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Online Code Editor

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Abstract: Several apps that were previously developed for desktop computers have started transferring to the web as the Internet has expanded quickly. These programs are easily accessible through a web browser at any time and from any location. A code editor is one of the tools that developers and programmers require for developing these kinds of applications. The primary purpose of an online compiler and code editor is to implement code which can be directly compiled and executed without the help of a system-installed compiler. For software developers or engineers who wish to write programs without the need for any software or computer components, this project proposes an online code editor.

Keywords: Code, Code Editor, developers, IDE.

I. INTRODUCTION

The programming industry has seen a considerable transition la tely. The need for effective, inexpensive, and collaborative programming tools has grown as the need for software development has risen. The online code editor is one such tool that has grown considerably in popularity.

Programmers can write, modify, and test their code in a browser using an online code editor, which is a web-based platform that eliminates the need to install any software on the user's computer. It is now quicker for developers to collaborate remotely, share code, and coordinate efforts.

Developers may find online code editors appealing because of its many capabilities, such as syntax highlighting, autocomplete, and error handling tools.

Several users can simultaneously work on the same code courtesy to the real-time collaboration features that are available in many online code editors. Online code editors have consequently emerged as a fundamental element of contemporary software development, facilitating programmers' capacity to create and test code, share it with others, and work together in real-time CODE EDITOR.

Software tools called code editors are developed to make it simpler for developers to write, edit, and manage code. They deliver a user-friendly interface with capabilities like syntax highlighting, code completion, and debugging tools that let developers write and edit code.

Simple code editors and fully-featured Integrated Development Environments are only two examples of the many options available for code editors. Sublime Text, Atom, Visual Studio Code, and Notepad++ are a few of the most well-known code editors.

Developers may write better code and be more dynamic by using code editors. They can accelerate the development and debugging of code and offer tools that make it smoother to work with big code bases. Moreover, they can be modified via plugins and extensions to meet the unique requirements of different developers or projects.

Code editors are essential components for developers, and selecting the best one can significantly increase output and efficiency.

II. HISTORY OF CODE EDITORS

Although they have been available since the early 2000s, online code editors didn't start to become popular until the middle of the 2010s. 2012 saw the birth of CodePen, one of the first online code editors. Since then, a large number of additional online code editors have been created, among them JSFiddle, Repl.it, and CodeSandbox. Since its inception, online code editors have advanced greatly thanks to advancements in web technologies like WebAssembly and WebSockets, which enable more robust and usable web-based apps.

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When developers started experimenting with ways to write and exchange code online in the early days of the internet, the history of online code editors began. Leo Horie, a software developer, designed the "JavaScript Sandbox" in 2004, one of the first instances of an online code editor, allowing users to write and run JavaScript code directly in their web browsers.

Online code editors have grown more powerful and complex over time, with numerous new features and functionalities being added to enhance user experience.

One of the most important advancements in this area was the invention of collaborative online code editors, which let several developers to operate on the same code in real-time.

Advantages of an online code editor

There are several advantages of using an online code editor, including:

1. Accessibility: Online code editors are a realistic choice for developers who need to work remotely or interact with team members who are in different locations because they can be accessible from anywhere with an internet connection.
2. Easy to use: Online code editors are typically simple to use and feature built-in templates and libraries that can expedite development and minimise coding errors.
3. Collaboration: Online code editors sometimes include collaboration tools that make it simple to share code and collaborate on projects by enabling numerous developers to work on the same code at once.
4. Cost-effective: Numerous online code editors are available for free, while some also provide premium plans with more functionality or storage. This can be a cost-effective choice for developers who don't want to invest in expensive desktop software.
5. Always up-to-date: Online code editors are updated automatically, which means that developers always have access to the latest version of the software without having to manually update it.
6. Cross-platform compatibility: Online code editors can be used on any device with a browser, making them interoperable with a wide range of operating systems and devices.
7. Reduced setup time: Online code editors require little setup time since they don't need to be installed on a local machine. For developers who have to start working on a project right away, this can be quite beneficial.

III. LITERATURE REVIEW

A. Online code editor on Private cloud computing [1]

As indicated in this paper, the Online Code Editor was created for programmers or developers who wish to build apps without any platform requirements or certain physical equipment. A web application that makes use of private cloud computing serves as its foundation. Among other web programming languages, HTML, PHP, CSS, and JavaScript enable the editor's functionalities.

