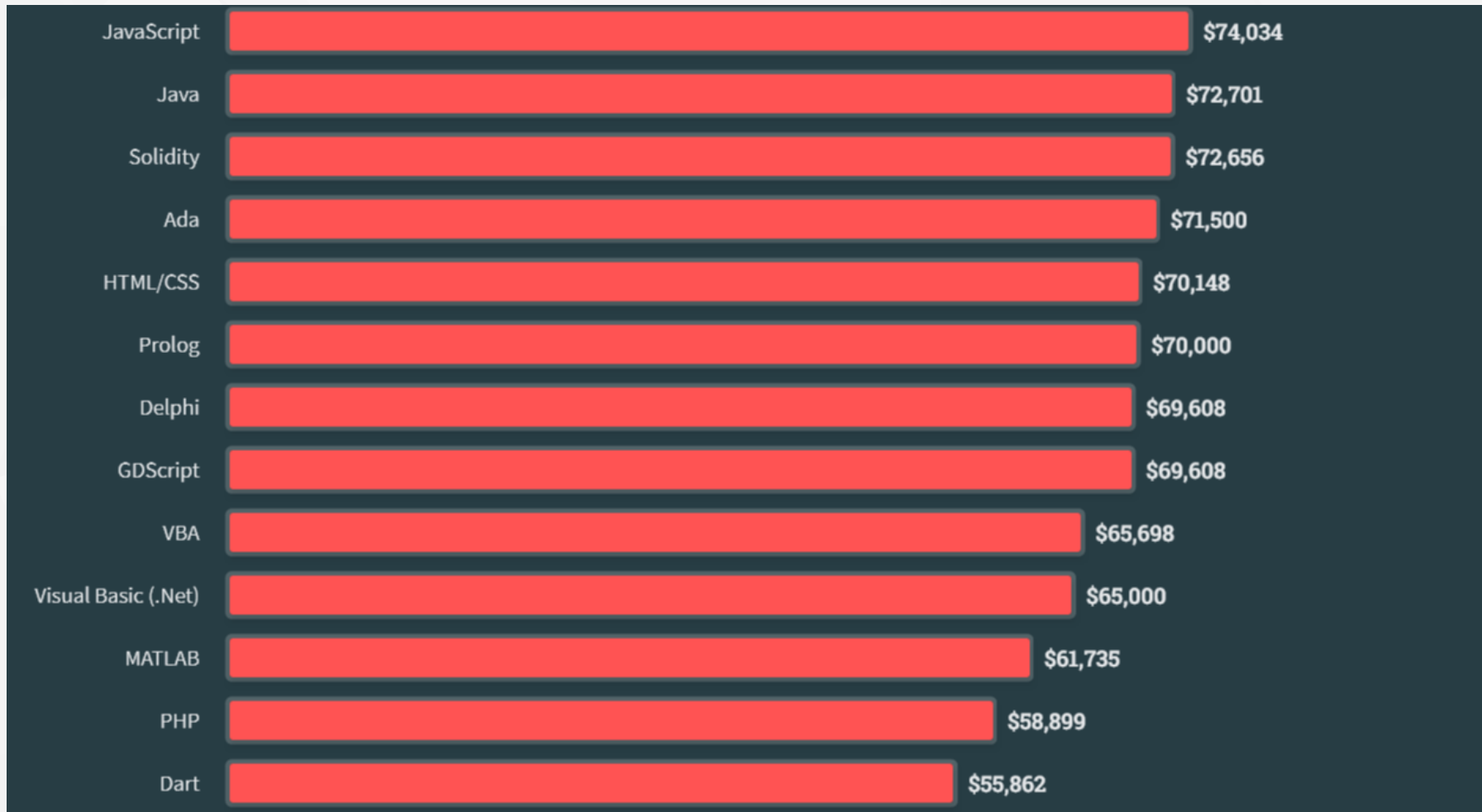
Stack Overflow - Best Language

What is the highest-paid programming language according to Stack Overflow?



Stack Overflow - Worst Language

What is the least paid programming language according to Stack Overflow?



Stack Overflow - Best Job

What is the highest paying job according to Stack Overflow?



