TECHSTACK

S3-INDIVIDUAL

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# Front-end framework

Before I came to Fontys, I had already graduated from ROC Ter AA in Helmond on Application- and media development. Here I had two internships, one of which introduced me to Angular. This is a super handy Front-end framework that uses HTML, SCSS and TypeScript. This one is in my list to research, and to this day, my favourite.

What there is a lot of market in these days is primarily ReactJS. I've worked with React Native during one of the other internships, and at first glance, the two don't seem too far apart.

I've also heard Vue come by a lot. Also a framework with JavaScript but worth investigating. By the way, these frameworks can be found in Canvas.

* Angular
* ReactJS
* Vue.js

Short bullets:

* React leads the market with 35.9% of developers using it. However, Angular is surpassing the popularity of Vue.js. Angular is being chosen by 25.1% of developers while Vue is utilized by 17.3% of developers.
* Market trends:   
  React: GitHub Stars 181K / Fork 36.9k / Contributors 1538/ Used By 8.8 Million Users

Angular: GitHub Stars 79.2K / Fork 20.8k / Contributors 1528 / Used By 2.1 Million Users

Vue.js: GitHub Stars 193K / Fork 31.3k / Contributors 404

Afbeelding met tafel

Automatisch gegenereerde beschrijving

## Angular

Angular is a TypeScript-based JavaScript framework developed by Google. Sometimes called a platform instead of a framework. But React's unparalleled capabilities surpass Angular's. With a variety of built-in features, Angular helps you build, manage, and test your apps more efficiently. Moreover, since it is a widely used framework for front-end development, huge organizations such as Google, Forbes, WhatsApp, and 500 other companies have shown interest in this framework.

Advantages of using Angular

* Ensure good app performance.
* Offers offline support and PWA functionality for app development.
* An ideal option for building rich applications because built-in functions are provided.
* Projects developed in Angular are extensible, scalable, and develop faster.
* Includes Angular-CLI, a command line tool.
* Angular provides a basic framework for developing and managing web apps without the support of other libraries.
* Guarantee end-to-end testing.

Disadvantages of using Angular

* Angular has limited platform SEO capabilities and poor accessibility for search engine crawlers.
* Angular is very difficult to learn due to its complex web of modules, programming languages, integrations, and customization options.

## ReactJS

React was started as a JavaScript library by Facebook. Over the last few years, React has grown a lot using the virtual DOM. This makes it easier to compare differences in previous HTML code and load only the parts that differ.

Advantages of using React

* Faster loading.
* React lets you separate data and presentation.
* It's based on JavaScript, so it's easy at first.
* One file contains both markup and logic (JSX).

Disadvantages of using React

* This is just a JavaScript library, not a complete framework.
* Implementing an MVC architecture is not possible with React.
* Inadequate for building web apps without support from other libraries.

## Vue.js

Vue is a community-driven, open-source framework and a rapidly growing JavaScript framework. It is the most talked about and fastest growing JavaScript-based framework started by former Google employee Evan You. A framework that sits between React and Angular. Developing user interfaces by combining reusable components is also important in Vue. But more than that, Vue offers more React and less Angular. That's why it's better than Angular.

Advantages of using Vue

* Vue has extensive documentation.
* Reusable components of this framework make the development process much faster and easier.
* There is a possibility of Component-based Architecture (CBA).
* It provides flexibility and simplicity for app development.
* Vue provides a list of tools and libraries such as official CLI, Development tools, Vue Router, State Management, and more.

Disadvantages of using Vue

* Community support is not as wide as Angular and React
* Limited number of plugin availability

## Conclusion

**Angular**: Angular is one of the mature frameworks, having good contributors and ensuring a complete package for app development. On the other side, it requires steep learning and creating watchers to view updates which may put off new app developers. All in all Angular is an ideal option for companies with the requirement for large scale apps.

**React**: React has an outgrown community for support. It has worldwide acceptance and is a good choice for front-end development.

**Vue**: It is a young library without any backing from major companies but still considered as a strong competitor for Angular and React. Due to its flexibility and ease of use, it has become a choice of industry giants.

Source: <https://javascript.plainenglish.io/angular-vs-react-vs-vue-js-which-is-the-best-choice-for-2022-5ef83f2257ab/>

# Backend framework

**Difference between Java and C#**

* Java is class-based and object-oriented whereas C# is object-oriented and component-oriented.
* Java doesn’t support features like operator overloading and pointers, whereas C# does.

