A Brief Study on Web Technology

Sushil Bhardwaj

RIMT University, Mandi Gobindgarh, Punjab, India
Correspondence should be addressed to Sushil Bhardwaj; sushilbhardwaj@rimt.ac.in

ABSTRACT- Technology has advanced at a rapid and efficient pace in recent years. Web technology is one of the technologies that allow computers to communicate with one another by using markup languages and multimedia applications. Because it has been noted that many are uninformed of Web technologies, the author has opted to highlight the ideas connected to web technologies in order to address this issue. The author of this review paper discusses Web technologies and their different kinds. Browser is included, as well as a thorough description of its applications. Programming languages, databases, and data formats are also discussed in this article. Motion UI, Serverless architecture, and SPA are just a few of the many trends that will continue in future. Web is adopting new technologies such as Artificial Intelligence (AI), voice search, Blockchain, and the Internet of Things. As indicated by the technologies that power the bespoke web software industry, the future of web technologies is bright.

KEYWORDS- Applications, Browser, Framework, Language, Web Technologies.

I. INTRODUCTION

Web application development is becoming increasingly common in IT projects as a whole. Web applications are available in a range of sizes and forms. Some Web apps are used for organizational purposes, while others are designed as interactive tools, and yet others are used for communication and visual design[1]. The use of markup language and multimedia packets to communicate between computers is referred to as web technology[2]. In this article, the author discusses web technologies and their many forms, such as browsers, HTML and CSS, protocols, and so on.

A. Web Technologies

Web technology is defined as the use of mark-up language and multimedia packets to communicate between computers [3]. It makes it easier for us to engage with online material such as web pages. The many sorts of Web technologies are described here:

B. Web technologies Categories

There are different types of technology involved in web as mentioned in Figure 1.
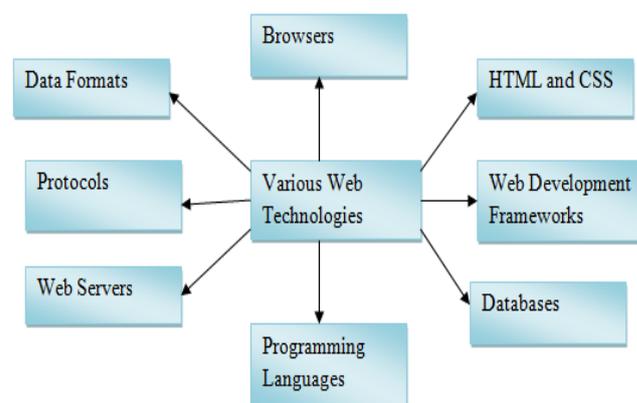

Figure 1: The above diagram shows different types of web technologies

C. Browsers

A browser, often known as a web browser, is an application software programme that is used to access the World Wide Web. In simple words, a browser is a piece of software that responds to a user's request [4]. When a user requests a web page, the web browser retrieves the necessary information and displays it on the user's screen [5]. Table 1 lists some of the most popular web browsers. A web browser is not the same as a search engine, despite the fact that the two are sometimes confused. A search engine is a web page that contains links to other online pages. A user must, however, have a web browser installed in order to connect to a website's server and view its web pages.

Table 1: The below table compares various famous browsers

Browser Name	Supported languages	Cost/Price	Engine layout	Operating system (OS)
Google Chrome	47	free	V8 Javascript engine, Blink	Mac OS, iOS, Windows, Linux, Android
Firefox	97	free	Spider monkey, Quantum, Gecko	iOS, Windows 7, Android Lollipop, Mac OS, Linux
Safari	40+	$100 per month	Nitro, Webkit	Mac OS, iOS, iPad OS, Windows
Opera	42	free	V8, Blink	Windows, Mac OS, Android, Linux

D. HTML and CSS

CSS (Cascading Style Sheets) and HTML (Hypertext Markup Language) are 2 of the core technologies that are used in building web pages.