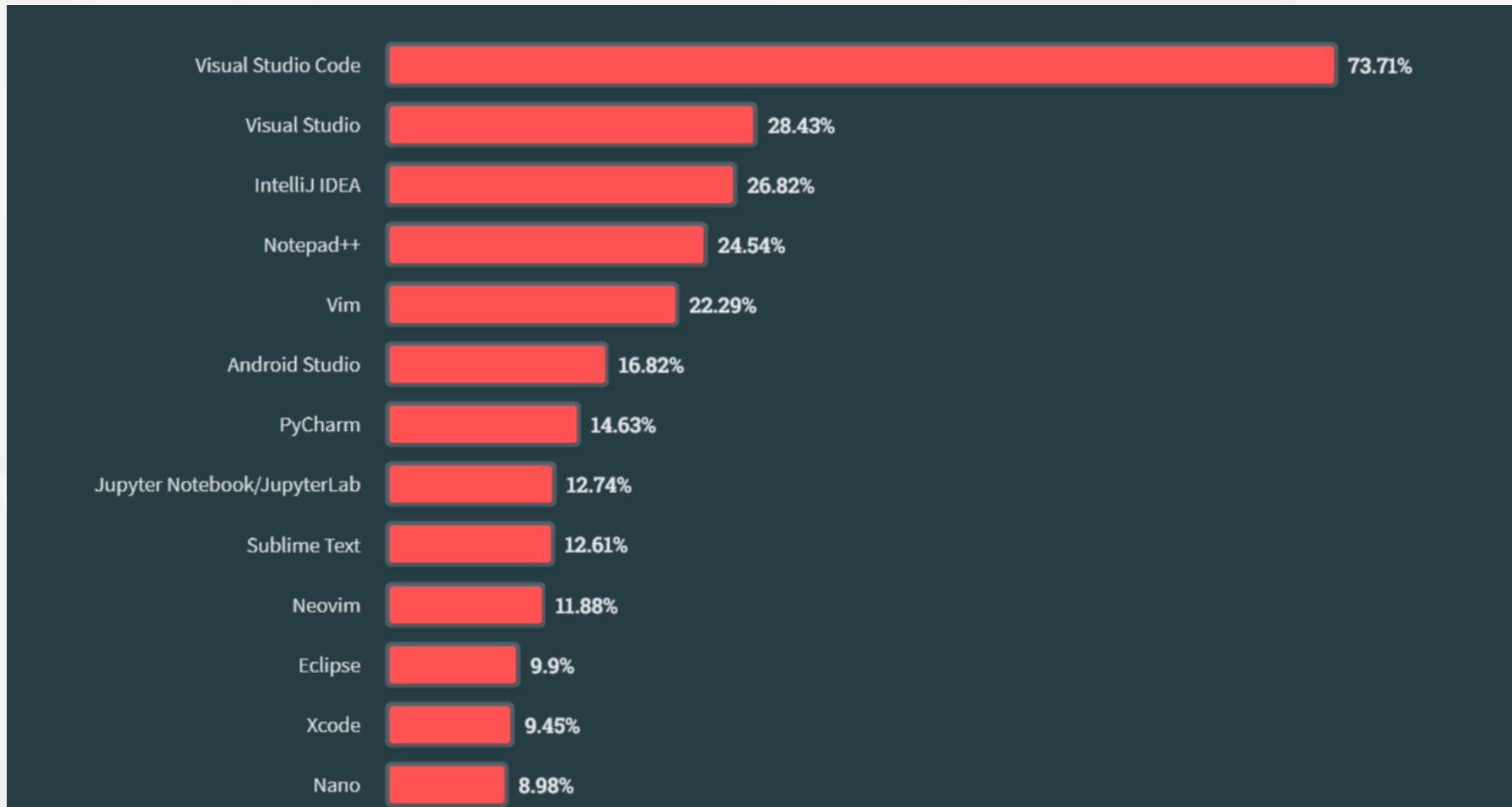
Stack - Lowest Job

What is the lowest paid job according to Stack Overflow?



