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Comprehensive Review on Various Web Technology Tools

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***Abstract*— In the fast-paced world of web development, selecting the right tools and frameworks is essential for the success of web applications. A web application is a software program that runs on a web server and is accessed via a web browser over the internet. Web developers today face the challenge of working with ever-evolving technologies, making it crucial to choose the most suitable development tools. This study provides a comprehensive comparative analysis of leading website builders, content management systems, design and prototyping tools, coding environments, and editors. By evaluating these tools based on criteria such as features, ease of use, community support, strengths, and weaknesses, the paper aims to offer developers practical insights for informed decision-making. This research adds to the existing body of knowledge by delivering a thorough comparison, helping developers streamline their workflow and improve the quality of their web applications.**

***Keywords*— Web design, Web development, Wix, Content management systems(CMS), Joomla, Drupal, Wordpress**

I. INTRODUCTION

There are many ways available in the World Wide Web to have some form of interactivity, but most cases involve programming of some type to process the user's request and provide the information the user has asked for[1]. Web development tools are essential for creating dynamic and interactive websites. With the rapid growth of the internet, developers now have a wide array of tools to choose from, each with its own strengths and weaknesses. Web development tools helps the developers to built, test and deploy user friendly websites.

There are various types of tools, frameworks and libraries that are used for web application development. The major challenge facing Web programmers today is choosing the right language for the web development. Tools vary from front end tools, back end tools, IDE's and project management / collaborative tools.

This survey paper aims to highlight on a detailed analysis of various technologies used in web development , various website builders, content management system , design , prototyping tools and various coding environment. This comprehensive includes various web development tools to identify the best options for different types of projects. Website builders like Wix, Squarespace, and Weebly allow users to develop front-end interfaces without extensive coding.

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Additionally, content management systems (CMS) such as Joomla, Drupal, and WordPress enable users to easily manage websites. For design and prototyping, tools like Adobe XD, Figma, and Sketch are widely used. When coding is necessary, developers turn to different coding environments and editors, such as VS Code, Sublime Text, and others. Section 3.1 presents a comprehensive comparison of website builders, followed by Section 3.2, that covers content management systems (CMS). Section 3.3 highlights on design and prototyping tools, and Section 3.4 delves into coding environments. The final section concludes the paper by presenting a thorough comparison of the technologies employed for different aspects of web development.

III. Comparative Analysis

A. Website Builders

With website builders, it is possible to build a website with basic coding experience or, in some cases, without any coding experience at all [3]. Website builders has a platform offering a visual interface for easy website design. These tools are used to construct a website without manual coding. They usually feature an intuitive interface and a wide range of templates, enabling users of all skill levels to create websites with ease, regardless of their technical background. Table 1 represents the various web site builders and characteristics of each builder. Wix, Squarespace, and Weebly are popular website builders that offer a range of features and benefits for users of varying technical expertise.

Table I: Various Website Builder Tools

Characteristics/ Tool Name	**Wix**	**Squarespace**	**Weebly**
Renowned for	its drag-and-drop interface	Known for its sleek, modern templates	user-friendly interface with a drag-and-drop builder
Customization/ Flexibility in Design	Versatile, highly customizable with over 900 templates and a powerful drag-and-drop editor. Allows users to create unique and complex website layouts	Offers a range of responsive, customizable templates suited for various purposes. Provides range of stylish templates but less flexible that wix	User-friendly drag-and- drop interface with customizable templates. Provides clean and professional templates.
Features	Built-in eCommerce, marketing, scheduling and branding tools.	Built-in SEO tools, eCommerce capabilities (product listings, payment processing, inventory management), integrated analytics, blogging tools and social media integration.	Built-in SEO friendly HTML formatting, responsive design, eCommerce support, blogging tools, integrated hosting and analytics.
Ease of use	User-friendly, AI website creation, no coding required.	Intuitive drag-and-drop interface and style editor.	WYSIWYG (What you see is what you get) editor, no manual coding required.
SEO	Built-in SEO tools to improve search engine rankings.	Comprehensive SEO tools included.	Advanced SEO settings available, including alt tags and meta descriptions.
Support	Supports over 500 apps for additional functionality.	Excellent customer support and design assistance.	Supports a unique mobile app for editing and managing websites.

