Comp4Compile (Online VB/C# .NET Compiler Using Cloud Computing)

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Abstract— **Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort. The paper aims to describe an online compiler which helps to reduce the problems of portability and storage space by making use of the concept of cloud computing. The ability to use different compilers allows a programmer to pick up the fastest or the most convenient tool to compile the code and remove the errors. Moreover, a web-based application can be used remotely throughout any network connection and it is platform independent. The errors/outputs of the code are stored in a more convenient way. Also, the trouble of installing the compiler on each computer is avoided. Thus, these advantages make this application ideal for conducting examinations online.**

Keywords— Online **Compiler, vb, C#, Cloud Computing, Comp4Compile**

I. INTRODUCTION

Cloud computing is a technology similar to distributed computing over a network in which we can run a program on many computers simultaneously. This paper describes a web based application which is nothing but act like an online compiler to reduce the problems of portability, storage, installation, and configuration using cloud computing. The proposed web based application will be the most convenient tool to compile the code and to remove the errors. Since web based application is a platform independent, the users don't need to worry about operating system and other environment. The proposed website will provide same GUI (Graphical User Interface) like desktop based IDE (Integrated development environment) to give same experience as desktop application gives.

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services -- such as servers, storage and applications -- are delivered to an organization's computers and devices through the Internet. Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine. [1]

The National Institute of Standards and Technology (NIST) defines 'Cloud Computing' as 'a model for enabling easy, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.'
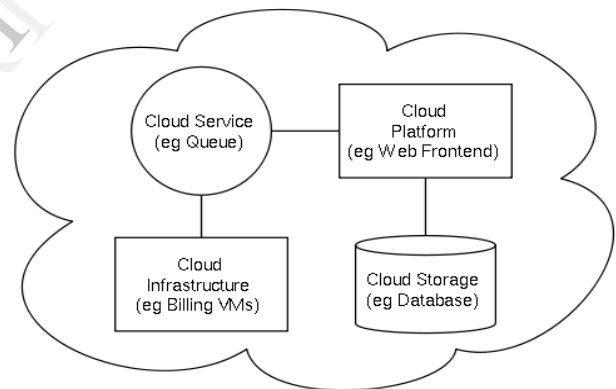
Using cloud computing maximization of effectiveness of the shared resources can be achieved. These resources are dynamically re-allocated on each demand. Cloud computing allows organizations to focus on business strategies, applications features rather than the infrastructure and project environment.

Cloud computing has 4 service models as

1. Infrastructure as a service (IaaS)
2. Platform as a service (PaaS)
3. Software as a service (SaaS)
4. Network as a service (NaaS)
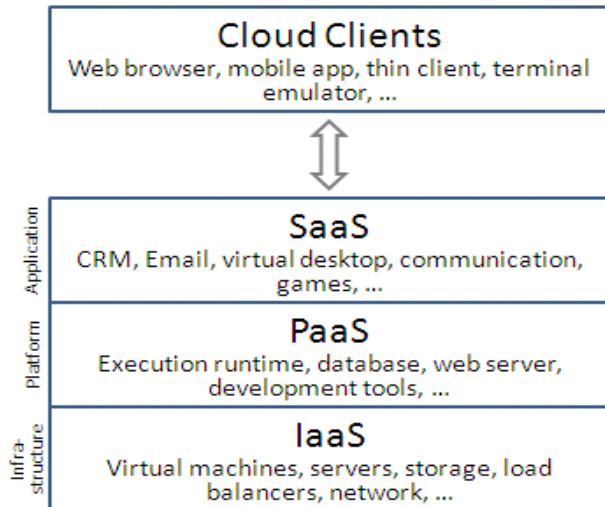
The Proposed web application will be using software as a service model. In software as a service model, software is installed in the cloud and user access it from client software such as web based application. This features eliminates the installation of software on user's machine and simplifies the maintenance and support.

Proponents claim SaaS allows a business the potential to reduce IT operational costs by outsourcing hardware and software maintenance and support to the cloud provider. This enables the business to reallocate IT operations costs away from hardware/software spending and personnel expenses, towards meeting other goals. In addition, with applications hosted centrally, updates can be released without the need for users to install new software. One drawback of SaaS is that the users' data are stored on the cloud provider's server. As a result, there could be unauthorized access to the data. [2]

II. SOFTWARE DESIGN CONSIDERATIONS

To run this website user requires Moderate speed Internet connection, user can run the website on his/her PC.This websites runs on any browser that supports HTML5 and CSS3 , javascripts i.e. to the browser should be updated one and .net framework is required to run the downloaded program on the user's computer. This website can be created by using object oriented programming languages for front end like VB.net, java , C# , HTML5 which will provide the latest technology in developing quite user friendly user interface so there is very less difficulty for all the users to learn the system. The Database or backend can be created on relational database management system like MS SQL SERVER 2008 or Oracle or MySQL etc. these tools will help to design and develop very efficient   database which we will require to store and manage a very huge amount of data that will be required   by   the   user   to   store   the   projects.

