

Mean Stack

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Abstract – This paper covers the four important component of MEAN stack i.e. MongoDB, Express.js, Angular.js & Node.js and their benefits as a full stack in web development. That helps to build fast, robust and maintainable web application. JavaScript is used as scripting language for client-side programming as well as server side programming that runs in any almost every browser from client to server to database. It is a full stack JavaScript which is 100% open source as well as large community support. There are some other languages also.

Keywords –MEAN, Angular.js, Mongo.DB, Node.js, Express.js, LAMP.

I. INTRODUCTION

Car rental or car hire agencies are private companies that provide short time leasing vehicles for a specified time with a fee to their customers. The purpose of this work to design system so as to be used by car Rental Company specializing in renting cars to customers. It is an online system through which customer can view available cars and drivers, register, view profile and book car and driver. The advancement in Information technology and internet penetration has greatly enhanced various business process and communication between companies and their customers of which car rental industry is not let out. A car rental, hire car, or car hire agency is a company that rents automobiles for short periods of time, generally ranging from a few hours to a few weeks. It is often organized with numerous local branches (which allow a user to return a vehicle to a different location), and primarily located near airports or busy city areas and often complemented by a website allowing online reservations.

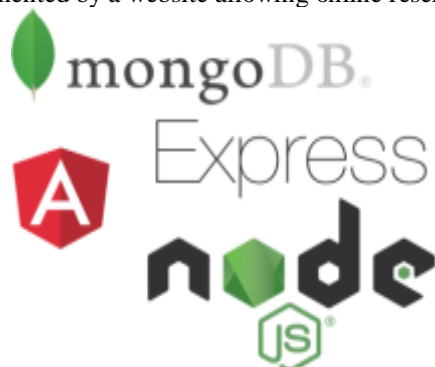


Fig.1. MEAN.

present related to Js to develop desktop application like Electron.js. This paper mainly focuses on roles of these four technologies in MEAN stack and how they are popularly implemented in present time. The MEAN stack replaces LAMP's use of MySQL and MEAN stack with

no SQL features. This change will change the various app on web server.

II. INTRODUCTION

M.E.A.N, M.E.A.N simply referred to as “mean stack” or just “mean”, may be a collective name for four pieces of software as presented by Haviv (2015) and Alfred (2014) the term MEAN stack refers to a collection of JavaScript based technologies which is used to develop web applications. The complete full form of MEAN is MongoDB, Express.js, Angular.js and Node.js. Each component in MEAN stack speaks the language of JavaScript Object Notation (JSON). MEAN connecting a stack that utilize MongoDB (database server). Express (server-side JavaScript structure), Angular (customer or client side JavaScript system and Node.js (JavaScript runtime).

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Frontend <---->JSON<----> Backend <---> JSON<-->  
>Database  
AngularJS<---->JSON<--->Node.JS/E.JS<-->BSON<--->  
>MongoDB
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Mean stack is straight forward to search out, because it's completely supported JavaScript, to find out MEAN Stack you've go to search out all the technologies from the MEAN Stack individually and when anyone learn all the components of MEAN then combine them to form a Web application on large scale like Flipkart, Amazon, or any other Hotel Website and many more. This technology consists of a No-SQL database. Many big companies switch their technology to this technology as an example Netflix, EBAY, LinkedIn, GitHub, Microsoft, Intel, etc. Because this technology is new and straightforward to search out and have many advanced features like asynchronous and event-driven, scalability, simple testing, the effectiveness of microservices. mean Supports MVC (Model View Controller) architecture, it allow to start out with complete frontend development initially, also because it's 100% free as well as Open

source and large Community support. Due to this Uniform usage of language the stack that's JavaScript, helps to avoid unnecessary grunt work and keeps your application organized. It comes with a really very powerful suite of testing tools and make a simple open source solution that's used to build robust and maintainable solutions. Helps in rapid development of applications. MEAN makes code Isomorphic. The most essential benefits of working with the MEAN stack is that everyone code is written in JavaScript. This paper presents a theoretical classification and scenario for considering the implementation of the MEAN stack technology within the development of the frontend and backend of web applications.

