Build a Secure Web based code editor for C Programming language

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Abstract - *As it is a competitive world and very fast world, everything in the universes is to be internet [6]. In this internet world all the things are on-line [6]. Programmers require a good tool to help them develop programs faster and more accurate. These programs are written in some programming language and every programming language requires a specific compiler or interpreter to compile and run the programs written in that language. Often there is a need to have many compilers or interpreters in the same machine to compile and run the programs in different languages. So, it requires installation of those software in the machine. Online C Compiler provides a platform where programmer can write and compile the programs written in C programming language. This is an online platform which eliminates the need of installation of compilers and interpreters for users to run the programs. This platform supports only the C programming language.*

*Key Words***: Cloud computing, Compiler, Online Compiler, Browser Based IDEs**, etc**.**

I. INTRODUCTION

Recently, computer software in writing computer program source code is very popular. Even though, the ability of software is less capable than the Integrated Development Environments (IDE), many programmers who want to edit the source code urgently might not access convenient resource without installing any application on the computer or notebook. Text editors are good tools for programmers to use within small resources [3]. Nevertheless, text editors also need to be installed on the computers before using. Therefore, programmers need to have at least one computer in order to edit program source code. If one does not own any computer, to urgently modify any source code is impossible.

Thus, Online C Compiler is proposed to solve this problem. It helps users to write or edit their source code at any place and any time. The online c compiler is built and run on cloud computing based on web-based application. Open source software called *Ace* is used to highlight the text. Programmers can compile and run source code via web browser and the code will be done at server-side. Then, the output from the compilation will be displayed at the browser of client-side. Programmers can use any computer or even tablet PC to write the computer program, without having to install software they just use only internet and browser. It

helps the organization to reduce the expense in purchasing many personal computers.

II. Drawbacks of the current system

The current & previous Web based Code editor having some drawbacks which are as follows:

- Currently programmers use compilers or interpreters installed on the machine to run the programs. So, for every programming language, it is required to install compiler or interpreters on that machine.

- The drawback of current system is all that installation of software for every machine depending on OS i.e. for different OS different compilers or interpreters are there.

- The current system providing a common platform for different programming language & for different platforms

- So Users uses different browsers for complete their work over different crossover platform.

- Also platform should be able to handle different programming languages.

III. PROJECT OBJECTIVES

- To create a platform in form of a website which can be used to write and run the programs written in C language.
- This platform should provide functionalities to save and share the programs with other users.
- To secure the code editor using Docker
- No need to install any kind software on devices.
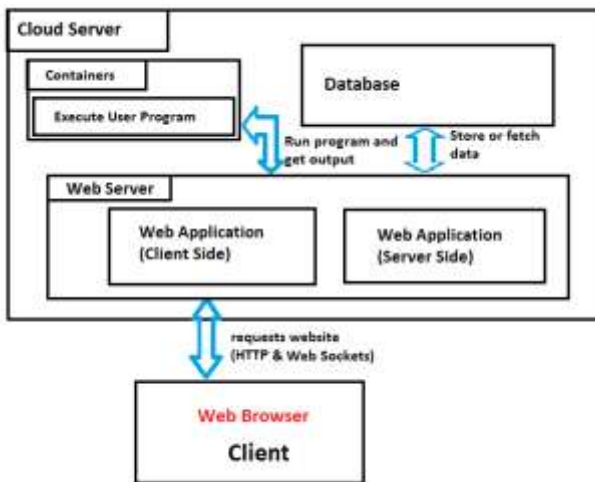
IV. Proposed Methodology & Implementation

Fig -1: Architecture of System

The mechanism of system is divided into four modules:

1) Web Server:

Web server is used to host the web application on internet & send client-side code to the user on request & this code will be parsed by browser. Web application also have a server-side code which is used for communication between client and container. Server-side code is also used for database handling.

2) Cloud Server:

Cloud server is used to store the web application on the cloud. It also stores database and Docker containers. It is used for secure communication on the internet.