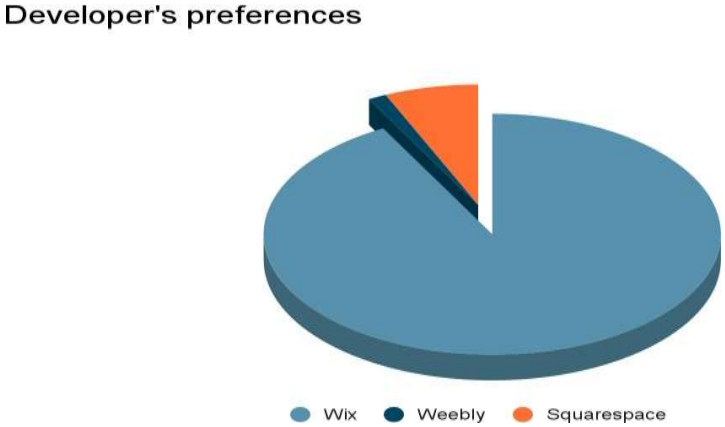

Figure 1: Developer Preferences for Various Website builders

Figure 1 shows the various website builders and as we can see weebly is rarely preferred by the developers. Best choice of website builders depends on your specific needs and preferences. If a user prioritize design flexibility and advanced e-commerce features, Wix might be the best option. For a more streamlined and user-friendly experience, Squarespace could be a good choice. If one is looking for a simple and affordable solution, Weebly might be the right fit.

B. Content Management Systems (CMS)

A Content Management System (CMS) is software that makes it easier to edit, create, and publish your work. It provides complete control over your content by combining all of your site's functions into one easy-to-use platform [4]. A CMS enables users to create, manage, and modify digital content on a website without requiring advanced technical skills, offering a user-friendly interface, templates, and organizational tools. Table 2 outlines the key features and characteristics of various CMS platforms, comparing their usability, customization options, and support for different types of content. Table 2 represents the various content management systems and characteristics of each CMS.

TABLE II: VARIOUS CONTENT MANAGEMENT SYSTEMS

Characteristics / Tool Name	**Joomla**	**Drupal**	**WordPress**
Language Support	Supports over 70 languages.	Extensive multilingual support.	Plugins available for multilingual support.
SEO	Includes out-of-the- box SEO and SEF.	API-first foundation with extensive martech integrations.	Exceptional code base for SEO.
Flexibility / Ease of Use	Blogs, businesses, websites, intranets, community websites. Powerful CMS that can handle large and complex websites.	Websites, online directories, e-commerce stores, intranets.	Blogs, resumes, business websites, and more. Most user friendly
User Management	Access Control list for managing site users and different groups.	Manages multiple websites from one place.	User roles and permissions available.
Speed	Efficient, but may require optimization.	Powerful, may need optimization based on setup.	Lean framework, focuses on removing code that slows down loading speed.

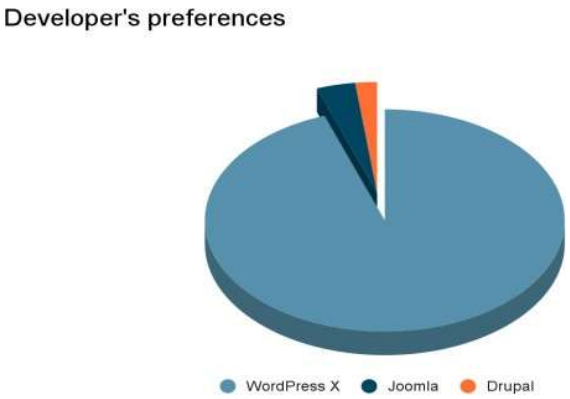

Figure 2: Developer Preferences for Various Content Management Systems

Figure 2 shows the various content management systems and as we can see Drupal is rarely preferred by the developers. Best CMS depends on specific needs and technical skills. If user is beginner, then word press is easy to learn. If one needs highly customizable options, then Drupal is good option. Word press and joomla both offer strong e-commerce capabilities while drupal is less suited for ecommerce websites.

C. Design and Prototyping Tools

Prototyping is an approach to computer tools development that is traditionally applied to provide feedback to tool developers[5]. Design and prototyping tools are software applications that enable designers to create, visualize, and test the appearance and functionality of websites, apps, and user interfaces. Tools like Adobe XD, Sketch, and Figma allow designers to develop detailed designs, build interactive prototypes, and collaborate in real-time, ensuring a smooth, user-friendly experience before the development phase starts.Table 3 represents the various design and prototyping tools and characteristics of each tool.