III.TECHNOLOGY & TOOLS USED

Microsoft Visual Studio 2010: Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop console and graphical user interface applications along with Windows Forms or WPF applications, web sites, web applications, and web services in both native code together with managed code for all platforms supported by Microsoft Windows, Windows Mobile, Windows CE, .NET Framework, .NET Compact Framework and Microsoft Silverlight. **MS SQL Server**: Microsoft SQL Server is a relational database management system developed by Microsoft Inc.. As a database, it is a software product whose primary function is to store and retrieve data as requested by other software applications, be it those on the same computer or those running on another computer across a network (including the Internet). **JavaScript**: JavaScript is a technique for manipulating HTML documents in the browser. This is often called client-side scripting. It allows the page author to incorporate facilities such as buttons that change in appearance when you move the mouse over them and menus that expand. **jQuery**: jQuery is a fast and concise JavaScript Library that simplifies HTML document traversing, event handling, animating, and Ajax interactions for rapid web development. **Ajax**: Ajax (also AJAX an acronym for Asynchronous JavaScript and XML) is a group of interrelated web development techniques used on the client-side to create asynchronousweb applications. With Ajax, web applications can send data to, and retrieve data from, a server asynchronously (in the background) without interfering with the display and behavior of the existing (JSON is often used instead), and the requests do not need to be asynchronous.

III. COMP4COMPILE

Comp4Compile is the proposed cloud based web application, which provides several online compilers like VB.net, C# etc. where the user can create a project by writing code in the code area and compile the code. Then if the compilation is successfully complete an executable file is generated and made available for the user to

download or if the compilation is unsuccessful errors will be displayed. User can write code in any language supported by the comp4compile application.

The proposed application can compile both the console based programs and GUI based programs. With console based programs, GUI based programs are also supported by the system where the user can create projects using 'forms',' command',' buttons' etc.

Along with compilation this application can also allow user to create their own account and manage it. Users can create as many projects as they wants and share them with other users on the cloud space. This option can provide a huge number of programs available to different users, since the application is cloud based hence the user can store n number of programs on the cloud space and access the same from any machine on the network also using cloud space for storage solves the storage issues at the user end and the server. The most important advantage is user don't have to install the huge and time consuming setup for visual studio , The current Visual Studio 2010 is more than 1 GB in size and takes more than 1 hour to install it correctly. It is a very tedious task to install the Visual studio 2010. On Comp4Compile the user just has to open this website on web browser and he will get the same GUI of Visual Studio, avoiding the time consuming and tedious task of installing it.

The Characteristics of the cloud based web application Comp4compile in brief.

➢ GUI - The user will get the GUI as same as the desktop application of the visual studio so the user will feel like he is working on desktop application without installing the huge setup.
➢ Intellisense- As the user type code in code window. He will get predicted code to simplify code writing.
➢ Confidentiality- User can create an account and manage his project in his account as well as store as many projects as he wants and his programs are secure from unauthorized access.
➢ Scalability- Using the clouds space user can store many projects and share many projects huge space is available for the storage which solves the storage problem.
➢ Data Sharing-
  • Public- User can share his projects with public, all the other users can view the projects shared publically.
  • Friend- User can add other users as his friend and share the program with them.
  • Group – User can create a group of people and share project with them.
  • Social Networking- Users can share their projects on social networking site like Facebook.com etc.
  • Users can also get comments and reviews on the project.
➢ Creating projects in groups- The group created by the user can also create a joint project where the project work is shared among one another and tasks are distributed among one another all the users can update their work done and time spent etc. Any of the group members can be a manager and manage the project and keep track of other group member's progress. So that it will result in one integrated project.
➢ Working hours of each user can be tracked.
➢ Manager can create the Gantt chart and share will all the users so the users can know the time of task completion, deadlines for milestones.
➢ Pricing – In the proposed system many pricing tools like COCOMO can be integrated so that the user/manager of the group can calculate the price of the project in case they are trying to sell It will also help to calculate the budget of the project. By implementing these properties we can get many project managing tools with the compiling tools.

IV. CONCLUSION

Hence, by implementing online Compiler using cloud computing will reduce the problems of portability, storage, installation time consumed, and configuration and provide the users a convenient tool to compile a code as well as manage the projects.

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