**Similarities Between C# and Java**

* Object-Oriented: Both languages are object-oriented and hence support concepts like encapsulation, polymorphism, inheritance, and more.
* Dependence from C and C++: C and C++ are a superset to both Java and C#.
* Intermediate Language Code Generation: Java compiler and C# compilers generate an intermediate language code after compilation. C# compiler generates Microsoft Intermediate Language (MSIL), whereas Java compiler generates Java bytecode.
* Advance Features: Both languages include advanced features like garbage collection.
* Syntax: Both languages are syntactically similar.
* Multiple Inheritance: Both languages support multiple class inheritance.

**Key differences**

* Runtime Environment: Java runs on JRE (Java Runtime Environment), whereas C# runs on CLR (Common Language Runtime).
* Programming Paradigm: Java is a strictly object-oriented language, whereas C# is object-oriented, functional, strongly typed, and component-oriented.
* Operator Overloading: Java doesn't support operator overloading, whereas C# supports operator overloading for multiple operators.
* Pointers: Java does not support pointers, whereas C# supports pointers only in unsafe mode.
* Arrays: Java arrays are a specialization of Object, while C# arrays are a specialization of System.

## C#

**Advantages of C#**

* C# provides lambda and generics support.
* Language-Integrated Query (LINQ)
* Secure extension methods
* Properties with getting/set methods
* Memory management
* Best in class cross-platform support
* Backward compatibility

**Disadvantages of C#**

* Poor GUI
* Must be windows based (C# is an internal part of the .NET framework)
* Software is proprietary; requires an upfront purchase.
* Mostly depends on the .Net framework; less flexible.
* Executes slowly, and the program needs to be compiled every time changes are made.

## Java

**Advantages of Java**

* Provides detailed documentation
* Offers a large pool of skilled developers
* Allows the development of standard programs and reusable code
* Offers a multi-threaded environment
* Excellent and high performance
* Huge array of 3rd party libraries
* Easy to navigate libraries

**Disadvantages of Java**

* The JIT compiler makes the program slow.
* Java demands high memory and processing requirements.
* The language does not provide any support for low-level programming constructs like pointers.
* The user has no control over garbage collection as Java does not provide functions like delete(), or free().

## Conclusion

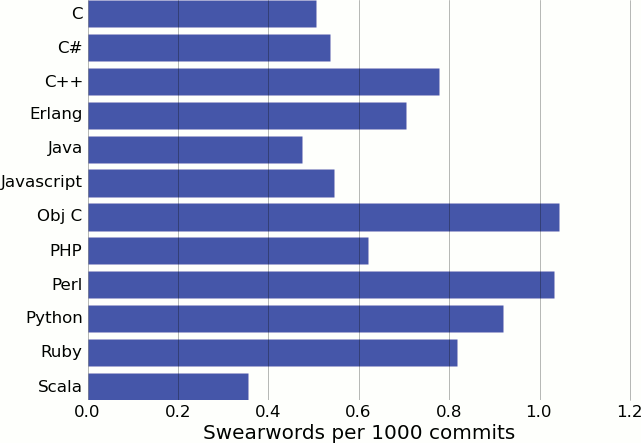
Java has a huge and better biological system; its local area is continually developing, making new libraries, structures, and even instruments. New dialects in view of JVM are additionally arising, as Scala, Awesome and so on. It is additionally the principal language utilized by Google to create for Android, which is the biggest portable working framework. C#, then again, is utilized basically on the .NET structure, Mono, and other execution of CLI. Applications fabricated utilizing C# would work effectively on Microsoft-biological system; be that as it may, this element is being redesigned with the most recent apparatuses and libraries.

Java and C# have such countless contrasts, and likenesses, the language that one decides for improvement will rely to a great extent on the stage. One can look at an alternate part of Java and C# and ask what Java shows improvement over C# as well as the other way around? By the day's end, it is the choice in view of angle like - application stage, designer simplicity of language utilization, more fit libraries and necessity.

Both Java and C# is profoundly Article Arranged dialects giving different elements. Day's end, Java versus C# are instruments; a device is best when it fits the errand being finished and succeed when utilized by a decent designer. It's a choice in view of simplicity of utilization, application prerequisite and stage backing and support.

Source: <https://www.educba.com/java-vs-c-sharp/>

## Swearwords per backend framework



# API

## What is an API?

An API, an abbreviation for Application Programming Interface, is a bunch of definitions and conventions that permit innovation items and administrations to speak with one another through the web.

