

REACT.JS AND FRONT END DEVELOPMENT

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Abstract - The most fundamental software or any app development is to select which is the right front end framework or library to go with. The market has a wide variety due to the wide range of problems that developers face every day. For front end development, react.js is playing a vital role and creating new opportunities for developers to build new apps. This paper talks about how react.js is helping in the building those application and what advantages it is having in building the front end. With more than 1,400 developers and over 92,000 sites making use of React.js to build their websites it wouldn't be an overstatement to call React the future of front-end development. After all, companies like Facebook, PayPal, utilize this JavaScript-based UI library for a major part of their application's front-end development for web as well as mobile. In this paper, the key features comprising this library was analyzed and its advantages over other frameworks was also analyzed.

1. INTRODUCTION

When React came into the picture, Angular was the only and major contender in the JS framework space. While Angular was a complete and proper framework, it was very difficult for developers as they had to do a lot of coding. Even seasoned JavaScript developers, found it difficult to code and they were looking for some alternative to solve their solution. Angular.JS was never the most desirable way to build JS applications. It has more functionalities and those were not needed by most developers.

React.js came and it revolutionized the way web applications are developed. However, React isn't an MVC framework as Angular is. It is only library. That is, React.js doesn't include state managers, routers, and API managers in the core library. It may look like a limitation but for React developers, but this is only the best in making website as code is very easy to understand with all components and other things.

The aim of the paper is to demonstrate the suitability of the react.js frameworks available for the development of web applications as well as mobile.

2. RELATED WORK

Axios is among the most popular when it comes HTTP clients for both browsers and Node.js. It's simple, lightweight and easy to use it for customization. Not only that, but works great with React and many other frameworks that are found to do the sending of requests and responses.

Axios provides support for request and response interceptors, transformers and auto-conversion to JSON. It's also protecting us by default against cross-site request forgery, so in a way it is safe too.

We can do the following things using Axios basically. Some of them are noted below:-

- Integrate and configure Axios in your React project
- We can make async requests in React
- Using Async/Await and error handling
- Make GET requests
- Make POST requests
- Make PATCH requests
- Make DELETE requests

3. ANALYSIS METHODOLOGY

3.1 Analyzed framework

Comparison would be made of the two most common JavaScript front end Frameworks, and dominance of react.js continues to rise over the years. The following figure displays the rating of all accessible JavaScript frameworks

Most Loved, Dreaded, and Wanted Web Frameworks

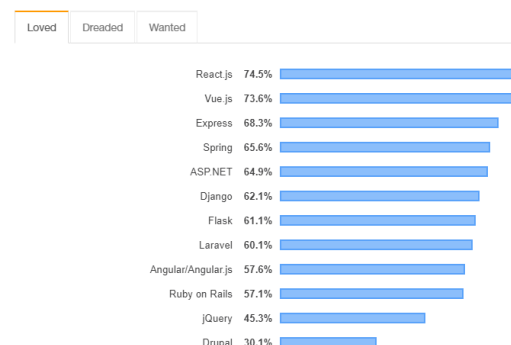
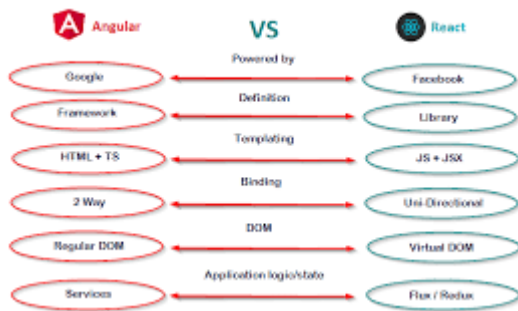


Fig -1

Source : <https://www.geeksforgeeks.org/angular-vs-reactjs-which-one-is-most-in-demand-frontend-development-framework-in-2019/>

3.11 React VS Angular



Source : <http://work.haufegroup.io/Angular-VS-React/>

JavaScript is one of the most popular and easier languages among all the developers nowadays. There are a lot of developers, and they love to build their application, project and web related thing using script but still there is a confusion when they have to pick up right framework or library for their project. Angular and React.js is the topmost priority for all but still, most of them can't decide between both on which one would be good for their project. Freshers want to know which one is easy to learn and since with less functionalities React.js is easier as it has more demand in the market and developers want to learn something which is easier and faster to code.