HTML or HyperText Markup Language is the standard markup language for texts that are intended to be viewed on a web browser [6]. Technologies such as Cascading Style Sheets (CSS) and programming languages like JavaScript can help. Web browsers accept HTML documents from a web server or locally stored files and convert them to multimedia web pages. HTML initially provided cues for the documents look and described the structure of a web page logically [7]. It is the default language for web page creation and is the structural block of HTML pages. <> tag is the representation of HTML elements where as CSS is languages that describe how HTML elements are to be presented [8]. There are 3 methods which uses CSS with HTML is mentioned in Figure 2.
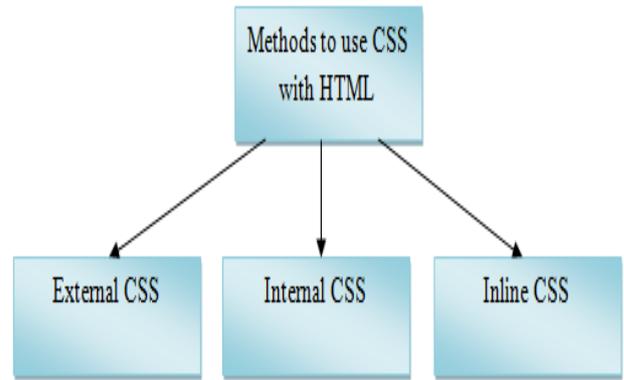

Figure 2: Illustrates methods to use CSS with HTML

- Inline CSS: Style rules can be applied to particular HTML elements using inline CSS. Inlining CSS is the process of embedding CSS into an HTML file rather than using an external CSS file [9]. Because inline CSS only allows you to apply a single style to one HTML element, it's only useful for defining unique properties.

- Internal or Embedded CSS: This is useful when a single HTML document has to be formatted differently. The CSS rule set should be in the head section of the HTML file, i.e. the CSS should be embedded in the HTML file. In <head> section, we can define CSS by using <style> tag.

- External CSS: External CSS is a distinct CSS file that solely includes stylistic properties through tag attributes (for example, class, id, header, and so on). CSS properties should be stored in a separate file with the.css extension and connected to the HTML content through the link tag [10]. This implies that just one style may be applied to each element, and it will be applied across all web pages.

E. Web Development Frameworks

The "online framework" is a software framework for developing web applications such as web APIs, web resources, and web services. In a nutshell, frameworks are libraries that assist you in developing your application more quickly and intelligently [11]. Some of the most popular web application frameworks are discussed below:

- Ruby on Rails: David Heinemeier Hansson designed a very productive framework for web application Ruby on Rails. It is 10 times faster than a conventional Java framework for developing applications. The language used in it is Ruby and the most recent edition is Rails 5.0.0.beta2. The introduction of Ruby on Rails in 2005 had a significant impact on web app development, thanks to revolutionary features such as seamless database table creation, migrations, and view scaffolding to enable quick application development [12]. The impact of Ruby on Rails on other web frameworks can still be seen today, with Django in Python, Catalyst in Perl, Laravel, CakePHP, and Yii in PHP, Grails in Groovy, Phoenix in Elixir, Play in Scala, and Sails all adopting concepts from Ruby on Rails. In Node.js, type js.

- Django: It is a new framework that aids in the development of first-class net application [13]. It was created to fulfil the tight constraints of a newsroom while still meeting the stringent standards of seasoned Web developers [14]. The language used in this is Python and latest version is django 1.9.2. It is secure, fast and Versatile.
- Angular: Adam Abrons and Misko Hevery created Angular initially. Currently, it is a framework provided by Google which is very useful in creating powerful web apps [15]. It is also referred as Angular JS. It's a framework for creating large-scale, high-performance online applications that are also simple to manage. Javascript is the language used in Angular JS.
- ASP.NET: It is a Microsoft-based framework, which is useful in building strong PC and mobile web applications. It is a framework which is powerful, productivity and speed. C# is the language used in ASP.NET.
- Meteor: Meteor, also known as MeteorJS, is another framework that makes developing real-time mobile and online apps a lot easier [16]. It enables quick prototyping and generates code that is cross-platform (Web, Android, and iOS). Javascript is the language that is used in Meteor JS.