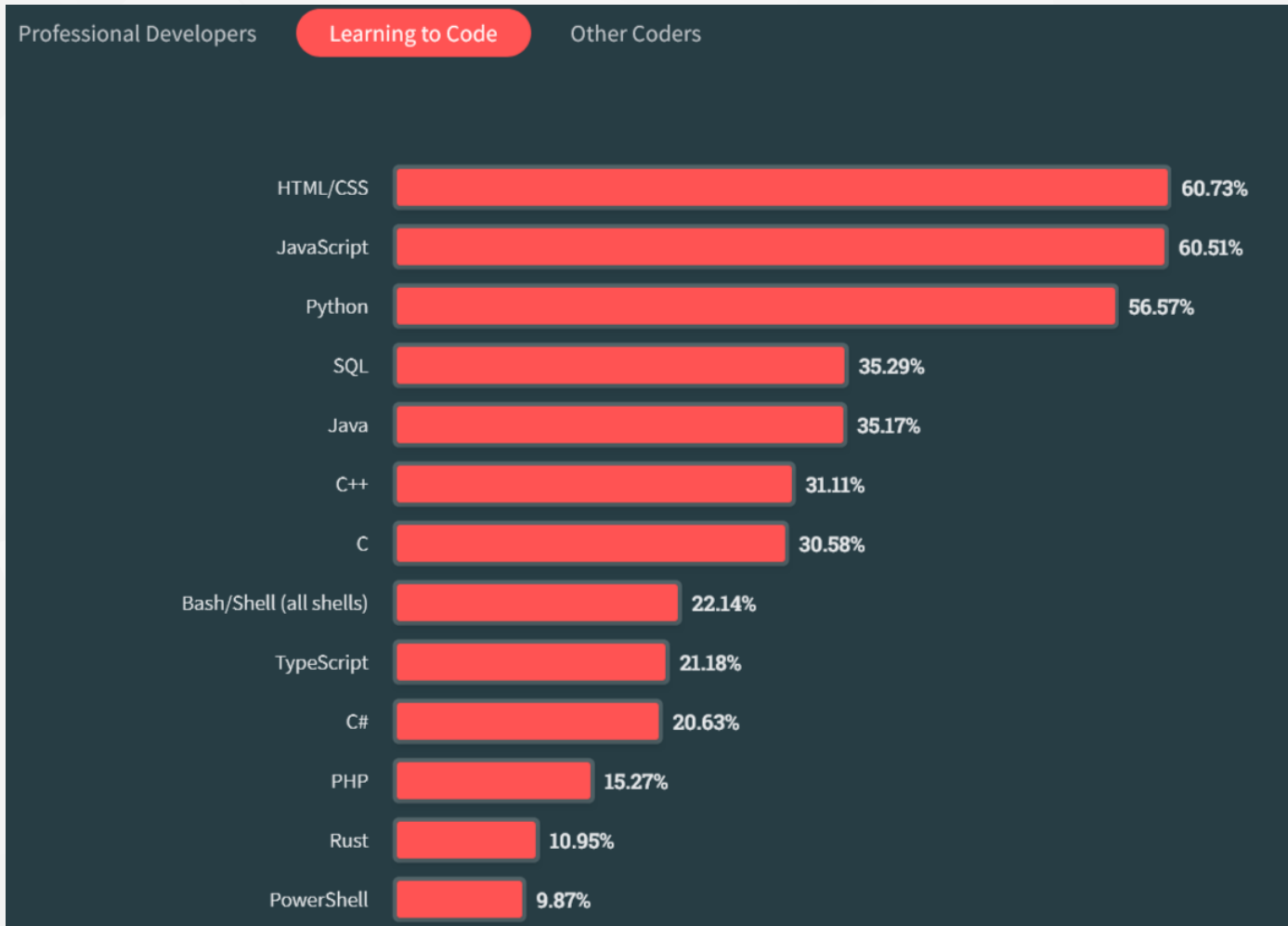
Stack - IDE

What is the best IDE according to Stack Overflow?