1. MongoDB

MongoDB is an open source, document oriented database designed with both scalability and developer agility in mind. Instead of storing your data in tables and rows, as you'd with a on-line database , in MongoDB you store JSON-Like documents with dynamic schemas, like other NoSQL database framework,



Fig.2. MongoDB.

MongoDB utilizes a schema less design. Information is stored and recovered as JSON formatted documents, which may have any number of nested fields. MongoDB is formed for cloud. This adaptability as MongoDB appropriate to quick application development when managing fast-changing requirements.

2. Express JS

It is a Node.js web application server framework, designed for building single - page, multi-page, and hybrid web applications, it's the actual standard server framework for node.js. Express provides a thin layer of fundamental web application features, without obscuring Node.js features that you know and love. Express is apparently the foremost generally utilized web application With a myriad of HTTP utility methods and middleware

at your disposal, creating a powerful API is quick and easy.



Fig.3. Express.JS.

Many popular frameworks are supported Express structure for Node.js Express gives just a touch arrangement of essential features its basically a negligible programmable web server-however can be extend out by method for plugins.

3. Angular JS

It is a structural framework for dynamic web apps. It allows you to use HTML as your template language and allows you to increase HTML's syntax to express your application's components clearly and sufficiently. Angular's data binding and dependency injection eliminate much of the code you currently have to write. Angular.js is also a fresh programming language.



Fig.4. Angular.JS.

Angular(earlier Angular.JS) is utilized to assemble the front for a MEAN application Angular uses the program's JavaScript to rearrange server-provided information in HTML formats, with the goal that an enormous element of crafted by rendering a website page are often offloaded to the customer. Many single-page web applications are fabricated utilizing Angular on the front .

4. Node JS

Last but not the least amount , there's Node.js JavaScript runtime that controls the server side of the MEAN web application. Node.js simplifies the server layer. Node depends an Google's V8 JavaScript engine, the equivalent JavaScript engine that keeps running within the Chrome internet browser. Node js is superfast.



Fig.5. Node.JS.

Node is cross-stage, keeps running on the two servers and clients, and has certain performance benefits circumstances over conventional web servers, for example, Apache. Remember, Node.js works best with many low-resource requests as against resource-intensive requests. While one thread protects against process deadlocks, it's not immune to an outsized process freezing the system for all clients.

5. Implementation and ease-of-use

JavaScript started as a simple script that's meant to be moved by the browser. Now, however, JavaScript is everywhere. It can be found running on smartphones, servers, Arduino, RaspberryPi and in additional technological developments. The thing that JavaScript has over other languages is that, it is Non-blocking. One non-blocking thread in JavaScript is more efficient than using threads in languages like java. JSON is that the common format used to exchange data between all 4 layers. Since JSON is native, no parsing is required within the least. JSON is lightweight and easily consumed by JavaScript. The foremost common and efficient thanks to use the MEAN stack is to use express to make a restful API, while angular handles the client side routes taking full advantage its SPA characteristics. only data from the database is required, will the appliance be required to form use of the API. This way most of the business logic are often applied and executed on the client side. Illustration are often found in fig.1 within the Express side of things, app handlers are wont to handle the requests and give responses. The MEAN stack is growing in popularity. Valued for its flexibility, consistent language, and scalability, the MEAN stack is a superb choice for any web development destined for the cloud.

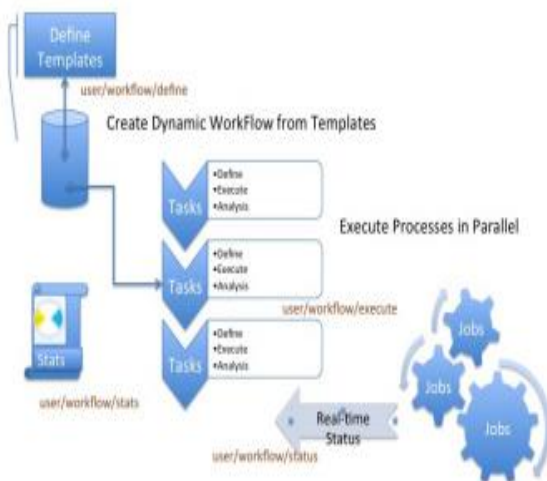


Fig.6. Workflow of MEAN stack.

