International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

Mean Stack Web Development

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Abstract *— With the recent advancement of digital technology, developers and technologists around the globe have never had a more exciting time to set up new web applications. There are plenty of new languages, web frameworks and resources to choose from for the creation of Web applications. E-commerce is one of the newest innovations designed to open up great opportunities for business people. One of e-commerce's most popular areas are e-Business areas. MEAN stack technology was the tool used to create an e-commerce website. It is one of the strong full stack technologies used to develop the most trafficking sites. This paper looks at the four MEAN stack components (Mongo Db, Express Js, Angular & Node Js) and how they go well together, their virtues as a full stack in web design. It also explains in depth the work flow and the back end server design to understand the dynamics of these four technologies used in the creation of the MEAN stack network. This paper focuses exclusively on the functions of these four technologies in MEAN stack and how they are popularly incorporated in the present time.*

Keywords ***—MEAN stack, Angular, Javascript, Web development, Web design, Node JS, Express JS.***

1. INTRODUCTION

Stack web development activities to analyse and comprehend the dynamics and intricacies of the latest technologies employed in MEAN (Mongo Db, Express Js, Angular, Node Js). For the modern developer, the practicality of FULL-STACK design employs the MEAN Technologies and their ease of use features. The four technologies comprising the MEAN stack are Mongo Db as the database, Express as the server system, Angular for front-end and Node Js as the JavaScript server-side event-driven I/O (in/output) environment. The key characteristic of MEAN stack is that all four technologies are based on java script and JSON (JavaScript Object Notation) data from those frameworks save potential JSON encoding time consumption [1]. Today Developers around the world are working to improve the user interface of using the application as well as to improve the developer's process of developing apps to execute projects and demands for implementation improvements within strict deadlines. Stacks can be used in the shortest period of time to create Web applications. A newly emerging web development stack is the MEAN stack that uses Mongo Db as database, Express as a versatile server platform that provides routing and manages requests and responses, while Angular operates on the client side. It is a free, open-source stack of JavaScript tools to create interactive websites and web applications. Since all MEAN stack components support programs written in JavaScript, MEAN applications can be written in one language for both server- and client-side execution environments.

MEAN is extremely simplistic for rear end and front end in various systems, but for server and client side execution, the separate languages for front and back end are written in a single language. It is a free and open-source stack of JavaScript software that is very important for the creation of dynamic Mean stack frameworks and websites [2].Over recent years, due to the advancement in information technology, the approach of web creation has drastically changed. The browser is not used to provide static information any more. The dynamic feature in the browser is heavily used by JavaScript. The browser becomes some form of mini operating system which uses various data sources-developer server services-in the net. Deciding this type of web application has the advantage of being able to upgrade parts of a website without submitting a request and reloading a full page.

2. MEAN -FRONT END

Angular is an open source JavaScript Frame work that Google creates and maintains. It has been configured with capabilities to manage all the application and interaction on the client side. It's primarily used to build a SPA (Single Page Application) that loads an initial request on the entire web page. Angular has the capacity to execute side routing of clients. This will help to lighten the server load by a substantial margin. Another feature of Angular is that it is an architecture of MVW (Model View Whatever). Normally, the front end part consists of HTML, CSS, Javascript and here since it is MEAN stack, it is Angular.

2.1 ANGULAR 8

TypeScript is the primary language used to create Angular applications. It is a JavaScript superset with design-time support for the safety and tooling of the application. Browsers can not explicitly execute a TypeScript. Typescript must be "transposed" into JavaScript using the tsc compiler, which requires a certain setup. Angular is an app-design system and forum for designing powerful and sophisticated single-page applications. It provides clean code creation and higher performance. An angular system can take care of the

routing, which means it is easy in Angular to switch from one view to another.

Angular is applied with a < script > tag to the tab, so that Angular begins immediately when loading the tab. The underlying logic begins within the wrapper where ng-app directive initializes Angular. Then the ng-model parameter binds the input value to the 'name' variable, and finally the ng-bind directive binds the inner HTML of the unit to the 'name' variable. Therefore, the name the user styles. AngularJS is one of them that deals directly with data on the edge. It permits developers to use HTML as a template language to expand the syntax of HTML. Data binding and dependency injection are two main functions. Angular works exclusively with data on the front end and compiles the HTML templates on the basis of the data provided. Reproduced properly.