3) Database:

Database is used to store user information, user programs, history, sharing details, sharing history, etc.

4) Container:

Container is run time instance of Docker image. Docker provides enough environment to run applications rather than virtual machines which containers are used to provide user separate space and also to deny user exposer to server.

5) Client:

Client is the user of this code editor.
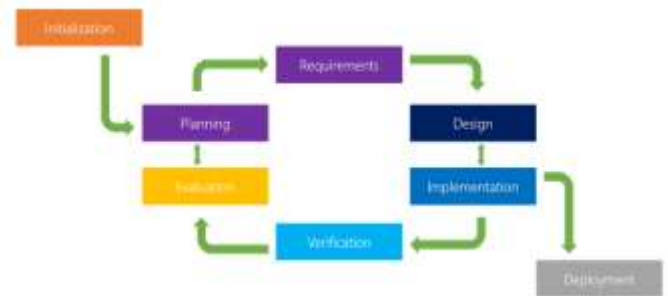
Software Development Paradigm:

Fig -2: Iterative Model

Major components of code editor:

1) Code Editor:

Code editor is used to edit the programs. Code editor includes features which helps programmers to code faster.

Features:

1. **Syntax highlighting:** It is useful to easily distinguish variables, functions, strings, etc. from each other and other components of a program. Each component has different colours, so it is easy to distinguish a string from an integer.

2. **Auto completion:** Auto completion examines each letter typed by user, guesses what is the keyword user is trying to type & suggests it to user. Then from suggested list user can select the desired keyword.

3. **Code folding:** It gives an option to user to fold a block of code. This is very useful when there is a large block of code & user wants to see other parts of code without repeatedly scrolling up & down in the editor.

2) Terminal:

Terminal is a Linux terminal provided to user to access the assigned space. Terminal can be used to browse through various folders as well as files, compile the saved programs, install required programs such as database, NodeJS, etc.

V. ADDITIONAL FEATURE

The goal is to achieve the objectives of the project mentioned above in given time and to include additional functionalities to the code editor like auto completion, autosuggestion. So, after the completion of project we'll be able to deliver a platform in the form of a website where users will be able to login to get his/her own space to store, view, share the programs, able to write & run the written programs.

Basic functions: Provide the basic functionalities of code editor (to compile & run programs and display output on screen).

Save & Open files: Provides functions to save a written program and to open an existing program.

User login: Provides user login where user can have his/her own space to save, open & view his/her programs & projects.

Share files: Provides functionalities to share your projects with your friends or teammates.

VI. CONCLUSIONS

- The proposed system provides a platform, where programmers can write and compile the code without having to install any specific software to create and execute program.

- This platform is system independent, that is it runs on any machine which supports compatible web browsers.

- It can be used by any user, even by unregistered user.

REFERENCES

[1] Priyadarashani doke, Surabhi Shingote, Sneha Kalbhor, Anumeha Singh, Heena Yeole, "Online C, C++, Java Compiler Using Cloud Computing - A Survey", International Journal of Advances in Engineering Science and Technology ,2011.

[2] Warangkhana Kimpan, Theerasak Meebunrot, Busaya Sricharoen Department , "Online Code Editor on Private Cloud Computing" in IEEE, 2003.

[3] Aamir Nizam Ansari, S. Patil, A. Navada, A. Peshave andV.Borole,"OnlineC/C++compiler using cloud computing," Multimedia Technology (ICMT), 2011 International Conference on, Hangzhou, 2011.

[4] Fatima Mulla1, Savitha Nair2, Aditi Chhabria3,"CrossPlatformCCompiler",IEEE, 2013.

[5] Online c/c++ compiler using cloud computing by Ansari, A.N., Pune inst. Of comp. tech., of Pune, India in multimedia technology (ICMT). July 2011.

[6] Online Editor f or Compiling and Executing Different Languages Source Code, G.J.E.D.T., Vol.5(2). April 2016.