F. Programming Languages

As computers don't use languages to communicate with humans, programming languages were introduced to solve this problem. There are various languages such as JavaScript, Python and many more that is used in web applications are mentioned in Figure 3.
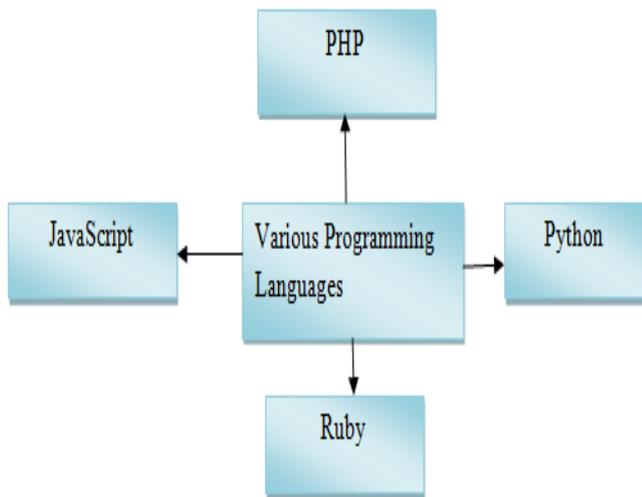

Figure 3: The above diagram shows various programming languages used in web applications

- JavaScript: It is the most famous language among programmers as It enables you to develop web apps backend, frontend and mobile [17]. The power of JavaScript is not only that it can execute both on the server and the browser using Nodejs, but also that it offers great web and app development frameworks and tools.

- Python: In recent years, Python have made his name in the field of web development, data science, computerization and Scripting. Like JavaScript, Python is equipped with a big community and excellent tools that may help you create a web application in no time [18]. Django is used to create full-stack web applications.
- Ruby: Ruby is another excellent programming language for web development [19]. It is a framework that allows Ruby to create Web sites such as Kickstarter, GoodReads, Groupon, Airbnb, Shopify and Github. It promotes and supports the adoption of web standards for data transport, such as JSON or XML, as well as HTML, CSS, and JavaScript for user interaction.
- PHP (Hypertext Preprocessor): It is a dynamic script language on the server which makes it easy to develop whole web apps. You don't know half the internet runs on PHP since WordPress is operating on PHP. Laraval has a strong PHP framework that allows you to easily create web application using the architectural pattern of the model-view-controller.

G. Protocol

Protocols are the commands for passing data rear and onward among computers and other gadgets. It involves protocols such as HTTP, REST, and DDP in web technologies are discussed below:

- DDP (Delivery Duty Paid): It is a delivery arrangement in which the seller takes full responsibility, risk, and cost for delivering goods until the buyer receives or transfers them at the destination port. It creates a constant connection between the client and the server using WebSockets.
- HTTP (Hypertext Transfer Protocol): This is a protocol for the application layer that sends hypermedia material such as HTML [20]. It was designed to connect with web-browsers and server but may also be utilize for other purposes. The protocols send a request to Google's server for the website's HTML, CSS, and JavaScript, and then receive a reply containing website's JavaScript, CSS, and HTML.
- REST: This protocol, which is primarily used for APIs, contains normal techniques such as PUT, POST, and GET that allow data to be transferred among apps.

H. Servers of Web

It is a hardware and software that replies with HTTP (Hypertext Transfer Protocol) and other protocols to client applications via the internet. It offers FTP (File Transfer Protocol) and SMTP (Simple Mail Transmission Protocol) for email, transferring of files, and storage.

