RESEARCH AND ANALYSIS OF THE FRONTEND DEVELOPMENT FRAMEWORKS AND LIBRARIES WITH VOICE RECOGNITION IN REMOTE AREAS FOR DEVELOPING ECOMMERCE BUSINESS FOR PEOPLE OF REMOTE AREAS WHERE PEOPLE HAVE LESS OR NO KNOWLEDGE OF TECHNICAL DEVICES

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Abstract: **According to recent trends, HTML5 is becoming a worldwide web consortium and leading the front-end development of the internet's history as a result of its rapid expansion in recent years. React, Angular, and Vue.js are just a few examples of the countless front-end development frameworks available. Web development's first objective is to figure out how to best set up an e-commerce site while also providing the best possible user experience. This article begins by providing an introduction of the most popular front-end development frameworks and libraries and then evaluating their performance in web services. This document will describe the advantages and disadvantages of each framework and library based on a variety of factors, including commercial considerations. Finally, the paper sums up the contributions and speculates on the future of front-end programming in e-Business.**

I. INTRODUCTION

User interaction occurs on the front end of a website. HTML, CSS, & JavaScript work together in your computer's browser to give you the fonts, colours, and menus you see while browsing the Internet.

II. FRONT-END WEB DEVELOPMENT REQUIRES SPECIFIC KNOWLEDGE AND TOOLS.

It is the job of front-end developers to create the code that visitors see and interact with on a website [1]. Front-end developers must be fluent in three computer languages: HTML, CSS, & JavaScript.

Additionally, front-end developers should have a working knowledge of frameworks and libraries including Bootstrap, Foundation, Bootstrap, AngularJS, ReactJS, and EmberJS to provide visually appealing content across a variety of devices. The emergence of frameworks has made web programming easier. As a result, full-stack web design has become a reality. To build, optimize, and manage websites and other online applications, full-stack developers depend on frameworks. Become familiar with the full-stack web design tools needed to become a full-stack developer [2]. You may have difficulty deciding which tool to employ. Learn how to tackle the subject using our full-stack web development roadmap.

III. BACK-END DEVELOPMENT REQUIRES CERTAIN SKILLS AND TOOLS

Server-side technologies including PHP, Ruby, Python, Java, others are used by back-end developers to connect the server, application, the database [3].

To create an application, you'll need to employ tools like ASP.NET and MySQL, Oracle, or SQL Server, as well as other back-end databases. Experience using PHP frameworks such Zend, Symfony, and CakePHP; knowledge of version control tools like SVN or CVS; and familiarity using Linux as just a development and implementation platform are all common requirements for back-end developers.

Full-stack web development is a highly sought-after profession with a good starting wage [4]. Being proficient in all aspects of full-stack web development is therefore an absolute must for you. Check out our full-stack web development online training course to become recognized as a full-stack designer. A wide variety of frameworks can't be learned. You'll also need to master a variety of high-level languages to use these frameworks. As a result, the

framework you choose is dependent on both your current knowledge and what you still need to learn. We have sought to curate a few of the widely utilized frameworks that are utilized in a big number of the stack by full-stack developers [5].

IV. PREFACE

People increasingly rely on e-Business to perform everyday tasks like shopping, getting a mortgage, and paying taxes because of the rapid growth of Internet technologies in the last decade. As a result, HTML5 technologies have emerged and have had a profound effect on the growth of the internet as a whole. HTML5 is a markup language for worldwide websites that establishes layout and renders content. With HTML5, web developers can more precisely specify the structure of their website by extending and improving several semantic elements such as "footer," "sidebar," and "navigation," which HTML5 replaces in the previous HTML standard. As long as the copies are not created for profit or commercial gain and display this statement and the entire citation on their first page, they are permitted to be made for private or classroom use without charge. Copyrights of components of this work that are owned by parties other than the American Chemical Society (ACS) must be respected. It's fine to take credit for something you've already done. Otherwise, permission and/or a charge are required for copying or republishing on servers or mailing lists [6]. Permissions@acm.org should be contacted for any more information.

