

COMPARATIVE ANALYSIS OF ANGULARJS AND REACTJS

Anurag Kumar¹ and Ravi Kumar Singh²

Abstract- We live in a different era of web, we need better ways to quickly develop and deploy interactive web applications and that is where JavaScript frameworks come to the picture. JavaScript frameworks are the backbone of single page web applications development and provide superpowers to plain HTML and JavaScript. AngularJS and React.js are two most used javascript frameworks in current web development. Both frameworks are used to build interactive single page application. This research paper helps in understanding AngularJS and ReactJS.

Keywords – Javascript, AngularJS, ReactJS, Two-way binding, Virtual DOM

I. INTRODUCTION

JavaScript is a client side scripting language which is used for providing dynamic attributes and features to the HTML webpages .JavaScript was developed for supporting the browser with feature of asynchronous communication, controlling the browser and for user interaction with the web page components.

An HTML page is just a static page. JavaScript can make the website more interactive and user-friendliness, JavaScript helps easy navigation of the website and to provides interactivity. Based on JavaScript there are many frameworks are developed and also added many new features for server side scripting. JavaScript has emerged so much in web industry and if you look at the current websites there are no web technologies that are not using JavaScript.

JavaScript is a dynamic scripting language, it instruct the browser to make changes to page elements after loading a page. JavaScript is easy to learn: you just need a browser and a text editor to begin writing and running your code.

II. JAVASCRIPT FRAMEWORKS

A. *AngularJS*

AngularJS is an open source JavaScript framework maintained by Google and community which can help developers to create single page applications. AngularJS which are built on top of the JavaScript are making the life of developers very easy. The idea behind using AngularJS in web

¹ *School of Computer Science & Information Technology DAVV, Indore, MP, India*

² *School of Computer Science & Information Technology DAVV, Indore, MP, India*

application is to make your web application modular and easy to maintain. Its purpose is to help developing the web applications with model-view controller (MVC) capability in an effort to make development, maintaining and testing easier. After using minified files in your application, the size reduces to some KBs and load pages much faster. AngularJS is great for building highly active and interactive web applications. It is the most used JavaScript framework for developing Single Page Web Applications.

AngularJS helps to create web applications which are based on HTML, CSS, JavaScript. You can create customized Document Object Model (DOM) elements using AngularJS. Back end communication is taken care of, views and controllers play a critical part in making of the UI. Dependency injection is a big plus features, automatically loading new modules that you may require. Automatic data synchronization between model and view components known as two-way data bindings is an another unique feature of AngularJS.

Two-way Binding:

Data binding in AngularJS is the synchronization between the model and the view. When data in the model changes, the view reflects the change, and when data in the view changes, the model is updated as well. This happens immediately and automatically.

B. React.js

React is a UI library developed at Facebook to facilitate the creation of interactive, stateful & reusable UI components. It is used at Facebook in production. ReactJS is best for rendering complex user interfaces with high performance. The basic fundamental behind React is the concept of virtual DOM. ReactJS effectively use virtual DOM, which can be rendered either at client side or server side and communicate back and forth. The Virtual DOM render subtrees of nodes based upon state changes. It does the least amount of DOM manipulation possible in order to keep your components up to date. React is lighter then Angular , it is filled with the least conditions and eliminates the need to use extra elements like plugins. React is against two-way binding, it intentionally stay away from it and make use of explicit updates instead.

Virtual DOM:

Like the actual DOM, the Virtual DOM is a node tree that lists elements and their attributes and content as objects and properties. React's `render()` method creates a node tree from React components and updates this tree in response to mutations in the data model, caused by actions.

Each time the underlying data changes in a React app, a new Virtual DOM representation of the user interface is created

III.COMPARISON

Angular and React, both are amazing JavaScript UI frameworks. While the differences between Angular JS and React JS are large, they can both accomplish the same thing.

Table -1 Comparison of AngularJS and ReactJS on different attributes

Attribute	AngularJS	React
<i>DOM</i>	Regular DOM	Virtual DOM

<i>Learning Curve</i>	High	Low
<i>Packaging</i>	Weak	Strong
<i>Abstraction</i>	Weak	Strong
<i>Debugging General</i>	Good HTML / Bad JS	Good JS / Bad HTML
<i>Debug Line NO</i>	No	Yes
<i>Unclosed Tag Mentioned?</i>	No	Yes
<i>Fails When?</i>	Runtime	Compile-Time
<i>Binding</i>	2 Way	Uni-Directional
<i>Templating</i>	In HTML	In JSX Files
<i>Component Model</i>	Weak	Medium
<i>Building Mobile?</i>	Ionic Framework	React Native
<i>MVC</i>	Yes	View Layer Only
<i>Rendering</i>	Client Side	Server Side

The most interesting differences are the size, community, debugging, DOM, and mobile. Angular JS community is very large React's community continues to grow. When looking at sizes, there are some distinct differences between React and Angular. React does not do as much of the MVC model as Angular so it has much smaller size.

IV. CONCLUSION

On some attributes Angular is better and on others, React is better. React gives you freedom and simplicity, but lacks the declarative power of Angular. Angular is a much fuller featured framework than React, but that doesn't mean a lot when we don't see the need for most of the features that Angular provides. We have to write less code to do more in React, also React has better performance than Angular due to React's implementation of a virtual DOM. The support for Angular is much better, with a larger community, as React is just getting started.

REFERENCES

- [1] Madhuri A. Jadhav et al, "Single Page Application using AngularJS", *International Journal of Computer Science and Information Technologies*, Vol. 6 (3), 2015, 2876-2879
- [2] AngularJS, "Angular Guide" [Online], Available: <https://docs.angularjs.org/guide>
- [3] ReactJS, "React Guide" [Online], Available: <https://facebook.github.io/react/docs/thinking-in-react.html>
- [4] Github, "virtual DOM" [Online], Available: <https://github.com/Matt-Esch/virtual-dom>