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CoRT Workspace- A Collaborative Real-Time Workspace

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Abstract - *A Centralised idea using Cloud Technology for techies and people working on various tasks in the same environment individually or in a community using Real-time Collaboration. The Integrated Development Environment (IDE) allows a user to build a new project/file, connect team members to it, Interact, Easy Sharing, and Collaborate work in real-time from a remote location by using the fewest resources possible. The cloud servers will synchronize all project data. Using network sockets, VoIP calls, and video conferences, two or more users working on the same project would be able to connect as well as look at each other's work. It will be possible to compile, run, debug, and distribute the application to local and remote locations. The framework will allow users to run and deploy projects in a variety of versions. Cloud services, in a similar way, are dependable. In similar ways, cloud services are related to every field. Contributors would have the freedom to design plugins for the applications and use them personally and publicly securely.*

***Key Words*: Cloud Technology, Real-time Collaboration,**

Cloud services, IDE, security, Easy Sharing, Workspace Online Compiler.

1. INTRODUCTION

In today's world, we expect everything to be available online, so all systems provide the best solution to these issues. We are implementing the 'real Time Interactive Coding And Work Sharing Platform' to collaborate on a project centered on a Real-Time online IDE that uses cloud storage to help with movability and repository space. A cloud will be open, with a server that will manage all of the user's codes and compile them separately on another device. As per requirements, remote teams could be able to collaborate, manage tasks, and exchange information. For this, They need real-time communication tools to bridge the gap, allowing team members spread across the globe to collaborate closely as though they were in the same space.

The system will compile and run code, as well as test it with pre-built data. The submitted code is passed by certain conditions, such as a time limit, memory limit, protection limitation, and so on are all examples of restrictions. The Software would capture the code's output and equate it to the regular output. If a python script needs to be run, the program will search for a python interpreter on a local computer first, but if none is found, it will use a cloud server to run the script and provide output to the application. The IDE may be used to alter, update, and delete the current code, text, or project. Using the principle of cloud computing in IDE-served features such as an online compiler, cloud project storage, interactive coding, real-time chat/talks, calls, and video conferencing, this application reduces the issues of portability and extra space.It also conveys the concept of all IDE users having access to interconnected forums and technical blog facilities.

Basically, this IDE combines a variety of features into a single package that users can access from their devices with Internet access, such as laptops or smartphones. Since this IDE is hosted in the cloud, there is no need to download any software or desktop IDE. It also allows people working in a variety of heterogeneous environments to code, collaborate, and share information with ease.

2. PROBLEM STATEMENT

As we all know, most existing online coding platforms provide online compilers that only allow you to code and compile. We are unable to save or share our work directly from the website. Furthermore, we are unable to code simultaneous in real-time to solve this problem.

We created a cloud-based framework solution that provides users with a powerful forum for real-time coding collaboration.

Aside from this forum, a user who uses the internet calling feature may directly contact his fellow members. Many of the projects are stored in the cloud, ensuring that they are highly protected and accessible from anywhere. Code does not always run correctly due to version conflicts. We can also remove this problem from our websites by allowing those with access to the project to save files locally or in the cloud.

3. EXISTING SYSTEM

Using an offline IDE and compiler in the age of cloud computing is such an old-school practice, but with the

development in technology, everything is getting smarter, so why not this?

Offline compilers are superior, but technology will continue to advance in the coming years. We'll most likely be able to equal the physical device's computing capacity. And we all know that to code in each language, we have to install a new platform, set up environment variables, and do all the other tedious stuff, and that people messed up the system during this time, making the problem worse. Our physical power is restricted, as is our space and processing power, which is a significant disadvantage. This has a direct impact on the coders' productivity. No special hardware or software is needed to start it; all required is a computer and an internet connection. An Online IDE automatically saves the codes, which can then be shared quickly and accessed remotely by anyone.

4. LITERATURE SURVEY

Cloud computing is a computing model in which multiple systems are connected through private or public networks to facilitate dynamically scalable infrastructure for application, data, and file storage. It is a technology that maintains data and applications using the internet and central remote servers. Consumers and companies can use applications without installing them and access their files from any device with an internet connection. Developers also have software installed on their computers that enable them to run and modify programming code locally.[1]

However, an online IDE is more available and allows you to work with the same program you use to surf the web. In this paper, we present an open-source web-based IDE for online code execution.This framework allows multiple users to collaborate online on the exact project. We'll implement online execution of several programming languages, with the compiler taking advantage of the cloud's computing and memory resources. The IDE manages several tasks and assists developers in saving data and production processes to a remote server.[2]

5. PROPOSED SYSTEM

This platform is a one-stop shop for people or techies looking for a place to work, share ideas, and assist one another in interacting with one another through video or audio conferencing. It's a cloud-based application that users can access from any computer with an internet connection and be up and running in no time. There's no need to install large amounts of software or depend on the computer indefinitely.

A user can access their own space from anywhere in the world using their respective login Id and password. The user can use the application to run, connect existing projects from their local computer, or fetch projects from the cloud. Here we are deliberately using the cloud as it provides more security to users' data. There is much application that provides this, but our primary focus is on Real-time collaboration. If anyone needs assistance when working, they can quickly grant another person access to the project to work on the same file at the same time. They can communicate with each other when doing so, and this platform provides them with a variety of choices, including text, video, and voice calls. There is a forum section where users can read posts to stay up with technology and contribute to making the world a better place.