I. Formats of Data: In a Structure called a Data Format, the Data is Stored. Various Formats of Data are Discussed Below

- JSON: The JavaScript Object Notation is data-storage and-exchange syntax. It is fitting as the most widely used formats of data.
- XML: It used to be the most common data format, and it was mostly utilised by Microsoft systems.
- CSV: It is comma-separated data i.e. Excel data

J. Databases

If your website has content that changes on a regular basis, you'll need a database. Images, articles, other sorts of information, and page layouts all require databases. It's simple to access data saved in a database online using server-side language like PHP or JSP.

II. LITERATURE REVIEW

Asha Mandava et al. discussed and analyze about technologies for developing web applications [22]. In this paper, Author look at some of the tools that may be used to design and create web-based applications. Authors also go through the technologies utilised on both the client and server sides of a web application. The following section compares several web application development frameworks and also goes through the web application development life cycle concept and framework.

Mehmet Tekdal et al. discussed about Development of Web technologies and their reflections to education [23]. The aim of this study is to provide extensive information and comparison on Web technology and its educational consequences [24]. A range of source that uses Web 1.0, Web 2.0, Web 3.0, Web 4.0, and 5.0 technologies is used to explore the document analysis technique in this context. The data obtained were used to compare web technology.

Eimhjellen et al. discussed about Web technologies in practice [25]. The connection between technology and organisations is investigated in this article using a structuration paradigm. Despite the fact that the research is contextual and temporal based, observations of patterns, interpretations and effects of use of Web technology might reveal the function of Web technologies in other similar contexts.

III. DISCUSSION

Web technologies, which have a long history of development and began in the 1990s, will be confronted with a variety of new concepts in the near future. The usage of markup language and multi-media package for communicating between computers might be referred to as Web technology. It enables us to consume internet-based data like web pages. The rapid advancement of web technologies is paralleling the fast development of web technology in the field of education. It is expected that computer networks and applied methods-based teaching strategies and methods will advance rapidly from day to day. As a result, new educational and training concepts will be introduced into our daily lives. In this paper, author has discussed about web technologies and its types such as Protocols, Browsers, HTML & CSS, data formats etc. In this paper, Author has also explained about popular technologies used in browser, programming languages and frameworks.

IV. CONCLUSION

When more work can be done in less time, object-oriented methods are utilised to create web applications. Web technology is a method of interacting with computers that employs borderline languages and multi-media packages. There are so many scripting languages, such as Python, and new technologies available for building these sorts of apps that one does not need to limit themselves to just one. Author has addressed web technologies and sorts of web technologies that are utilised to develop web apps in this review paper. Website development is the technology that will power custom web applications in the future. Future web trends will include SPAs, serverless architecture and Motion UI. Even general technologies like artificial intelligence (AI), voice search (Voice Search), blockchain, and Internet of Things (IoT With the advent of new technologies, web application development has gotten easier. As a result, web apps have a promising future.

REFERENCES

[1] Shabbir M, Naim M. Introduction to textiles and the environment. Textiles and Clothing: Environmental Concerns and Solutions. 2019.

[2] Sharma S, Hussain MS, Agarwal NB, Bhurani D, Khan MA, Ahmad Ansari MA. Efficacy of sirolimus for treatment of autoimmune lymphoproliferative syndrome: a systematic review of open label clinical studies. Expert Opinion on Orphan Drugs. 2021.

[3] Mair P, Chamberlain S. Web technologies task view. R Journal. 2014.

[4] Hussain S, Singh A, Zameer S, Jamali MC, Baxi H, Rahman SO, et al. No association between proton pump inhibitor use and risk of dementia: Evidence from a meta-analysis. J Gastroenterol Hepatol. 2020;

[5] Kuhn RM, Haussler D, James Kent W. The UCSC genome browser and associated tools. Brief Bioinform. 2013;

[6] Hussain S, Singh A, Habib A, Hussain MS, Najmi AK. Comment on: "Cost Effectiveness of Dialysis Modalities: A Systematic Review of Economic Evaluations." Applied Health Economics and Health Policy. 2019.