As a result of the V8 engine's release, JavaScript can run as fast as Java or C++. With the help of the V8 JavaScript engine, online projects can run as fast as traditional desktop applications. Many JavaScript platforms based on the V8 JavaScript engine have appeared and helped to usher in a new era in internet development history. The V8 JavaScript engine and the Node.js framework were launched in 2009 as a development platform [7]. In addition to being able to write a basic script for a website, JavaScript can also be used to write an event-driven server-side application with ease. Node.js was created nine years ago, yet new JavaScript frameworks have emerged and are influencing the growth of the internet. The next section of the paper will go over the most popular front-end libraries.

V. FRAMEWORKS AND LIBRARIES FOR THE FRONT-END

The V8 engine's innovation has resulted in various front-end libraries based on JavaScript. We use data from GitHub, the world's most popular repository for Git-based software, to identify the most popular front-end frameworks and libraries. According to GitHub usage statistics, front-end developers throughout the world are more likely to use certain frameworks and libraries than others. In terms of popularity, react was the clear winner, with Angular 2 in second place and Vue in third place. A newer version of Angular, called Angular 2, has been released, and this article will include information from both versions [8]. Angular 1 and 2, as well as Vue, will be covered in the following parts.

VI. REACT.JS & REACT NATIVE ARE TWO OF THE MOST POPULAR FRONT-END FRAMEWORKS.

Facebook created the React JavaScript library to make the Facebook and Instagram websites more user-friendly. In 2013, Facebook released React as an open-source JavaScript ES6-based library to developers and enterprises throughout the world because of its amazing capabilities. On top of that, Facebook launched React Native in 2015, a mobile app development platform for React that can run on both iOS and Android. It shows how to render a page using React technology by mounting and re-rendering components. The Document Object Model is where React stores the various components that make up a website's content (DOM). The component will be displayed in the browser like JavaScript. The JavaScript rendering performance will be faster than typical dynamic webpages with Chrome V8 technology [9]. The key knowledge of another React is the creation of a virtual DOM. When a user refreshes data or visits another subpage on a typical HTML website, the site will be re-rendered. The re-rendering procedure consumes more browser resources and slows down the website's loading times. Because of the one-way data binding in React, the traditional technique isn't able to deal with this issue. First, react builds an updated virtual DOM, then compares the virtual DOM to the shown DOM to see if there are any differences. Re-rendering only the actual transform part will be done after it summarises each component's differences. The virtual DOM's greatest benefit is that it speeds up the website when used with the React framework. A further benefit of React is that it encourages developers to create their UIs in a modular fashion. For example, there are two sites with text forms, all serving the same purpose, but each with its own unique set of attributes. Clicking on a link to go to another website results in a new rendering of the text, which is necessary owing to the pages' differences. It is possible, however, that the text form will not be re-rendered if the project team creates the UI module standards and selects it from the module to be used on other sites. A new standard for UI development and design has been set by React, which has revolutionized front-end programming.

VII. 1 AND 2 ARE KNOWN AS ANGULAR.

Free software front-end web app framework Angular was acquired by Google around 2010 and is based on JavaScript ES5. Angular's primary development goal is to make it easier for web designers to create more efficient persistent online forms. Web developers can create more complex apps with Angular as the front-end history progresses and

the framework's position shifts to accommodate new development criteria [10]. Due to its initial design concept, Angular has several drawbacks and has fallen significantly behind competing front-end frameworks in recent years. The Google development team launched Angular 2 in 2016 as an update to bring it up to date with the rest of today's web standards.

demonstrates how to use React to render a page. The Document Object Model is where React stores the various components that make up a website's content (DOM). The component will be displayed in the browser like JavaScript. The JavaScript rendering performance will be faster than typical dynamic webpages with Chrome V8 technology. The key knowledge of another React is the creation of a virtual DOM. When a user refreshes data or visits another subpage on a typical HTML website, the site will be re-rendered. The re-rendering procedure consumes more browser resources and slows down the website's loading times. Because of the one-way data binding in React, the traditional technique isn't able to deal with this issue. First, React builds an updated virtual DOM, then compares the virtual DOM to the shown DOM to see if there are any differences. Re-rendering only the actual transform part will be done after it summarises each component's differences [11].

