Full Stack Web Development

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Abstract. This paper provides the summary on varied aspects of full stack web development. Full stack web development could be a pace growing branch of CSE sector because of its successive step towards making the long run in the IT industry. Full stack developers manage the rear end (backend) and front- end development of web site or an online application. They handle the info, clients, system engineering and style. Full stack developer is in demand since of their skills and mastery of web development, due to this vast demand the remuneration of full stack developers is additionally high as compared to alternative jobs. Full stack developer in the main works on web stack, native application stack or mobile stack. Since, they accompany each server side development and client side development, full stack developers head the arrange of action and keep a track of the progress of the project. Within the finish of the paper, we will clearly outline Vision, Challenges and Future scope of Full Stack Web Development.
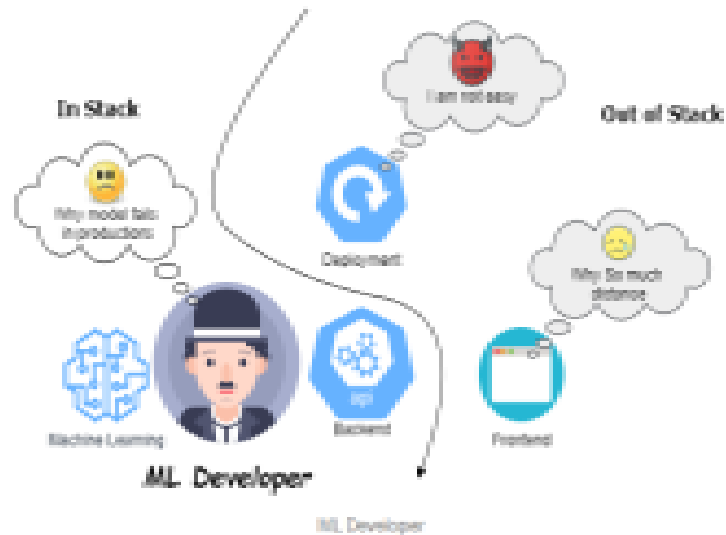**Keywords:** Full stack web development, Front-end, Back-end, Programming, Server-side, Client-side, Development, ETC

1. Introduction

Full stack web development is the scenario of acting on each, the front-end and back end of a program. It is a term largely used for those operating in web development. The developers have background on making program and user expertise for front-end, and even have robust information in an exceedingly programming language that's used for handling the logic of the appliance, therefore back-end. Full stack could be a layer of software system or web development consisting of the front-end and also the back-end parts of   associate application. Front-end is what the users can see or act with on your application. Back-end part is what users don't see, like application's logic, database, server, etc. A full stack web developer is comfortable operating with each, back-end and front-end technologies that build a web site or application perform properly Full stack developers are also termed as "developer generalists", as they will produce any complicated application from scratch, provided they have understood how each and every technical layer ought to act with the other. As Full stack web development refers to the both of each front-end and back-end of an online application, web application, the development method contains 3 layers, i.e., the logic layer (back-end layer), the presentation layer (frontend layer) and the information layer (database layer). The major stacks of full stack web development that are commonly used to develop websites and applications are: • Linux Apache My SQL PHP (LAMP), Cross-Platform Apache Maria DB PHP (XAMPP) • Mongo DB Express Angular Node.js (MEAN), • Windows Apache My SQL PHP (WAMP)
Apache My SQL PHP PERL Softaculous (AMPPS).

2. Full Stack Web Development

Full Stack Web Development Web development normally involves both client-side and server-side, which is often referred to as full stack web development. Among them, client-side is also called front-end and server-side is called back-end. As shown in figure 1, front-end most of times the program is written in HTML/CSS/Javascript, and in the last few years Angular, Vue and React have emerged as front runner frameworks. For back-end development, it can be programmed with Java, C#, node.js and PHP, and data server can either be SQL based such as MySQL or NoSQL based such as Mong DB. The mobile-first web design or responsive web design, the most commonly adopted architecture for web development is the presentation-logic-data three-tier architecture. Logic tier is a middle tier between presentation tier and data tier. It conducts business logic operations via processing and moving data between two surrounding layers. Data tier is at the bottom layer where data stored in a database or file system can be pulled/retrieved, and then the information is passed back to logic tier for processing. Information flow occurs two-way, users can push data from presentation tier to logic tier, and then to data tier for storage.

Three-tier Web Architecture
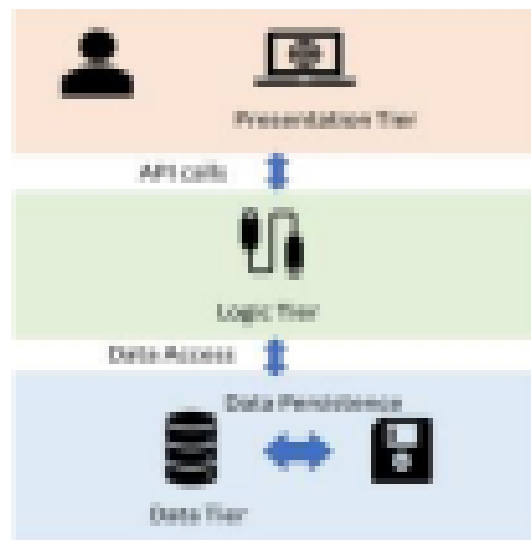
3. Components of Fswd