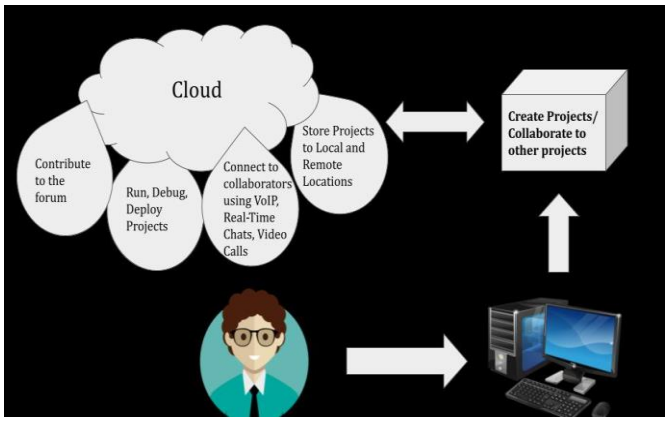

fig-1: web App system flow

- It's very light, fast to start, and takes the shortest amount of time to load.
- User Friendliness and interactive.
- Change the theme to light or dark.
- Switching between programming languages with ease.
- Liberty of using any language to run your code, such as C++, C, Java, Python, Golang, etc.
- Allow multiple users to work together on a project in real-time.
- Collaborative real-time editing and work sharing.
- Build communication, interaction, critical thinking, and creativity.
- Helps Team to brainstorm and develop new ideas.
- Shortcuts to save your time.
- Install the code on your local systems.
- Entirely anonymous for use.
- Data security.

6. IMPLEMENTATION

Firstly, the user using the platform needs to create his profile as we prioritize individual security. Now a user can navigate through the project section after successful authentication, where he can create or view projects if he is already a user; otherwise, create a new file or import it from the machine.

After creating a new project, the user will redirect the coding hub to access various features of this IDE. Users can code using different programming languages individually or collaboratively with many others by adding a team to share brainstorm ideas by allowing editing, where files can be amended or altered jointly in real-time. The users can also use our platform to compile their codes from the online compiler we provided, and they can also read articles on the forum.

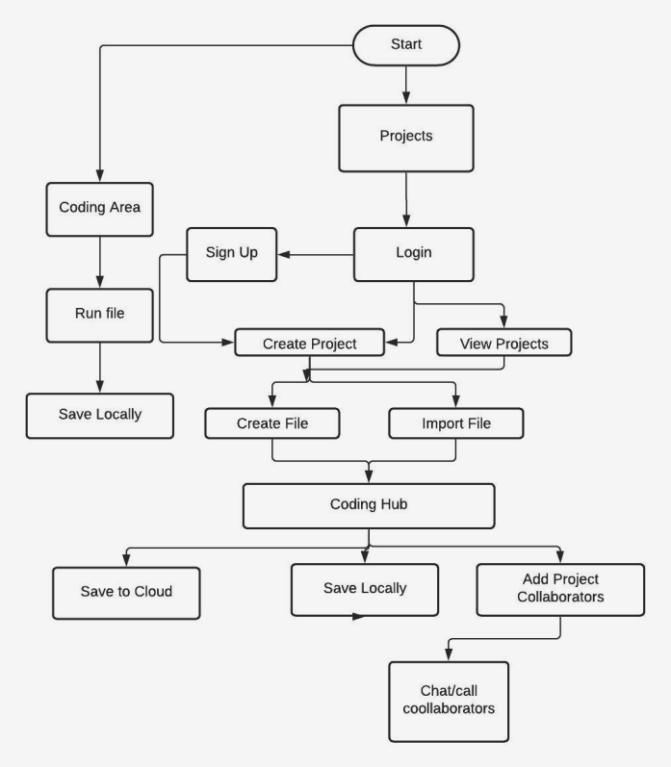

fig-2: Use Case diagram

Among the features available to registered users on the platform are:

- Browser-based Workspace where Users can access the platform's services directly from their browser, which would be independent of the device they are using since all processing and storing is done in the cloud.
- Users who want to work in real-time teams will be able to do so with the Real Time-Online Collaboration feature, which allows them to collaborate and work on the same project in real-time.
- Users will also communicate directly with team members through VoIP calls, real-time chats, video calls, discussion boards, virtual meetings, and screen sharing.
- Get system-independent work files to make it possible for users to export files at some point during their job; the platform can do so for them.
- Users have access to a network of interconnected forums and a professional/technical blog.

The platform provides non-registered users with features as:

- Platform independent / Browser-based Workspace where users can access the platform's services directly from their browser, which would be independent of the device they are using since all processing and storing is done in the cloud.
- Get system-independent work files to make it possible for users to export files at some point during their job; the platform can do so for them.

6. CONCLUSION

In current situations like the COVID-19 pandemic, this platform is like oxygen for people who want to work from a simple home structure to an easily understandable user interface with minimal use of hardware. All this makes this one of the best platforms and one-stop solutions for people to collaborate and work in real-time. For help now, users don't have to use separate platforms for interaction with each other or solve their doubts; they can use this forum, which is rich with many related topics on which the user wants to work. This framework stores all of the user data in the cloud, making it unbreakable, so the user can rest assured that your data is in good hands.

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