## What are APIs used for?

In the event that you are a novice developer, you might be considering what the meaning of API is. An API (Application Programming Interface) permits your application to connect with an outside help utilizing a straightforward arrangement of orders. To separate the name, the "Interface" is where different programming parts can communicate. Utilizing an API permits developers to add explicit functionalities to their applications and can accelerate the improvement interaction.

## What Different Types of APIs are there?

There are four main types of APIs:

1. Open APIs: Also known as Public APIs. These APIs are publicly available and there are no restrictions to access them.
2. Partner APIs: These APIs are not publicly available, so you need specific rights or licenses to access them.
3. Internal APIs: Also known as Private APIs. These APIs are usually meant for use within a company and are only exposed by internal systems. A company can use this type of API across different internal teams to be able to improve its products and services.
4. Composite APIs: These APIs combine different data and service APIs. It is a sequence of tasks that runs synchronously as a result of the execution and not at the request of a task. The main purpose of this type of API is to speed up the process of execution and improve the performance of the listeners in the web interfaces.

## What are Web Service APIs?

Aside from the primary web APIs, there are additionally web administration APIs. A web administration is a framework or programming the purposes a location (ex: the URL on the Internet) to give admittance to its administrations. The most widely recognized sorts of web administration APIs include:

1. SOAP (Simple Object Access Protocol): This is a protocol that uses XML as a format to transfer data. Its main function is to define the structure of the messages and method of communication. It also uses WSDL (Web Service Definition Language) in a machine-readable document to publish a definition of its interface.
2. XML-RPC: This is a protocol that uses a specific XML format to transfer data, compared to SOAP that uses a proprietary XML format. It is also older than SOAP. XML-RPX uses minimum bandwidth and is much simpler than SOAP.
3. JSON-RPC: This protocol is similar to XML-RPC, but instead of using an XML format to transfer the data it uses JSON.
4. REST (Representational State Transfer): REST is not a protocol like the other web services. Instead, it is a set of architectural principles. The REST service needs to have certain characteristics, including simple interfaces, which are resources identified easily within the request and manipulation of resources using the interface.

Source: <https://rapidapi.com/blog/api-glossary/api/>

# Database

## MariaDB

MariaDB is a fork of the MySQL database the board framework. The RDBMS offers information handling abilities for both little and endeavour undertakings.

This DBMS is a better adaptation of MySQL. It accompanies various inbuilt strong elements and many convenience's, security and execution upgrades that you can't find in MySQL.

## MySQL

MySQL was one of the main open-source database accessible on the lookout. Today there are numerous options variations of MySQL. Nonetheless, the distinctions between the variations are not critical as they utilize a similar language structure, and essential usefulness likewise continues as before.

MySQL is a RDBMS that assists you with keeping the information that exists in a database coordinated. It is utilized with the blend of PHP and Apache Web Server, on top of a Linux conveyance. MySQL utilizes the SQL language to question the database.

## Key Difference between MariaDB and MySQL

* MariaDB has 12 new storage engines, whereas MySQL has lesser storage engines.
* MariaDB has a larger connection pool supporting up to 200,000+ connections, whereas MySQL has a smaller connection pool.
* Comparing MariaDB vs MySQL performance, In MariaDB, replication is faster, whereas in MySQL, replication is slower.
* MariaDB is Open Source, whereas MySQL uses some proprietary code in its Enterprise Edition.
* MariaDB doesn’t support Data Masking and Dynamic column while MySQL supports it.
* Comparing MariaDB or MySQL, Comparatively MariaDB is faster than MySQL.

Pro’s when using MariaDB

* It operates under GPL, BSD, or LGPL licenses.
* MariaDB supports a popular and standard querying language.
* It comes with many storage engines, including the high-performance ones that can be integrated with other relational database management systems.
* It offers the advance Galera cluster technology.
* MariaDB supports PHP, a popular language for web development.

## Conclusion

MySQL is under the corporate umbrella of the greatest business database seller on the planet. With such countless full-time designs working nonstop to foster premium new elements, we as of now have a few places where they separate. MariaDB, then again, as a rule makes up for lost time with regards to premium increments however that isn't generally quick and there are no certifications.

Having said as much, however, there are numerous situations wherein MariaDB offers further developed execution. Add to this more spry fixes and updates, a more steady open source future, and somewhat more good faith.

Source: <https://kinsta.com/blog/mariadb-vs-mysql/>