The components of Full Stack Web Development are- ront-end Back-end, Database Version Control (a.) Front-end is the part that users see when they visit the websites, web-applications. The two most important types of front-end designs are- User Experience (UX), • User Interface (UI) these things are of different kind when we got to know them, otherwise they seem same. The things including visual elements, animations, pictures, videos, etc. Which look good in the website, are difficult to create is an example of good UI but bad UX and vice versa; intuitive experience that doesn't require the user to think too much is a good way to design the website. From the programmer's perspective front-end or the part that users see when they visit the website is mainly about the design and to make to look it good somehow. The above elements UX, UI are taken in consideration in developing web programs or web pages, apps or applications for iOS or Android, Windows or MacOS. (b.)Back-end is the part that is hidden from the users but is a part of the development process. The back-end part can be divided into two types: The server, the application the server handles all the requests that came from application's code. There are many relations between application source code and server requests, so therefore server keeps synchronizing from time to time with application's code. The block parts of the code such as async wait, try-catch, sync blocks are good examples of such codes. The server handles them according to their request type and response to client-side(front-end) or server side(back-end) depending on the types of callbacks present in the code. (c.) Database is the storage component in the full stack web development that contains all the data present in form of tables containing rows (tuples) and columns(attributes) which on requests sends data through secure transmission channel to help the application perform dynamically with a huge size of data able to send and receive simultaneously. Some examples of databases are MY SQL,

Mongo DB, Couch DB, MS SQL, etc. which comes handy while creating strong applications needing a good back end support. (d.) Version Control being called as source control is the type of component in the full stack web development that is used to track and manage the changes to software code from time to time. There are mainly three types of version control system: Local Version Control System Centralized Version Control System. Distributed Version Control System. The local version control system is available locally on your system and users are able to store every file as a repository in this system. To check the last version of the file it is important to add up all the file versions to the repository in order.

4. Secured Full Stack Web Developments

We proposed a holistic framework for Internet security based on the analysis of cyber threats and furthermore argued that the standalone application security design is the basic building block. To prevent threats posed by vulnerability issues of front-end software and back-end software from entering the web application ecosystem, full-stack web development should follow secured software guidelines; various security measures can be applied to achieve the goal. And the approaches to exercise the measures can be found in table 1. If a web server deploys HTTPS for its website, it can eliminate Man-in the-Middle threat in most cases. HTTPS also encrypts all the data in transfer such that the possibility of eavesdropping and the potential of data stolen can be removed. However, HTTPS is still venerable to CSRF attack, and it cannot replace the security measures for front-end and back-end.

5. Web Application Threats

In (IBM, 2018), one of the top enterprise network attacks is injection attack. Among the injection attacks, most are botnet based command injection (CMDi). Furthermore, (IBM, 2018) stated that publicly reported financial breaches in 2017 affected a major US credit reporting firm and may have impacted more than 145 million people. And the cause of the data breach was an unpatched web application vulnerability which led to the unauthorized access of highly sensitive information.
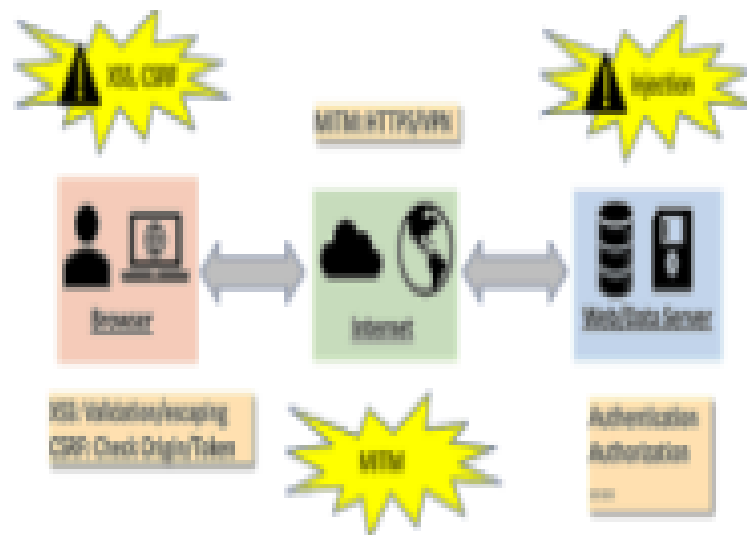
SQL Injection (SQLi) (OWSAP, 2016) is conducted by inserting a SQL query via the browser input to the application. As shown in figure 4, the malicious query will further be passed to data server to conduct illegal SQL commands. Cross-Site Scripting (XSS) (OWSAP, 2018) can occur with any user browser supporting scripting and doesn't validate it. Web server directly publishes output from its user input without validating or encoding it.

6. Conclusion

Full stack development is a popular solution for web development. It has many benefits that make it an attractive option for many professionals. In addition, the use of JavaScript as the primary programming language makes it more convenient for JavaScript professionals. Acknowledgment I am delighted to express my heartfelt appreciation to our department's head and staff, as well as family and friends. This paper is made possible by their encouragement, assistance, and support.

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