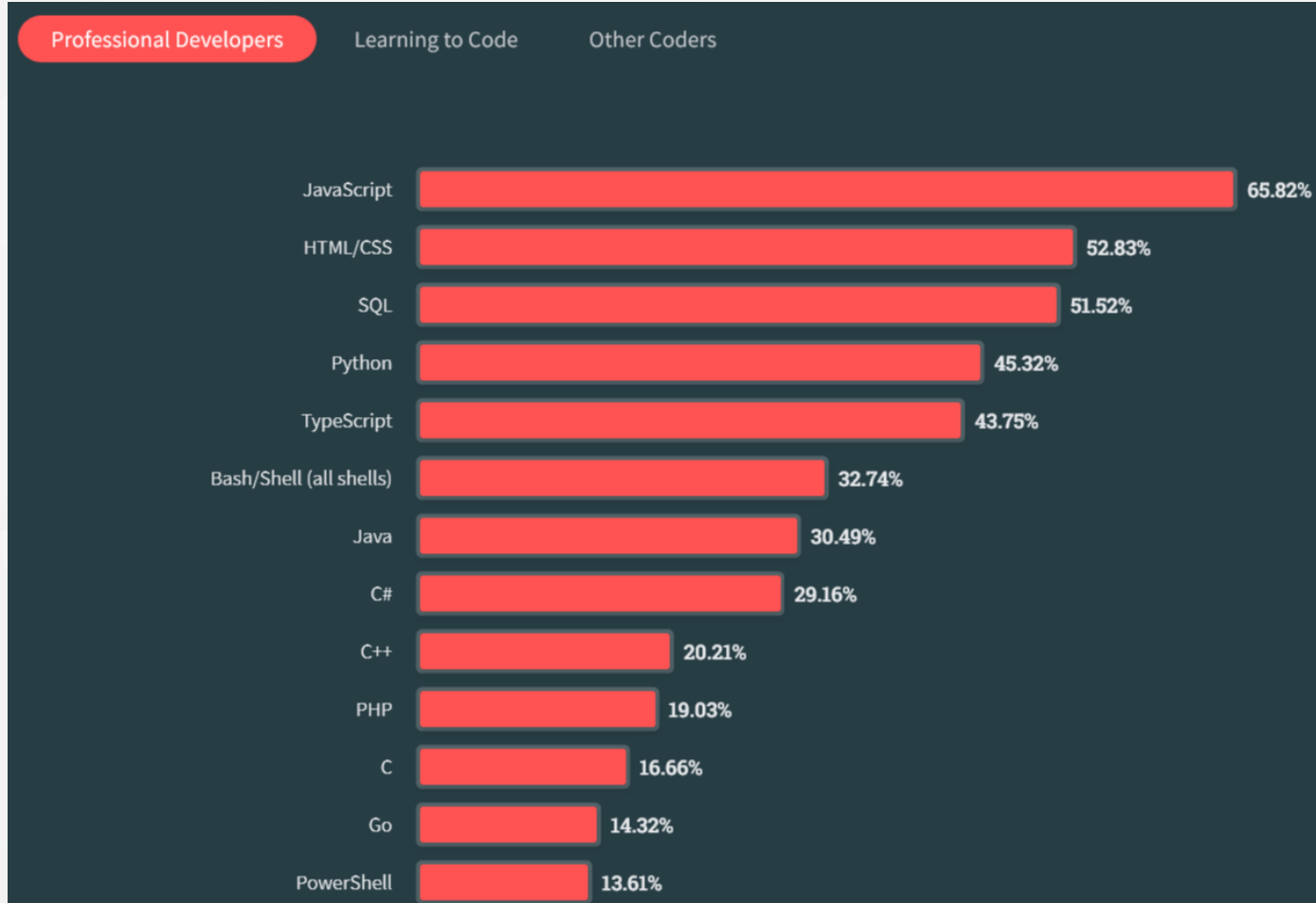
Stack - Language to learn

What language should we learn according to Stack Overflow?