With the React framework, the virtual DOM provides a considerable speed boost to websites. A further benefit of React is that it encourages developers to create their UIs in a modular fashion. As an example, Angular 1's core notion is two-way data binding in web browsers with a significant reduction in the back-data end's processing burden in web servers. how Angular 1 data binding works is shown in this video. JavaScript Object Notation (JSON) contains the custom tag attributes, and Angular 1 uses these directives to link website page inputs and outputs to a model represented by Scope. The values of the JavaScript variables will be updated from dynamic JSON resources and submitted to the server whenever websites obtain interactive actions from users. With Angular's two-way data binding, all interactions are handled in web browsers, saving time by eliminating the need for back-end server processing and directly rendering the new data in the front-end by HTML during website updates. It's because of Angular 1 technology that HTML rendering speeds can be sped up without having to wait for back-end responses.

VIII.   HELP WITH TECHNICAL ISSUES

Technical assistance is also vital since it can help foster a stronger relationship with the developer community, which is critical to the framework's reputation in the community. Strong technical support and a solid API are provided by React. The official scripts to aid developers in finalizing the required update make upgrading and immigrating a breeze. Pervasive technological services are provided by the React

framework [12]. React's API outlasts that of Angular, which offers similar functions. The APIs of some older versions have been removed. Despite the ease with which new versions of Vue can be imported and updated, the official team has no plans to provide any future updates owing to budget constraints.

Python for Hindi Speech Recognition

Using Python with Speech Recognition, we are able to identify English words and phrases. We will, however, utilise Python in this tutorial so that it could also recognise Hindi words that use the Voice Recognition module.
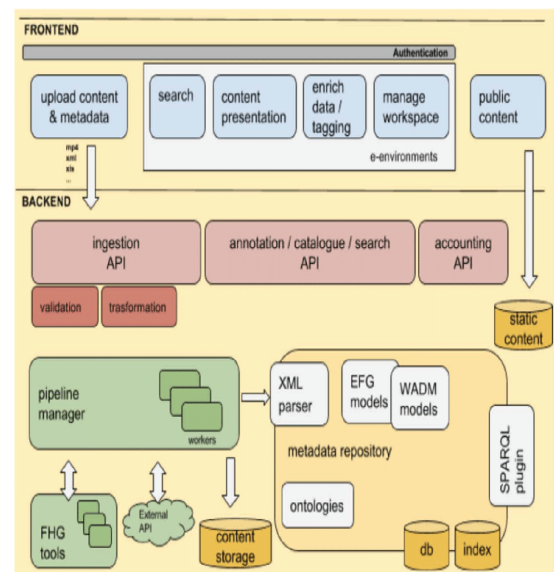Requirements:
Speech-to-Text Interface: It is a module that helps Python identify the supplied command. Speech Recognition requires pip.
Install Speech Recognition with pip.
The PyAudio Module As just a cross-platform C++ framework that interfaces with audio drivers, PortAudio has been implemented in Python. Because the Voice Recognition module relies on Pyaudio, we must also set up that package.
Install PyAudio using pip
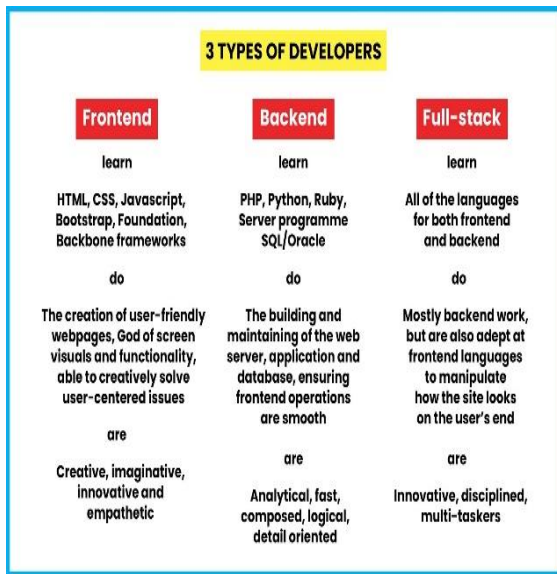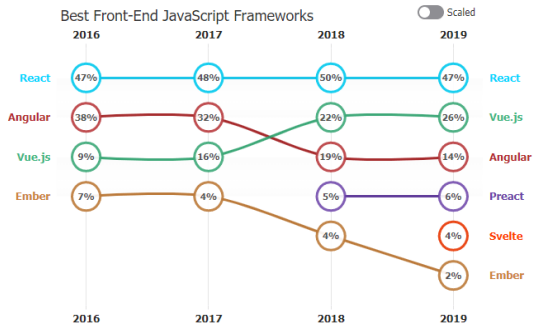You can use the following command on Windows if this command fails.

