Research document

Individual Project Semester 3

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# Introduction

The purpose of this research is to find the best suited front-end framework for my individual project. My project is a single page application which will provide users with the opportunity to create, search and view advertisements for second hand cars. It needs to have an easy to navigate and use interface which can be supported by all browsers and run smoothly and efficiently. This is where the question comes in:

## ***Which front-end framework is best suited for my project?***

1. What are available?

From the conducted research there are many options for creating the required user interface. The main and most popular are:

* React
* Angular
* VueJs

Currently React is the top rated most popular front-end framework as show by the *Stack overflow developer survey* (2021).Angular and VueJs are also on the list with lower percentages but are still widely used. Each of these provide options for creating the required user experience with some differences in their ways of working. In the next questions we will find out what those are and which one will be best suited for my application.

*Used methods:*

1. Available product analysis – I had to research what frameworks I have available to achieve my goal.
2. Literature study – I had to read some articles to find out which of the frameworks I found were suitable for my problem.
3. What are the main features and advantages?

* *React*

React is an open-source platform used for creating front-end user interfaces. It relatively easy to use once you have passed the initial learning curve. It allows you to reuse previously created components in other parts of the application. This speeds up and simplifies the development process while making the application light and keeping the maintenance and upgrading of the application easy and convenient for the developers. React also has a virtual DOM which is a mechanism for optimizing the performance of the application. (Mojeed, I., 2022) Simply put, React “reacts” to the changes and adapts the application according to them. (Technostacks, 2022)

* *Angular*

Developed by Google, Angular is a front-end framework which uses TypeScript and provides tools for creating front-end user interfaces. It uses a two-way binding feature, which synchronizes the data to the UI. This way any changes to the data that happen are reflected directly in the interface. This makes it easier to make changes in the application. (Infragistics, 2022) It uses dependency injection to create interdependent components that can be used throughout the application. (Karczewski, D., 2022)

* *VueJs*

VueJs is a combination of the best features from modern front-end development. It has a relative ease of use compared to others with shorter learning curve. It is also smaller in size, providing developers with the essential parts needed for developing both big dynamic and small web applications. Its main advantage is the simple syntax and straightforwardness of the framework. (Monocubed, 2022)

*Used methods:*

1. Community research – I had to go around and read from forums and websites where people who use the frameworks that I am researching and I can get a better idea of what functionalities each has.
2. SWOT analysis – I had to know what each framework can do best, where it lacked and in what. I did this in order to figure out which was the best for my project.
3. Limitations

* *React*

The initial learning can be pretty hard for developers new to web developing and JavaScript. The concepts are complex and might require time to learn and understand properly. Documentation can be hard to find. React is only used for the UI part of the application and other technologies will be needed for the rest of the application. (Monocubed, 2022)

* *Angular*

The big number of features available can make it very tricky to learn and may take significant time to understand and implement properly. A complex language with a steep learning curve overall. Due to the way of working the applications can sometimes lag behind a bit and not perform up to the required standards. (Technostacks, 2022)

* *VueJs*

It provides a lot of features but not as much as other frameworks such as React and Angular. Documentation may be hard to come across and community support is not as big as for the other examples. (Karczewski, D., 2022)

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1. Community research – I had to go around and read from forums and websites where people who use the frameworks that I am researching and I can get a better idea of what functionalities each has.
2. SWOT analysis – I had to know what each framework can do best, where it lacked and in what. I did this in order to figure out which was the best for my project.
3. Document analysis – a relatively good way to find the capabilities for these frameworks was reading through the available documentation so that I had a better understanding of what I was dealing with.
4. What support there is for each framework?

* *React*

Since it is one of the most popular frameworks it has a big community and support. It also has a browser developer’s tool called React Developer Tools which is allows for easier development and bug fixing. (Karczewski, D., 2022)

* *Angular*

It has grown in popularity and has a big community of developers. In case of trouble one can get in contact with them and find the solution to their problems. Angular also has a decent documentation, albeit hard to understand sometimes. (Monocubed, 2022)

* *VueJs*

It has a growing community of developers and while it is not on the levels of React and Angular it is starting to get more traction in the recent years. Documentation and other support may be more difficult to find in some cases. (Technostacks, 2022)

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1. Community research – I had to go around and read from forums and websites where people who use the frameworks that I am researching and I can get a better idea of what functionalities each has.
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# Results

The results show that all three frameworks have a lot of capabilities and will surely be able to fit my needs for creating a single-page website application. All of them support very useful features that will help me to create a good user experience as well as keep my web application light and capable of handling under higher loads. In the next chapter I state my final decision as to which one I will use for my project.

# Conclusion

With all the above questions answered I have managed to make the decision about which front-end framework is best suited for my project. From my research I have deducted that the best choice is *React*. It has a very big variety of features that I will be able to make use of. It is used to make fast, light and user-friendly interfaces while keeping the development relatively easy and maintainable. It also has a very large community which I will be able to seek in case of problems. The fact that it is one of the most popular development frameworks means that the knowledge and experience that I will acquire during the development of my project will also be useful in the future.

# References**:**

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