The editor can distinguish among several programming languages by highlighting the syntax of programmes. Users can import and export any files they choose, as well as start new projects and files on a server. Additional options for the editor include Save, Auto Save, Delete, and others. The open source technology "Ace" was utilised in this study of the text editor's development for various features like Undo, Redo, and Syntax highlight.
The experimental results show that the suggested editor is practical for use with private cloud computing. Additionally, a comparison of the desktop PC-based editors Notepad++ and EditPlus' capability was given.

B. Review on Server Based Code Editor [2]

In this paper, a server-based code editor for Java code is shown. Some code editors have the ability to run languages like JavaScript, CSS, and HTML.
Programmers operating on programming languages like Java, PHP, etc., face many difficulties. Java is a new programming language that has been added to this project, though. Java can be used by programmers to run in a server-based code editor. Using this capacity to run many programming languages on the same platform is appropriate.

C. CodeR: Real-time Code Editor Application for Collaborative Programming [3]

In order to enable user collaboration while working on the project, the aim of this research is to design and build a real-time code editor application using web socket technology. This programme has a function that enables users to collaborate on a project in real time. The researchers are using analysis methodologies to examine the current code editor programmes

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through carrying out surveys and reviewing the available literature. Users are able to access a workspace where they can write code, run it, see the results in the terminal, and interact in real-time with other users thanks to a web service called CodeR.

D. BROWSER BASED CODE EDITOR [4]

The authors plan to create a website that will allow users to write C code, copy it, paste it into the C-code editor, and then hit the run button. the system will s transmit information to the server. So, installing the whole C compiler with DOS, which is a time-consuming operation, will take less time thanks to this application.
As a result, this online compiler may be used directly by people, which is a quick and simple procedure.

IV. METHODOLOGY

A. Hypertext Markup Language

HTML is the short form of HyperText Markup Language. It is used in building web pages using the markup language. The text document inside the tag that defines the structure of online pages is defined by markup language, and the links between web sites are defined by hypertext.

B. Cascading Style Sheets

CSS can be used to apply styles to web pages (Cascading Style Sheets). Cascading Style Sheets is known by the abbreviation CSS. It is used to create appealing web pages. Making professional web pages will be easier if you use this. It can be utilised to layout webpages. More importantly, it enables you to accomplish this without relying on the HTML that makes up each online page.

C. JavaScript

The open-source programming language called JavaScript was made specifically for building web-based applications. It is integrated with HTML and is lightweight and interpreted, which makes it faster than other languages and makes it simpler to employ in web applications.
In other words, anything that moves on your screen without requiring you to reload your browser is frequently developed and managed using JavaScript, a scripting language. It is possible to create anything, from animated graphics to an auto-generated Facebook timeline.

D. Docker

Application development, testing, and deployment are made simple by the use of a software platform called Docker. The essential code, libraries, system tools, and runtime are all contained within the containers that Docker creates for software. You can swiftly extend and deploy projects into any environment with Docker and be sure that your code will function.

E. Architecture of the Editor

When a website initially launches, the page displays an intuitive code editor with an array of functions, such as code highlights that are specific to each language. Users can also save their progress in the browser, take a break, and pick over wherever they left off.
The user has the possibility of writing code in C, C++, Python 3, and Haskell, a pure functional language.

The user is able to save the code in the browser after writing and editing it. The cache of the browser retains this code. Therefore, the previous code that was cached or saved will be utilised for showing the user whenever they visit the website again.

Next the user can execute the code in the respected language. when the user clicks the run button a JavaScript Object Notation (JSON) message is crafted with {id: <some_id>, code: <some_code>}, where id being the language id to the corresponding code. Then this json data is sent to the backend server handling the code execution part at /submit. On to receiving the JSON message the server simply unpacks the data converts it into a python dictionary so that it can access the data through its keys. It extracts the id and code and proceeds further executing the code with the provided language id.

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V. CONCLUSION

This paper proposes an online code editor that can be used by developers on the go or without requiring to download or install any other heavy software. The proposed editor can also be used for educational purposes in order teach upcoming generations to become the developers of the coming age.

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