

# V Editor: Online Collaborative IDE

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**Abstract:** We live in an era of IT world and there are lots of projects going around all over. While working on projects small or large, every team of software engineer sometimes faces problem in adding or reverting changes in code/project. There are many existing editors/workspace which fail to facilitate viewing and editing of files prone to deadlocks and race condition. To solve these problems and make a better environment, we have proposed a system, V Editor which is a PHP based web application and IDE that facilitates real time collaborative editing of files and programming which will help in collaboration in real time for any organization or software development environment to work efficiently to make necessary contribution in source code, avoid wasting time and speed more time collaborating and success of project or team.

**Keywords:** Real time collaborative editor, collaborative IDE, web based IDE.

## I. INTRODUCTION

In IT world, it is a common practice where team members working on a common project share their documents, text files electronically as an email attachment or storing the files externally like hard disks etc. and then sharing these devices to team member. The group member who needs to contribute to the work/files updates his/her work and the whole process is repeated so that everyone receives an updated copy and contributes to work. This whole process is exhaustive and may result in delay in timeline as well as may increase overall cost and effort. Distributed computing involves multiple computers to communicate through each other in a network to achieve desired goal, one of the biggest advantage of this is collaborative editing. They are of 2 types' real time and non-real time. Real time collaborative editing is mainly used in editing documents and coding by software engineers, such contributions are very efficient in time, as group members need not assemble in order to work together. There is a workspace provided to contribute in distributed environment and everyone can contribute without process being exhaustive. Aside from how real-time editing can be a valuable solution for source control and valuable addition for tutoring, the IDE's collaborative feature also make it a good development choice, where all web related language can be parsed and compiled anywhere at any time. Multiple user editing same file may sound chaotic especially in case of programming, it can get messy. To improve it, collaboration is featured with personalized user names, network storage of project and chat feature.

## II. RELATED WORK

In V Editor we have adopted client server architecture where server holds a persistent copy of shared document; clients will have their own local copy of this shared document. Changes made to document will be synchronized to server and propagated to client by server. Fire pad provide a real time collaborative environment with chat feature but does not provide an IDE environment

and no existing file can be edited, there are problem with synchronous editing and there is continuous sharing of file to limited number of users i.e.4 and it is basically used for document editing and not suitable for programming environment. There are many similar projects likefire pad, Etherpad but faces problem of synchronization and reflection of work through server and they also have problem of storage and it is basically desktop share application. Thus we try to implement a system V Editor which has overcome all the above mention drawbacks and includes many advance features that helps in effective collaborating.

## III. OVERVIEW

The primary mission of our project V Editor is to design a platform that is simple IDE yet a practical solution that supports multi-user file editing over a distributed environment. There is client server model. We create a web server that will maintain all the files being edited and updated by team member, and then at client side, user will use their machine to request a particular file from web server. The server will maintain files at centralized repository. When any client updates the shared files, the server synchronously updates the changed files to maintain the consistent state of file and solve problem of deadlock and race condition.

## IV. FUNCTIONALITIES

The various features and functionalities are as follows:

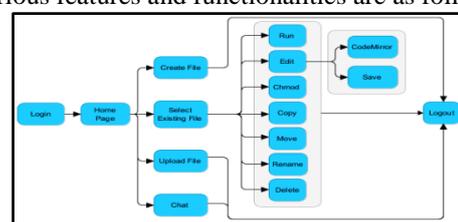


Fig. 1 General Flow of V Editor

**A. File System**

V Editor consists of file functions such as create file, create folder, rename, save, download, delete and exit editor. It allows us to upload file, the file can even be a zip file, image or file with any other format from our system to sever. The user can even download files on sever, save and open it using any other format. It also provides other additional information's such as last modification date and time, file size, permissions and file operation shortcuts. The actual location of the file on sever can be determined by using open shell option. Permission can be granted by file owner, which helps in restricting and managing access rights of the files in the system.

Following permissions can be granted:

- Read ,write and execute permissions for owner, others have no permissions
- Read ,write and execute permissions for owner, Read for others
- All permissions for owner, Read and execute for others
- All permissions for owner, Read, write, and execute for owners group

**B. Collaborative editing**

Collaborative editing is the process involving groups of users producing works together through individual contributions using different devices from different places.

In programming environment, editor of an IDE becomes a very important component. In V Editor the editor has functionalities for effective coding which includes line numbering, syntax highlighting for all the well-known web programming languages and semantics management.

**C. Web-based IDE**

V Editor is a web-based IDE and code editor, which provides a real time collaborative programming environment where multiple-users from different locations can work on web development projects in real time. It can be used to parse and compile all web programming languages such as HTML, CSS, JavaScript, Python, Perl, PHP, etc. It can be accessed through web browsers from anywhere or any devices and therefore no additional setup is required, thus there is no setup cost for collaborative development of projects. The front end of web-based IDE in online collaborative editor is implemented in HTML, JavaScript and PHP and AJAX method is used to communicate with the backend.

**D. Mobile/ Tablet Friendly**

V Editor is an online collaborative IDE and can be accessed from any devices which include computers, laptops, smart phones or Tablets. This makes it more flexible for the users to use it from anywhere.

Also Educational Institutions can use V Editor for learning purpose. Teachers and students can use this IDE in their lab projects for working together. Students can use IDE from computers, as all the files are maintained at centralized repository teachers can monitor every student,

using this IDE from their smart phones. This helps teachers to keep check over student's progress and they can provide required assistance to the student without the need of student personally submitting their projects.

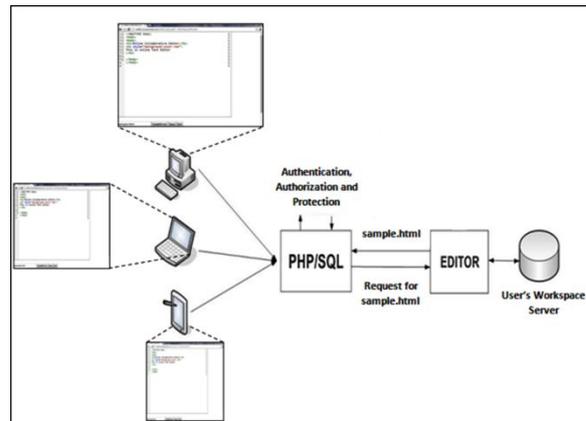


Fig. 2 Shows Collaborative editing

**E. Security**

We have a secure login panel which works great against all types of attacks like SQL injection, Cross-site scripting (XSS), brute force attack, etc. If a particular user failed to login thrice from a device then the IP address of that device will be traced and the system blocks that IP address for 5 minutes.

**F. Chat**

Chat is an important application for maintaining collaboration between the users working collaboratively on V Editor. After the user registers in the chat application, the application traces the IP address of all the users currently using the chat session and displays list of users connected.

**V. CONCLUSION AND FUTURE WORK**

V Editor is an effective editor that helps in collaboration with real time IDE application based on PHP and java script and it doesn't involve any setup for coding environment; one can go online and share the work and contribute synchronously with the server. It is basically used for compiling and parsing of all web based languages like Ruby, Pearl, HTML, CSS etc.

In future, we would like to implement an environment that can support java and other languages that require set up for parsing and compilation, we have planned to add an auto save option so that no data will be lost in case of any circumstances and cache will be maintained to overcome any limitation in the existing system. Providing separate workspace to the users and organizations. Integrating video chatting to users for more flexible discussions.

The goal of the system is to have a perfect collaborative environment which can be used by an organization or an individual to contribute effectively in team work and will lead to the success of the project by maintaining baseline cost and time.

**VI. ACKNOWLEDGMENT**

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