TABLE III: VARIOUS DESIGN AND PROTOTYPING TOOLS

	AdobeXD	**Sketch**	**Figma**
Ease of Use	User friendly interface	Intuitive interface	Relatively easy to learn, with a clean and straightforward interface.
Prototyping	Interactive prototypes, animations, overlays, timed transitions	Interactive mockups, visualize user flows	High-fidelity prototypes, interactive components
Design System Integration	Manages design systems for consistency and scalability	Supports symbols for reusable design components	Facilitates design systems and consistency across projects
Offline Features and Collaboration Features	Requires Creative Cloud for collaboration features. It supports Real-time collaboration, version control, and cloud-based sharing.	Desktop application, no built- in real-time collaboration features but it requires a plugin.	Desktop applications for offline features on macOS and Windows. Strong real-time collaboration, allows multiple designers to work on the same file simultaneously.
Standout Features	Animate prototypes, add overlays, timed transitions	Symbols for reusable components, responsive design	Real-time collaboration, versatility across platforms

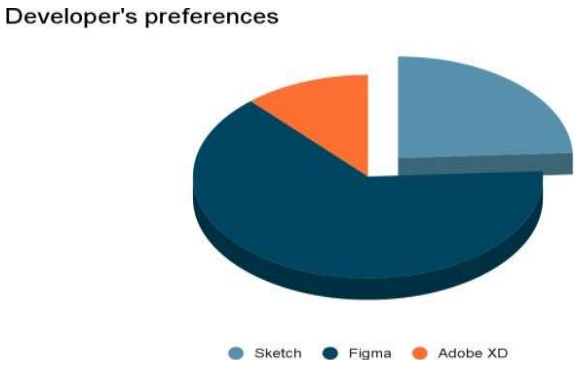

Figure 3: Developer Preferences for Various Design and Prototyping Tools

Figure 3 shows the various design and prototyping tools and as we can see in the diagram Adobe XD is rarely preferred by the developers. Considering the various factors there are various factors when selecting design and prototyping tool. If web site development team size works remotely and in a collaborate manner figma is best option. If user has mac-os then Sketch is better choice. If user needs advanced prototyping features, Adobe XD or Figma might be better suited. If user prioritize vector editing and pixel-perfect design, Sketch is a strong contender. Each tool has unique features and strengths, making it essential to understand their differences to choose the best fit as per web developer design needs.

D. Coding Environments and Editors

Coding environments and editors are software tools that developers use to write, edit, and manage code. Using a single integrated development environment (IDE) is one method for real-time teamwork, much like pair programming [6]. These tools offer features such as syntax highlighting, code completion, and debugging to simplify the coding process [8]. Back-end frameworks make it easier and a lot more convenient to create consistent and stable back ends. Additionally, coding environments and editors boost productivity and support a variety of programming languages [7]. Table 4 provides a comparison of various coding environments and editors, outlining their key features and characteristics.

TABLE IV: VARIOUS CODING ENVIRONMENTS AND EDITORS

Characteristic s / Tool Name	Visual Studio Code (VS Code)	Sublime Text	Atom
Type	Free, source-code editor from Microsoft	Shareware, free to use with occasional purchase prompts	Free, open-source[text and source- code editor developed by GitHub
Supported Platforms	Windows, Linux, macOS, Web	Windows, Linux, macOS	macOS, Linux, Windows
Code Editing	Syntax highlighting, autocompletion, code formatting, snippets, code refactoring, spell check	Autocompletion, syntax definitions, snippets	Syntax highlighting, code folding, automatic code indentation

Performance	High performance, lightweight, fast startup times	High performance, lightweight, fast	Moderate performance, may be slower with many plugins
Community Support	Strong community, extensive documentation, frequent updates	Active community, extensive documentation, regular updates	Strong GitHub community support, extensive documentation, frequent updates

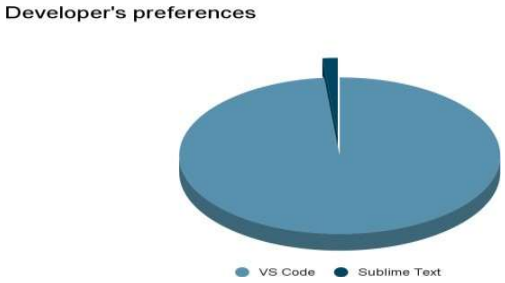

Figure 4: Developer Preferences for Various Coding Environments and Editors

Figure 4 shows the various coding environments and editors and as we can see sublime text is rarely preferred by the developers. Also, atom is not used as the software was deprecated in 2022. VS Code is a powerful and versatile editor with a vast ecosystem of extensions. Sublime Text, known for its speed and customization options, is a favorite among many developers.

IV. CONCLUSION

This comprehensive survey has presented a comparison of various kinds of technologies used for web development. This study includes a comparison of mechanisms like Website Builders, Content Management Systems(CMS), Design and Prototyping Tools and Coding Environments. The challenge faced by programmers today is selecting the right technology for flawless web development. The most common deciding factor typically centers on the developer's familiarity, an extremely subjective measurement. Each technology has its advantages and limitations. Thus, several technologies are analyzed, and the conclusions are discussed based on certain parameters. Ultimately choosing the right CMS is to experiment with each one and see which one the web developer prefer. Also, each editor has its own strengths and weaknesses, making the choice of the best one dependent on individual preferences and project requirements.

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