In this thread I want to discuss Node.js. I want to discuss how Node.js is used. I would also like to explore the differences between Node.js and JavaScript. I will also describe the Chrome V8 engine. Finally, we will also discuss NPM and why NPM is used. So, what is Node.js?

Node.js is “an open source, cross platform, JavaScript runtime environment that executes JavaScript code outside of a web browser. It is a popular, lightweight web framework for beginners and is used by large companies such as Netflix and Uber. (Kopecky, 2020). How does Node.js work? “Node.js utilizes a highly customizable server engine that uses non-blocking event-based input/output. What this means is Node.js does not “sleep” unless you tell it to, yet unless you tell it do so, it will continue to do things one after the other. It likes juggling with one hand, Nodejs will juggle with one hand and keep all the other things in the air (other threads). (Web, 2020). Node.js is used to allow developers to deploy and maintain network applications. Nodejs is used to help manage the exchange of data between servers and users, is used in the development of back-end components and connects applications with other web services. Node.js is also used to support front end developers by integrating web-based applications. “The Chrome V8 engine is “a very powerful open-source JavaScript engine provided by Google. It is a program that converts JavaScript code into lower lever or machine code that microprocessors can understand. “ (freeCodeCamp.org, 2017).

The differences between JavaScript and Node.js are:

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| --- | --- |
| **JavaScript** | **Node.js** |
| JavaScript is a programming language that is used for writing scripts on a website. | Node.js is a JavaScript runtime environment. |
| JavaScript can only be run in the browsers. | We can run JavaScript outside the browser with the help of Node.js |
| It is basically used on the client side. | It is mostly used on the server side. |
| JavaScript is capable enough to add HTML and play with the DOM. | Node.js does not the capability to add HTML tags. |
| JavaScript can run in any browser as like JS core in safari and Spidermonkey in Firefox. | V8 is the JavaScript engine inside of node.js that parses and runs JavaScript. |
| JavaScript is used in frontend development. | Nodejs is used in server-side development. |
| Some of the JavaScript frameworks are RamdaJS, TypedJs, etc. | Some of the Node.js modules are Lodash, express etc. These modules are to be imported from npm. |
| It is the upgraded version of the ECMA script that used Chrome’s V\* engine written in C++. | Node.js is written in C, C++ and JavaScript. |

(GeeksforGeeks, 2021).

What is NPM? NPM is two things. “First and foremost, it is an online repository for the publishing of open-source Node.js projects; second, it is a command-line utility for interacting with said repository that aids in package installation, version management, and dependency management.” (2011). The reason NPM is used is that “it is a package manager for Node.js with hundreds of thousands of packages. Although it does create some of your directory structure/organization, that is not the main purpose. The main goal is automated dependency and package management.” (*What is NPM and Why Do I Need It?*, 2015).

In conclusion we have covered many topics in this short essay. We have learned what Node.js is and how it works. We can see the differences between Node.js and JavaScript. We now know what the Chrome V8 engine is and how it works with JavaScript and Node.js. We have touched on what npm is and how it is used. It is the intent of this writing that we can see how all of these components work together and for a similar purpose, to help us developers be able to design programs and applications that will undoubtedly have an impact for those that we design for.

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