



## OPTIMIZING WEB PERFORMANCE: A REVIEW OF CURRENT TECHNIQUES

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### ABSTRACT

*This paper highlights current web development technologies in the IT industry and its measure. Developers of web-based applications are confronted with a bewildering array of available choice formats, languages, frameworks, and technical objects. They investigate, identify, and evaluate technology for creating Web applications. They determine that although most of the Web's connection issues have been resolved. The confusion of technology for Web-based apps that this area lacks a dependable model that is suited to it.*

**Keywords** - Back-end and Front-end development

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### [1] INTRODUCTION

Building and managing a website that is accessible through a web browser and hosted on a server either on premise hardware or in the cloud—for the Internet or an intranet is known as web development. This ranges from simple plain-text webpages to sophisticated online apps. business, and community networks. A web application is a distributed application that runs on more than one computer and communicates with a server or database over a network. A web application provides the ability to update and maintain a program without deploying. Dynamic HTML (DHTML), extensible (XHTML) and XML are some of the technologies that provide interactive features to web applications. Web servers are also being enhanced to respond to clients' requests in a more flexible way than presenting the same content every time. By bringing website browsing closer to using native mobile applications, Progressive Web Apps (PWA) advance the web. It is the most recent technology for website building since it offers a feature set that was previously exclusive to native apes. Progressive web app has characteristics of both website and locally installed program.

Web development technologies refer to all the many programming languages and development tools that are used to build dynamic, feature-rich websites and applications.

Web development technologies are divided in to two categories front-end and back-end technologies.

## **[2] FRONT-END TECHNOLOGIES**

### **1. HTML -**

Hypertext Mark-up Language, or HTML. It is composed of the same words and phrases that web designers use to build webpage. Hypertext is text that contain links that readers may click to get to a different page or section of the same page. The portions of a page, such as headers and footers, as well as other components, such as tables and graphics, are defined using markup language, which employs tags or plain text with specific markers.

One of the three important tools for building websites is HTML. The structure of HTML determines how text, images, and other elements will be displayed on the page. Colours, format, and layout are just a few of the aesthetic characteristics that CSS (cascading style sheets) controls for these elements. In the meanwhile, Java script modifies how these components act.

### **2. CSS –**

CSS, or cascading style sheets, is an acronym. It is a language for creating style sheets that specify the layout and appearance of mark-up-language documents. It gives HTML an extra functionality. Typically, it works with HTML to modify the look and feel of online pages and user interfaces. Any XML document type, including plain XML, SVG, and XUL, may be used with it.

## **[3] FRONTEND LIBRARIES AND FRAMEWORKS: -**

There are several JavaScript-based frontend libraries and frameworks it is due to of the innovation of the V 8 engine. We gather usage information from Stack Overflow as well as GitHub, the vast hosting site for Git repositories, to identify well-known front-end libraries and framework that adhere to industry level and the usage patterns for various front-end frameworks and tools on GitHub and Stack Overflow can be used to gauge the preferences of front-end developers globally.

### **1. VUE.JS: -**

Evan You created the well-known open-source framework Vue.js in 2014; it is based on JavaScript ES6. A lightweight JavaScript framework for creating responsive online user interfaces is called VUE. JS (or just Vue). VUE is a robust toolkit for creating the front end of interactive web apps by extending ordinary HTML and CSS. An open source, progressive JavaScript framework called Viejias is used to create dynamic web interfaces. One of the well-known frameworks for streamlining web development is this one. The view layer is where VUE JS focuses. It may be seamlessly incorporated into large front-end development projects.

### **2. ANGULAR: -**

With the use of HTML and Typescript, single-page client apps may be created utilising the Angular platform and framework. Typescript is used to create Angular. As a collection of Type Script libraries that you load into your apps, it offers both core and

optional functionality. Because it has strong beliefs about how your application should be organised, Angular is regarded as a framework. Additionally, it offers a lot more "out-of-the-box" capabilities. You may immediately start coding without having to choose which routing libraries to use or make other similar decisions.

### 3. REACT NATIVE with REACT.JS: -

Face book created the React JavaScript library to improve the user experience on the Face book and Instagram websites. Due to Reacts robust capabilities, Face book made the library available in open-source JavaScript ES6 library to corporations and developer worldwide. Additionally, in 2015, Face book introduces React Native, a tool for using React to create mobile applications for popular operating systems like iOS and Android.

## [3] Back-END TECHNOLOGIES

The server-side element of software known as the backend oversees application performance, stores data, and does data analysis. Backend developers conduct a range of different responsibilities in addition to creating APIs and libraries and working with system components, business processes, and data architecture. Backend development exchanges data, interacts with the frontend, and displays the information as a web page all without being visible to users. Following are top backend technologies:

### 1. JAVASCRIPT: -

JavaScript features include dynamic typing, lightweight scripting, and object-oriented programming. It also has a large user base.

Additional tools: MeteorJS, Node.js, and Express renowned applications: Google, eBay, Face book, and Netflix.

### 2. RUBY: -

Ruby is a programmer-friendly language known for its readability and simplicity. Unlike complex languages, Ruby code is easy to write and understand. Everything in Ruby is an object, allowing for flexible and intuitive coding. This, along with its open-source nature, makes Ruby popular for web development (especially with the Rails framework) and scripting tasks.

### 3. PHP: -

PHP (Hypertext Preprocessor) is a widely used open-source scripting language designed for web development. It is embedded in HTML and executed on the server, enabling dynamic content generation. PHP powers many websites and applications, offering ease of use, flexibility, and extensive community support, making it a popular choice for developers.

## [4] SUMMARY

In this paper, many potential Frameworks and libraries for front-end development are addressed., along with potential web application development approaches. React, Angular 2, and Vue may be contrasted in several aspects., Web development is the process of creating and maintaining websites; it's the labour done in the background to make a website

appear nice, function quickly, and provide a positive user experience. Web developers do this, or "devs," who use a range of coding languages. In the future, we will broaden the scope of our research to incorporate more front-end development techniques. A web-based portal's back-end layout was demonstrated. A back-end web application developer's duties, which include creating tables and fields with a particular number of rows to database, are demonstrated. The server-side scripting is his responsibility. His main area of interest is the creation of all server-side definition and upkeep of the core database, as well as making sure the front end is responsive and performs well. He might also oversee adding other people's front-end.

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