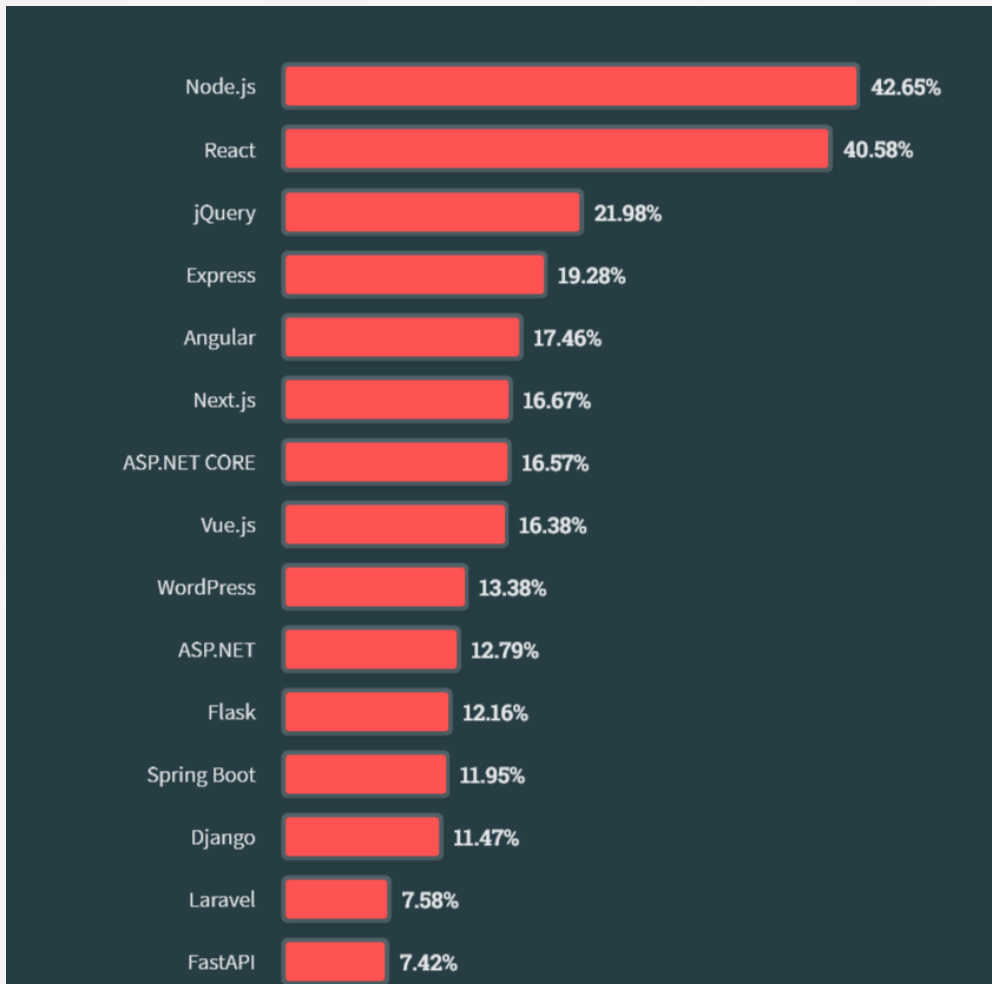
Stack - Technology to learn

What technology should we learn according to Stack Overflow?



Stack - Web Technology to learn

What web technology should we learn according to Stack Overflow?



What have we understood?

- The most popular languages are not necessarily the most paid
- In 2023, molti di noi devono ancora imparare HTML e CSS

----- **TO REVIEW** -----

Why use Python?

There are many reasons why you might want to program with Python.

- **Python is easy to learn.** The syntax of Python is very simple and easy to understand, making it a great language for beginners.
- **Python is versatile.** Python can be used for a wide variety of tasks, including web development, data science, and machine learning.
- **Python has a large community.** There are many Python users and developers out there, which means that there is a wealth of resources available to help you learn and use the language.
- **Python is free and open source.** Python is free to download and use, and it is open source, which means that you can modify it to suit your needs.

Why not use Python?

- **Python is slow.** Python is an interpreted language, which means that it is not compiled into machine code before it is run. This makes it slower than languages like C++ or Java, which are compiled.
- **Python is not strongly typed.** Python is a dynamically typed language, which means that variables do not have a type associated with them. This can lead to bugs if you are not careful.
- **Python is not statically typed.** Python is a dynamically typed language, which means that variables do not have a type associated with them. This can lead to bugs if you are not careful.

