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**\*\*TERM PAPER OUTLINE**

**The Frameworks Which Changed the DOM**

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The web framework is one of the most revolutionary concepts that has been brought to the internet browser. For a long time, web pages were being built statically with HTML and CSS. HTML stands for Hyper Text Markup Language and CSS stands for Cascading Style Sheets. It was only recently that other languages that act on both the client side and the server side had been introduced as crucial languages. The web’s most popular language that is being used in modern day is JavaScript. To understand where most of these frameworks are coming from and to understand the power that they convey, you have to understand the history of the languages that they were built in. Currently, JavaScript is becoming and arguably is the most powerful programming language on the planet to date. The language is not to be confused with the Java programming language, which is much older. JavaScript was created in just ten days during the month of May in 1995. The language was not always known by the name of JavaScript. Its original name was known as Mocha which had been given by the founder of Netscape, Marc Andreesen. The name was then later changed to Live Script and then eventually JavaScript shortly after. The company ECMA eventually bought the rights to the language and added their own changes/updates to the language. It then adopted the name of ECMAScript. At the point, the language gained a large amount of interest from the development community and began to be tested by developers around the world. Interestingly enough, Microsoft had mentioned that they had no intention to fully incorporate the language into their Internet Explorer browser. Instead, they were planning on fully implementing the .NET server-side language to take over the powerful processes that JavaScript would have done. JavaScript then became an open sourced language and had become extremely criticized and taught by a famous man known as Douglas Crockford who had been an employee of Yahoo at the time. Not long after, the term AJAX was coined. This is still used today, where the JavaScript language is used to send and retrieve data over the server in the background and negating the need for the page to fully reload. This allows for the applications to be more dynamic and useful to the different users of the application. Now, due to the fact that JavaScript has become open sourced, there have been many different libraries and frameworks that have been developed that are also open-sources. Two of the most famous JavaScript libraries that have been developed are DOJO and jQuery. Both of these libraries help perform the tasks of Vanilla JavaScript with writing less code that has already been written as different methods and properties by the library developers (W3.org, June 27, 2012).

Now that we know some of the history behind the JavaScript language and the origination of the different libraries that have been used, we can dive into the most important topic on the internet today. This topic is about the different frameworks that are used through the web browser and the internet for a full-stack experience. To date, there are many different frameworks and libraries that are open sourced to the public for people to be able to write dynamic web applications. Most of them are written in JavaScript or variations of JavaScript like TypeScript or JSX (JavaScript and XML/HTML). However, there are other frameworks that have been created with other languages like Python and Ruby. We will dive into these as well. As of 2017, Hackernoon states that the top five JavaScript frameworks are Angular-s (Angular.js and Angular 2) made by Microsoft with their TypeScript language, React JS built by Facebook (Focusing on UI with a virtual DOM for high traffic management), Vue.js (evolved from ember and combines the knowledge of React and Angular with optional JSX support for single-page applications), Ember.js (Allowing for UI performance and server-side rendering of the DOM with use from companies like Chipotle, Blue Apron, Nordstrom, Kickstarter, LinkedIn, Netflix and many others), and last but not least, Meteor.js (Great for back-end development and front-end development. It is developed with modules that are going to be fully written with pure JavaScript. It is used by many companies like Mazda, Honeywell, and IKEA (Hackernoon, Eugenia Korotya, Jan 19, 2017). Some of the other frameworks that are widely known and used today are derived from the Python and the Ruby programming languages like Django and Rails, otherwise known as Ruby on Rails. Django’s most notable feature is that it is a server-side web framework that is written in Python. Django can be written on pretty much any operating system and uses many different unique features like models to represent the data structures that we would store our app’s data in. Django also comes prepackaged with an admin CMS (Content Management System) to store and control data that is moving across the server and the database. Django also comes pre-equipped with its own security protocols and methods (Mozilla Developer Network, 2017). Ruby on Rails is a web framework that has been built on top of the Ruby programming language that utilizes syntax from Smalltalk, Python, and Perl. It is considered to be high-level and is object-oriented. The Ruby on Rails framework is interpreted and therefore cannot be considered to be as high level as Java and or C or C++. It is said that you can develop a Rails application at least ten times faster than you would be able to with a standard Java framework. The Rails framework is most well-known for its back-end capabilities and database integration (Tutorials Point, 2017).

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