6. Workflow of Mean stack

These handlers receive the request and start request-response cycle with middlewares. User management, authentication, session management and thus the CRUD

operations on MongoDB are handled by express. Technologies are often hindered in their development if it's too hard to search out and thus the costs outweigh the benefits. However within the MEAN stack, these 4 technologies seamlessly integrate with each other e.g. express response object can directly be supplied to angular within needing for parsing. MEAN.io and MEAN.js are popular Node packages that have all 4 technologies already pre-compiled and may be used directly without having separate setup for them. This makes it especially easy for the developers since some a part of the mixing is already automated straight out-of-the box. MEAN removes the necessity to rent different specialists to develop each a part of an application. A MEAN application enters the world optimized to require advantage of all the cost savings and performance improvements of the cloud.

7. Server architecture of Express.js

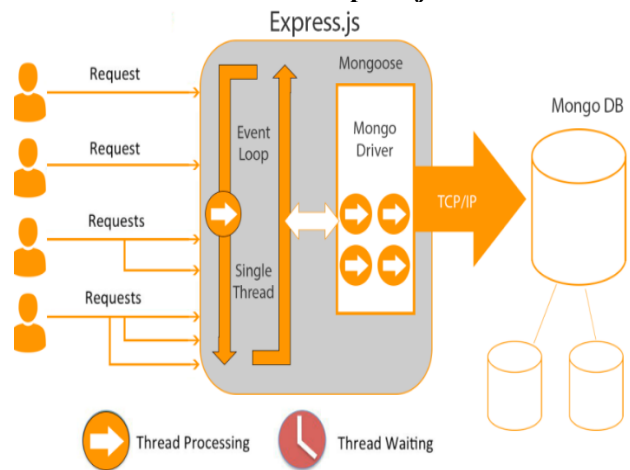


Fig.7. Server architecture.

8. Comparison of Javascript with Other Programming Languages

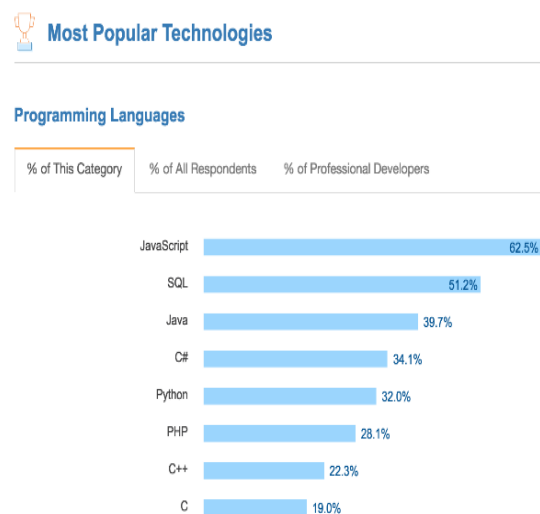


Fig.8. Comparison with other languages.

Benefits to use JS.

LANGUAGE	INTENDED USE	OBJECT-ORIENTED	FUNCTIONAL	STANDARDIZED	EVENT-DRIVEN
JS	Client-side, server-side, web	YES	YES	ECMA	YES
JAVA	Application, business, client-side, general, mobile development, server-side, web	YES	YES	STANDARD VIA JAVA	YES
C#	Application, RAD, business, client-side, general, server-side, web	YES	YES	ISO	YES
PYTHON	Application, general, web, scripting, artificial intelligence, scientific computing	YES	YES	STANDARD VIA PYTHON	YES
PHP	Server-side, web application, web	YES	YES	STANDARD VIA LANGUAGE	YES
C++	Application, system	YES	YES	2014,ISO/IEC	NO

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Limitation

1. Not recommended for applications.
2. No specific general JS coding guidelines.
3. Once you've got developed the primary site
4. using Mean stack technology, it's really hard to travel back to the old approach.
5. It offers poor isolation of server from business logic.
6. you'll lose records gradually.

III. CONCLUSION

Mean stack technology is improving day by day and is additionally easy to use. The leading mobile app development companies use Mean Stack for developing top mobile apps as Mean Stack is listed because the best technology for developing mobile apps. For most innovative and cut-edged web applications this is often the foremost suitable technology.

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