Best Front-End JavaScript Frameworks

3 TYPES OF DEVELOPERS

Table
Data binding in front end frameworks

	Angular1	Angular 2	react	vue
Data binding	Two way	One way & two way	One way	One way two way

Front end development in remote areas using angular

At this point in the project's development, the most critical decisions must be made. During this phase, specifics of how the agricultural operation would be carried out effectively are provided.
Angular framework::
In recent years, Angular has shown to be an outstanding framework. Many new and seasoned developers alike have been drawn to Angular because of its ease of use, developer friendliness, and potential for creating amazing applications.

A cross-platform programming language, Angular is ideal for web development. Multiple operating systems can be used with it. Angular may be used to create a wide variety of apps.
Desktop apps can be built using same Angular approaches as are used to build native apps for both web and mobile platforms, such as Windows, Mac, and Linux.
its possible to make native apps

Hardware Design of Nodes (Node Hardware)

Nodes must simultaneously function as administration centres and access points for mobile devices in the field in our concept. If there's no smartphone access, each node runs in its normal mode. ZigBee transmits instructions to the node every polling cycle in this mode. Following the instructions, it performs created to monitor and device control. Node will provide sensor data and smartphone access information and peripheral devices status data to the host computer after these procedures are completed. Nodes' NFC tags can store a variety of data, including information about the nodes themselves, the plants that surround them, and the Bluetooth devices nearby. First, smartphone users approach the NFC label; after that, the mobile phone gets to read this same node NFC tags using the corresponding App, as well as eventually the encrypted file in the NFC tags can be transformed to legible specific newly planted data and device variables through the App's built-in database. According to a device parameter, the Bluetooth of the node is immediately certified to connect the smartphone rapidly (NFC-based quick connection). Real-time environmental parameters and field control of an external electromechanical device can be received after a link is established. NFC and Bluetooth multi-access collision can be avoided by adopting this approach, which allows for comfortable and rapid communication between the hybrid node and the smartphone.
Not only must the hardware suit the distributed agriculture service system's function requirements; it also must fulfil the criteria of simple structure and high dependability. A PIC16F1947 nanoWatt XLP microcontroller, RN4020 Communication module, and DRF2619C ZigBee module are all housed in this node. Farmers can utilise the node's sensors to collect agricultural data.

Farm-to-consumer e-commerce for agricultural products

Food is an essential part of our daily lives, and we wouldn't be here if it weren't for it. The majority of our food intake comes from farms as well as other sources. Many people's lives are improved as a result of the farmers' efforts, and they are rewarded with a steady stream of revenue. Farmers, on the other hand, are still unable to make a profit because of intermediaries in the sale of their ultimate products. We will be able to link farmers directly to customers so that

products can be sold directly to the consumer through this project. Price reductions for currently available goods will be significant, and the resulting profit will go straight to farmers' pockets. For many, technology is all around us, but many people are still unfamiliar with its advantages and uses. This application is designed to help farmers learn how to use this technology and its benefits, so that they can reap the benefits of it as well.

Android is the principal operating system leading in mobile operating system market, with a share of the market of much more than 80% and the majority of applications being free to download. Today, mobile phones have been used everywhere. It is our goal to employ cellphones in the horticulture sector to give farmers with information about all the crops they can harvest and the most efficient method of harvesting them. All of this data will be made available to farmers in regional audio format as well. As an example, farmers in India can benefit greatly from this tool because it provides information in various languages in only a few keystrokes. This programme is simple enough to be used by someone who has never used a computer before.

IX. SOLUTIONS FOR THE BUSINESS WORLD WIDE WEB

We may infer from the aforementioned analysis that each of the front-end frameworks and libraries examined has its own set of strengths and weaknesses. One-way and two-way data binding are both supported by Angular 2, making it the best choice. In addition, the official technical support provided by the Google development team is solid and reliable. However, because of its large number of functions and the small number of people who speak its underlying language, its volume is too large to play an adequate running performance. The complexity and sophistication of data processing methods necessitate that Angular 2 be used in large-scale e-Business applications. When it comes to rendering an updated DOM, react is extremely efficient, thanks to its powerful technical support and durable API. After understanding React, developers may go right into developing React Native mobile apps.