Angular apps are modular, and Angular has a modular architecture of its own called NgModules. NgModules are containers for a coherent block of code dedicated to an application area, a configuration or a collection of functionality closely related to that [3]. They can include modules, service providers, and other code files whose scope is specified by the NgModule container. They can import functionality derived from other NgModules, and originates in a file named app.module.ts. Although there may be only one NgModule in a small application, most apps have a lot more feature modules. The root NgModule is so named for an app, since it can include child NgModules in any depth hierarchy.

3. MEAN -BACK END

The back end is used for designing the tables/documents to store the data from the front end via servicing. After that it can be retrieved using the primary key / foreign keys from the database structure. In this project Mongo DB is used to create the database structure and the node Js, express Js is used for establishing the connection between front end and back end. Normally backend of MEAN stack comprises of Node JS, Express JS and Mongo DB.

3.1 NODE JS

Node Js is a software platform that helps create asynchronous and event- driven network applications. It includes built-in HTTP server libraries that allow developers to create their own web server and additionally build highly scalable web applications. The V8 JavaScript run time engine used by Node Js is the same engine used in Google's Chrome browser. Node is compact, strong and diverse. Due to its specific features, it can accommodate tens of thousands of interconnected connections [4].

Node.js creates an event-with event handlers for all requests. When an I/O operation occurs, the associate handler is queued up for execution and a callback function emits an event after the I/O operation is completed. Certain I/O operations meanwhile tend to operate outside of the server's event loop. Therefore, Node Js performs the I/O operations asynchronously and does not interrupt any execution of scripts, allowing the event loop to respond to other requests [5]. The Node module provides a public API (Application Programming Interface) that can be used after the module has been inserted into the existing script. Core modules are modules that come with the installation of the Node and are synced when a Node cycle starts.

3.2 EXPRESS JS

Express Js is a lightweight and versatile Web application framework for Node.js that offers a comprehensive collection of simple web application features without obscuring the features of Node Js. Provided access to middleware, Express makes it easy to build APIs [6]. Middleware functions are functions that have access to question and response objects along with a next function that executes the middleware that replaces the current middleware when it is invoked. Express Js provides a similar functionality to what Spring offers to Java applications, i.e. an easy-to-use Web interface.

Express Js is a Web platform for Node Js that has gained tremendous popularity because of its simplicity. It has easy-to-use routing and clear support for view engines, which brings it well ahead of the HTTP server base node. Setting up a new Express application involves a certain amount of boilerplate code, however: starting a new server case, setting up a view engine and setting up the handling of errors. While different starter projects and boiler plates are available, Express has its own command-line tool which makes it easy to start new apps, called the express generator.

3.3 MONGO DB

MongoDb is a Database style NoSQL - oriented text. Data is stored in JSON format. It is simple, and is used for database storage. It is a document-oriented cross-way database with attributes Nosql. MongoDB describes the Web-based application as a database that stores data. MongoDB has some exciting features that make it very popular among other databases for the application and its architecture [7]. This has a complex schema and is therefore used with great popularity to create scalable applications. MongoDb does not allow its users to be familiar with a conventional relational language like SQL. Node has a package called mongoose which handles the interaction between MongoDb and the server, Data in mongo is stored in the form of objects or documents as they are referred in mongo. BSON (binary encoded JSON) is the format of a text. BSON is derived from JSON and has some different data forms which are not included in JSON. While MongoDB has a low-level driver available, you'll likely want to use a "Object Document Mapper" (ODM). Mongoose is the officially licensed ODM for MongoDB.

4. CONCLUSION

Latest research has shown that the MEAN stack is well adapted for the class of Internet devices requiring a web-services API to build back-end services. MEAN provides efficiency and productivity advantages over more conventional stacks of devices. A combination of Node & Express.js with a MongoDb database offers an outstanding implementation of a web-service based on JSON; not least because all stack tools can use the underlying JSON data natively. Such a web-service MEAN stack is also highly scalable – due to the advantages of both Node and MongoDb. Although systematically assessing the merits of running Node and other scripting languages & interpreters directly on the hardware was outside the reach of this work; this research has shown that this is possible — and needs further exploration and consideration of use cases. It is both possible and appealing to use a web-service to securely allow remote software updates. As technology matures, the use of software containers to enable the scalable deployment of MEAN stack web-service also merits further exploration. Mean stack technology improves day by day, and is convenient to use as well. Mean Stack is used by leading mobile app development companies to build top mobile apps, since Mean Stack is listed as the best mobile app development technology. It is the most appropriate platform for most innovative and cutting edge software applications. Mean is a basic transposition of a development group's initial letters. Upgrading the framework and moving the base platform from an OS (Linux) to JavaScript platform has helped to achieve OS flexibility.

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