University of Exeter Business School

BEEM062 Technical Assignment B

Question 1.3 "TypeScript"

Explain in words the difference between JavaScript and TypeScript. Your answer must demonstrate an understanding of the pros and cons of both.

April 2024

JavaScript Vs TypeScript

JavaScript and TypeScript are programming languages that are used most in web development. However, both languages have unique characteristics that set them apart as well as pros and cons that make them suited for different tasks.

JavaScript was introduced as a client-side programming language. Eventually, the usage of JavaScript for web development led to developers learning that it could also be used for server-side programming (Raval, 2021). The language is supported by all web browsers and because of its wide adoption it has the benefit of an extensive ecosystem of libraries and frameworks (Jonna, 2024). This benefit actively contributes JavaScript's popularity as new users find it easy to learn and discover how to code with it. JavaScript however does not come without its disadvantages as the language can often be difficult to troubleshoot and debug, additionally the language can create vulnerabilities such as cross site scripting (Jonna, 2024).

On the other hand, TypeScript a syntactic superset of JavaScript which adds static typing, this means that TypeScript allows for syntax on top of JavaScript which allows for developers to add "types" (w3schools, 2024). TypeScript was made to enhance development in large scale and complex applications by catching errors as it enforces type safety, by doing these developers can reduce runtime errors and improve code maintainability (AppMaster, 2023). Additionally, TypeScript is also integrated with advanced tooling which gives developers features like code completion which improves productivity and brings down the likelihood of bugs (Deshpande, 2021).

While TypeScript has many advantages its use does not come with its drawbacks. Adopting TypeScript can potentially introduce an added layer of complexity which means that there is a steep learning curve for many who are not yet familiar with the language (Cheung, 2021). There is also the added layer of the development process that is created as TypeScript must be compiled to JavaScript before it can be executed meaning it can become time consuming to use the language (Ramotion, 2023).

Ultimately, the decision between using JavaScript and TypeScript will depend on the needs of the project, the scale of the application, and with the developer's comfortability with using the languages. JavaScript provides a great deal of flexibility and quicker to develop making it ideal for smaller projects whereas TypeScript is favoured in large projects where code maintainability is important. JavaScript remains to be a key language in web development

while TypeScript continues to become more popular due to developers prioritising the new features to support their projects.

References

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