Because React is indeed a JavaScript framework and does not have the same size as Angular 2, developers must deploy React on their own. Faster rendering speeds are often requested by social networking and communication programs that require extensive re-development of features and functionality. Because of this, react could be a viable option for them. One-way and two-way data binding are available in Vue's data processing options. Angular 2 has a smaller footprint than React, thanks to its more efficient rendering and processing. Although Vue is a front-end development tool that is extremely flexible, its technical support is lacking due to a lack of development team scalability and unanticipated official updates. In addition, because of its modest size, it only has the bare essentials.

Vue is a good fit for small and medium-sized online projects that require a high degree of flexibility and ease of development, as well as the fastest data processing.

X. CONCLUSION

There are three various front-end development frameworks and libraries described in this paper that can be used to create web applications, as well as a list of possible web app development solutions. React, Angular 2, and Vue are compared in a variety of ways, including data binding, language-based, technical support, volume, and performance, among other things. It's safe to say that Angular 2 has the most extensive set of capabilities and functions for large-scale commercial applications, notably in e-Commerce. React with Vue can be used for live streaming, blogging, and small and medium-sized apps. A UI framework is required for the development of a whole front-end section to demonstrate a professional UI design. Further investigation of front-end development methods and their working principles will be the focus of our future work.

XI. REFERENCE

[1]. M. Dawson and A. Szakonyi, "Cybersecurity Education to Create Awareness in Artificial Intelligence Applications for Developers and End Users", Scientific Bulletin, vol. 25, no. 2, pp. 85-92, 2020. Available: 10.2478/bsaft-2020-0012.

[2]. E. Wijaya, S. Kosasi and D. David, "Implementasi Aplikasi Web Full Stack Pendataan Cloversy.id", Jurnal Sisfokom (Sistem Informasi dan Komputer), vol. 10, no. 3, pp. 320-327, 2021. Available: 10.32736/sisfokom.v10i3.1293.

[3]. H. Mohammed and K. Faraj, "A Python-WSGI and PHP-Apache Web Server Performance Analysis by Search Page Generator (SPG)", UKH Journal of Science and Engineering, vol. 5, no. 1, pp. 132-138, 2021. Available: 10.25079/use.v5n1y2021.pp132-138.

[4]. A. Pratomo, E. Schriek, and T. Veen, "Test-Driven Development in OWOW's Full-stack Web Development", International Journal of Industrial Research and Applied Engineering, vol. 4, no. 2, 2020. Available: 10.9744/jirae.4.2.46-50.

[5]. M. Amoretti, "An Effective Framework for Full-Stack Benchmarking of Quantum Computers", Quantum Views, vol. 5, p. 52, 2021. Available: 10.22331/qv-2021-04-26-52.

[6]. Brought to you by ACS Careers, "Take time and take charge", Chemical & Engineering News, pp. 37-37, 2020. Available: 10.47287/cen-09842-career tips.

[7]. O. Gokalp, A. Ugur and S. Bodur, "CONTACT-JS: Metaheuristic Algorithms based JavaScript Software Library for Continuous Optimization Problems",

Journal of Intelligent Systems with Applications, pp. 1-7, 2019. Available: 10.54856/jiswa.201905050.

[8]. W. Withdrawn, "WITHDRAWN: This article has been withdrawn", RussianStudiesHu, vol. 3, pp. 1-8, 2021. Available: 10.38210/rustudh.2021.3.2.

[9]. "Legionella test provides results faster than current methods", Membrane Technology, vol. 2018, no. 9, pp. 6-7, 2018. Available: 10.1016/s0958-2118(18)30183-6.

[10]. G. Luo and Q. Wang, "Developers' Competition Behaviour of Land Reserve in Assembled Buildings Development: Based on Game Analysis Framework", E3S Web of Conferences, vol. 136, p. 04044, 2019. Available: 10.1051/e3sconf/201913604044.

[11]. C. Mawer, "Something must be done—but chemotherapy isn't the only option", BMJ, p. i6455, 2016. Available: 10.1136/BMJ.i6455.

[12]. "REACT FRAMEWORK (CREATING A WEB APPLICATION WITH REACT NATIVE)", International Journal of Recent Trends in Engineering and Research, vol. 4, no. 3, pp. 642-646, 2018. Available: 10.23883/ijrter.2018.4176.npvsn.