[7] Hickson I. HTML Microdata. W3C Work Gr Note 29. 2013;

[8] Kumar N, Singh A, Sharma DK, Kishore K. Novel Target Sites for Drug Screening: A Special Reference to Cancer, Rheumatoid Arthritis and Parkinson's Disease. Curr Signal Transduct Ther. 2018;

[9] Goswami G, Goswami PK. Artificial Intelligence based PV-Fed Shunt Active Power Filter for IOT Applications. In: Proceedings of the 2020 9th International Conference on System Modeling and Advancement in Research Trends, SMART 2020. 2020.

[10] Yadav CS, Yadav M, Yadav PSS, Kumar R, Yadav S, Yadav KS. Effect of Normalisation for Gender Identification. In: Lecture Notes in Electrical Engineering. 2021.

[11] Thappa S, Chauhan A, Anand Y, Anand S. Thermal and geometrical assessment of parabolic trough collector-mounted double-evacuated receiver tube system. Clean Technol Environ Policy. 2021;

[12] Iyer M, Tiwari S, Renu K, Pasha MY, Pandit S, Singh B, et al. Environmental survival of SARS-CoV-2 – A solid waste perspective. Environ Res. 2021;

[13] Django Software Foundation. Django: The Web framework for perfectionists with deadlines. DjangoprojectCom. 2013;

[14] Gupta S, Mishra T, Varshney S, Kushawaha V, Khandelwal N, Rai P, et al. Coelogin ameliorates metabolic dyshomeostasis by regulating adipogenesis and enhancing energy expenditure in adipose tissue. Pharmacol Res. 2021;

[15] Prakash P, Radha, Kumar M, Pundir A, Puri S, Prakash S,

et al. Documentation of commonly used ethnoveterinary medicines from wild plants of the high mountains in shimla district, himachal pradesh, india. Horticulturae. 2021;

[16] Catlos EJ, Perez TJ, Lovera OM, Dubey CS, Schmitt AK, Etzel TM. High-Resolution P-T-Time Paths Across Himalayan Faults Exposed Along the Bhagirathi Transect NW India: Implications for the Construction of the Himalayan Orogen and Ongoing Deformation. Geochemistry, Geophys Geosystems. 2020;

[17] Doernhoefer M. JavaScript. ACM SIGSOFT Softw Eng Notes. 2006;

[18] Mahat RK, Panda S, Rathore V, Swain S, Yadav L, Sah SP. The dynamics of inflammatory markers in coronavirus disease-2019 (COVID-19) patients: A systematic review and meta-analysis. Clinical Epidemiology and Global Health. 2021.

[19] Marburg A, Hayes MP, Bainbridge-Smith A. A machine vision extension to the Ruby programming language using OpenCV and FFI. In: International Conference Image and Vision Computing New Zealand. 2013.

[20] Agarwal A, Agarwal S. Morbid Adherent Placenta Score: A Simple and Practical Approach on Application of Placenta Accreta Index. Journal of Ultrasound in Medicine. 2021.

[21] Berrington J. Databases. Anaesthesia and Intensive Care Medicine. 2017.

[22] Mandava A, Antony S. A review and analysis of technologies for developing web applications. 2015;(March 2012).

[23] Tekdal, Mehmet; Saygıner, Şenol; Baz FÇ. Developments of Web Technologies and Their Reflections to Education a Comparative Study. J Educ Instr Stud World. 2018;8(1):17–27.

[24] Singh AP, Chandak S, Agarwal A, Malhotra A, Jain A, Khan AA. Utility of High-Resolution Sonography for Evaluation of Knee Joint Pathologies as a Screening Tool. J Diagnostic Med Sonogr. 2021;

[25] Eimhjellen IS. Web technologies in practice: the integration of web technologies by environmental organizations. Media, Cult Soc. 2014;