Why use Java?

There are many reasons why you might want to program with Java.

Platform-independent: Java programs can run on any platform that has a Java Virtual Machine (JVM). This makes Java ideal for developing cross-platform applications.
Object-oriented: Java is an object-oriented language, which means that it allows you to create modular and reusable code. This can make your programs easier to write, maintain, and debug.
Secure: Java has a number of security features built in, such as sandboxing and bytecode verification. This makes it a good choice for developing secure applications.
Robust: Java is a very robust language. It has a garbage collector that automatically manages memory, which helps to prevent memory leaks and crashes.
Popular: Java is one of the most popular programming languages in the world. This means that there are many resources available for Java developers, such as libraries, frameworks, and tutorials.

Here are some specific examples of the kinds of applications that Java is often used to develop:

Enterprise applications: Java is a popular choice for developing enterprise applications, such as customer relationship management (CRM) systems and enterprise resource planning (ERP) systems.
Web applications: Java can be used to develop web applications using a variety of frameworks, such as Spring Boot and Hibernate.
Mobile applications: Java can be used to develop mobile applications using a variety of frameworks, such as Android and Kotlin.
Desktop applications: Java can be used to develop desktop applications using a variety of frameworks, such as Swing and JavaFX.
Embedded systems: Java can be used to develop embedded systems, such as smart TVs and set-top boxes.

Why not use Java?

Verbosity: Java code can be more verbose than code written in other languages, such as Python or JavaScript. This can make the code more difficult to read and maintain.
Compilation: Java code needs to be compiled before it can be run. This can add an extra step to the development process, especially for small projects.
Performance: Java can be slower than other languages, such as C or C++. This can be a concern for performance-critical applications.
Ecosystem: Java has a large ecosystem of libraries and frameworks, but it can be difficult to keep up with the latest changes.
Popularity: Java is still a popular language, but it is not as popular as it used to be. This means that there may be fewer resources available for Java developers.

You are developing a small, simple project. Java is a good choice for large, complex projects, but it can be overkill for small, simple projects. For these types of projects, you may want to consider using a language like Python or JavaScript, which are easier to learn and use.
You are developing a performance-critical application. Java is a good choice for general-purpose applications, but it may not be the best choice for performance-critical applications. For these types of applications, you may want to consider using a language like C or C++.
You are developing a machine learning application. Java is not the most popular language for machine learning development. For machine learning applications, you may want to consider using a language like Python or R.

Why not use C?

There are many reasons why C is still a popular programming language today, even though it was created in the 1970s. Here are some of the most important ones:

Performance: C is a very efficient language. Programs written in C are typically much faster than programs written in other languages, such as Python or Java. This makes C a good choice for performance-critical applications, such as operating systems, embedded systems, and video games.
Portability: C programs can be easily compiled and run on a variety of platforms, from small microcontrollers to large supercomputers. This makes C a good choice for developing cross-platform software.
Flexibility: C gives programmers a lot of control over how their programs work. This flexibility can be used to optimize programs for performance or to implement complex algorithms. However, it also means that C programs can be more difficult to write and debug than programs written in other languages.
Popularity: C is one of the most popular programming languages in the world. This means that there are many resources available for C developers, such as libraries, frameworks, and tutorials.

Here are some specific examples of the kinds of applications that C is often used to develop:

Operating systems: C is used to develop the kernels of many popular operating systems, such as Linux, macOS, and Windows.
Embedded systems: C is used to develop embedded systems, such as routers, smart TVs, and cars.
Video games: C is used to develop video games for a variety of platforms, from PCs to consoles to mobile devices.
High-performance computing: C is used to develop high-performance computing applications, such as scientific computing applications and financial trading applications.
System programming: C is used to develop system programming tools, such as compilers, debuggers, and assemblers.

Disclaimer

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After generating the language draft, the author reviewed, modified and revised the language to their liking and assumes ultimate responsibility for the content of this publication.

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