- React.js is a library and not a framework to build interactive user-interfaces. On the other hand Angular is a complete framework.
- **Learning :** Angular is a complete framework which requires a lot of learning to be done and developers must put in a lot of effort. In advance topic, it requires to learn change detection etc. On the other hand, React.js is just a library and so it is having fewer topics and easier to learn as compared to Angular. React uses JSX (JavaScript XML) which is a way of writing HTML into JavaScript. React provides flexibility and developers can learn quickly using this.
- **Server side rendering** is yet another important advantage for some type of React.js implementations using Axios etc whereas it is a bit difficult to connect to server using Angular.js
- **Components:** Angular works on Real DOM. Angular follows bidirectional data flow also it is larger in size with a lot of memory(92KB) in comparison of React. React on the other hand works on Virtual DOM which is a lightweight copy of a Real DOM size(46KB) of React is smaller than Angular.
- **Downloads:** Everywhere popularity of react is better and is having more downloads as compared

to angular which is a complete framework with all the functionalities needed by users or developers.

- **SEO:** Relatively better SEO in comparison with angular
- **Binding:** React.js has 2-way binding data property and Angular.js has 1-way binding property
- **TypeScript vs JavaScript/Flow:** React uses JavaScript, a dynamically-typed language (which means you don't have to define the variable's type). Because many developers already know and love JavaScript, this can be seen as a pro.

Conversely, Angular uses Typescript which is old and not favored that much by the users or developers

- Mobile solutions of React are usually better than Angular

3.12 React Advantages and Disadvantages

React is a JavaScript library used to build reusable UI components. open sourced by Facebook in.

Some of the reasons for choosing react as the front End development are as follows:-

- Easy to learn as we can quickly build things
- It helps us build a rich interface as poorly looking interface wouldn't look good.
- Faster development and can be used to earn money faster too. Productivity is an important factor and React is definitely exhaling in that case as well
- It is trusted by great companies and all these companies uses React to build their websites. One of the well known companies is Netflix itself
- It has got strong community support and the number of downloads exceeds Angular
- It is one of the trending topics and everyone is keen on the development too.

Some disadvantages along with all advantages are as follows:-

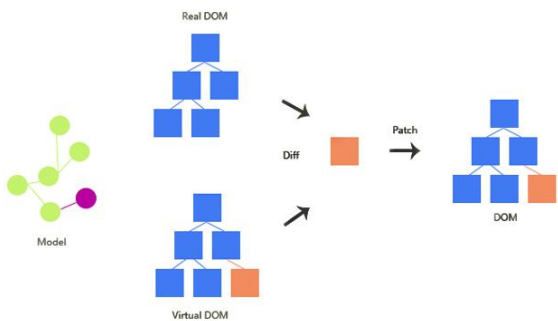
- Need to import libraries for state and model as React doesn't implement MVC and also is not having a complete structure

- React moves away from class-based modules and can be an obstacle for Object Oriented Programming and developers may not be relaxed with that.

- Good number of downloads
- Better SEO
- Applications that require versatility
- That require high speed

3.13 The Virtual Dom in React

Some manipulations in DOM does a job on increasing the web app's performance regardless of how fast the client platform and the JavaScript engine is and these manipulations are extremely useful.



Source : <https://dzone.com/articles/why-choose-react-for-front-end-development>

The DOM has a tree like structure and changes on top may affect the bottom and this will create a problem on giving delay to UI responses and affecting the user experience

React solves the problem with a layer of the Virtual DOM between the user layer and actual DOM fortunately. The Virtual DOM is a virtual representation of the DOM and rather than staying on the screen, it stays on the memory. The changes made on the Virtual DOM is taken care by an algorithm which is made and determines which changes must has to be made to the real DOM and, thus, the user's screen.

Virtual DOM absorbs any changes to the DOM and keeps them in memory. The algorithm then detects on which component the change was made and updates that part of the DOM. This change will be reflected on the user's screen without disturbing the other components.

4. DISCUSSION

The analysis show that the different frameworks like Angular.js and library like React well based on the following application criteria:.

React is feasible framework for applications because of the following:

- Better learning
- Binding is better

Angular is less suitable though for applications. Still some of the reasons why angular should be chosen are:-

- It is having a good structure
- Applications having dynamic content are better suitable with angular.js

Virtual Dom in React is a concept which is important to increase the performance of the webpage by doing some Manipulations. It is one of the many advantage of React and is a really important concept

5. CONCLUSION

This paper examined the use of react is primary for the front end technologies and for the creation Web applications. The front end frameworks React and Angular were compared and React was definitely a better choice. React was discussed in details and its advantages and disadvantages were listed too. The criteria for selection of specific framework were clearly identified and react should be chosen in most of the cases.

Also, one more concept was discussed as well that is nothing but The Virtual Dom in react and its advantages on how it increases the performance of the UI and also reduces the delay.

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