

Cloud Enabled Application Programming Suite

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Abstract In this paper a Multilanguage compiler is described, that enables user compile programs to run in a distributed manner in the cloud. The paper aims to describe an online compiler which helps to reduce the problems of portability and storage space by The errors/outputs of the code are stored in a more convenient way. Cloud Enabled Application Programming Suite is an Multilanguage compiler collaborative development environment that enables you to code, build, debug in the cloud and deploy to your PaaS of choice. Best of all, it's completely free - and claiming your own Cloud takes just minutes.

I. INTRODUCTION

Cloud computing is seen to bring together many services that are provided through the “world wide computer”. A trend to multifunctional environments is currently taking place on the operating system kernel level encouraged by new virtualization techniques

On the other hand, on the highest level of abstraction, object orientated notations and ideas are mostly used. The general concept is that once the cloud provider is chosen, a lock-in to their techniques and libraries occurs. Service compatibility is then achieved by adding specific output filters to the program, which emulate object usage. This results in that every “Software as a Service (SaaS)” provider creates his own format. Other programs then have to retrieve this information and parse it accordingly and create local object representations, if they want to communicate with this service. This creates many difficulties especially when the format has to change. By these methods, both ends of a cloud service stack have become scalable, and in a nutshell “cloud enabled”. Since the important layer of compilers and interpreters and as such the program constructs, have been neglected in the past few years, it is still the case that to use other services of a cloud provider, the programmer has to include some specific library or write the interface himself. Efforts to make compilers and/or interpreters more “cloud friendly” have only resulted in non-complete products and are not generally used. As seen by the success in the usage of SOAP and the object orientated paradigm, an object oriented distribution approach bears many advantages for the cloud, but has not been implemented in the layer of language compiler yet.

II. LITERATURE SURVEY

We have surveyed through the existing systems, and found out some of them. One to me named is, eXo Cloud IDE. eXo Cloud IDE is an one of the online collaborative development environment that enables you to code, build, debug in the cloud, and deploy to your PaaS of choice. Teamscan collaboratively build HTML5/JavaScript apps, OpenSocial gadgets, or Java, PHP, Ruby and Python web apps. Because you can deploy directly within a PaaS environment, migrating from development to staging and deployment takes just a few clicks. A multi-window, extensible editor supports several file types, while familiar file system tools make it easy to move files from local sources. eXo Cloud IDE leverages several key components from [eXo Platform](#), the enterprise Java portal and user experience platform.[1] Our system provides storage service to the users for free.

Ideone is another existing system. Ideone is something more than a pastebin; it's an online compiler and debugging tool which allows to compile and run code online in more than 40 programming languages.[2] But it does not provide the facility for storage of codes. Our system provides storage service to the users for free. Another existing system is JXXX Compiler Service his is a remote compiling service for those who would either like to develop applications and/or applets but aren't fortunate enough to have access to one of the platforms to which the JDK has been ported, or who just don't want to go through the hassle of installing the complete JDK. In addition to compiling you can view any compiled applets directly without having to download them to your site first; this should speed up debugging applets a bit[3]. Our system allows the user to enter the code on our

website and he can even store and access his code from anywhere and at anytime.

III. SYSTEM DESCRIPTION

Cloud Enabled Application Programming Suite is an Multilanguage compiler collaborative development environment that enables you to code, build, debug in the cloud and deploy to your PaaS of choice. Best of all, it's completely free - and claiming your own Cloud takes just minutes.

A. Platform as a Service (PaaS)

PaaS are development platforms for which the development tool itself is hosted in the cloud and accessed through a browser. With PaaS, developers can build web applications without installing any tools on their computer and then deploy those applications without any specialized systems administration skills.[4]. PaaS offerings may also include facilities for application design, application development, testing and deployment as well as services such as team collaboration, web service integration, database integration, security, scalability, storage, persistence, state management, application versioning, application instrumentation and developer community facilitation.[6]



figure 1

As shown in figure 1, In PaaS, our system will take care of networking, storage, hardware, virtualisation, servers, databases, security and integration and runtime environment for the user and the user only need to take care of their application they write.

B. Cloud Storage

Cloud storage means different things to different people depending on how it's implemented. The most common implementation is a 'public cloud', which is essentially storage capacity accessed through the internet or a wide area network (WAN) connection, and purchased on an as-needed basis. Users can expand capacity almost without limit, by contacting the provider, which typically operates a

highly scalable storage infrastructure, sometimes in physically dispersed locations.

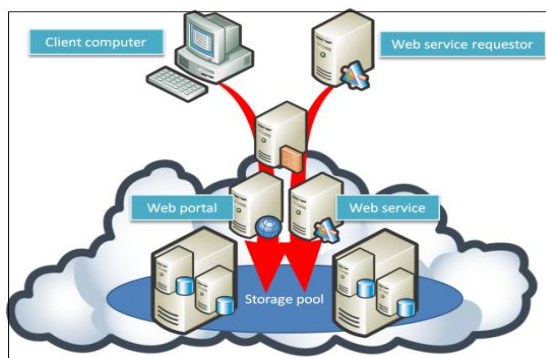


figure 2

As shown in figure2, a definition of a cloud-based storage system might be one that creates a pool of storage resources where the details of the storage solution a from the consumers of the service. Using this definition, both Public and Private Cloud providers can deliver "cloud storage" to their customers. A Public Cloud offers PaaS solutions might give customers access to their data, either through a Web portal (in the case of direct client storage) or as a Web service (more common with server-based data transactions).

C. System Architecture

System Architecture of Online Java Compiler, shown in figure 3. As shown in figure, in the system when multiple clients arrive simultaneously then our system create virtual database session and compiler instances for each arrived client. The session consists of JVM, session memory and call memory.

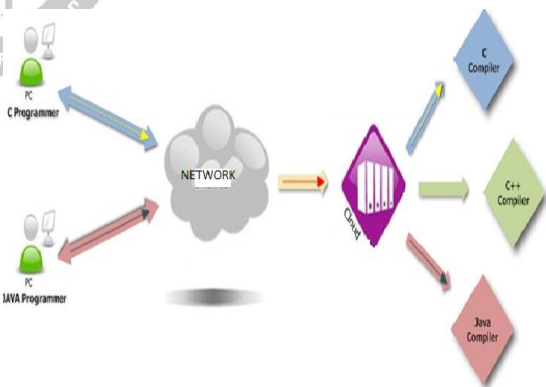


figure 3

D. Flow Chart Diagram

A. As Shown in figure 4, steps are as follows:

Step1: if the user have not registered, our system will ask for registration.

Step2: Once the user is registered, the details will be stored in the database

Step3: The folder of user's name will be created and the java code which the user is performing will be stored in this folder.

Step4: Our system will provide the user with GUI containing the text box where the user can write/edit its java code. GUI will also provide the submit button to submit the code, after which the user can check the output in the text box which is displayed below the text box in which the user have written the code.

Step5: User can also reset the text area where the code is written by clicking on reset button and also can save the code by clicking the save button.

Step6: After clicking on the submit button at the server side, the server will accept the code and convert it into .java file by its class name and will store it in the users folder.

Step7: The server will automatically compile the java file and will create the .class file and store it in the same folder. As soon as the compilation is over the server automatically will run the file and will show the output in the other text area.

Step8: If multiple clients arrives simultaneously, that many instances if java compiler will be created by the server, automatically

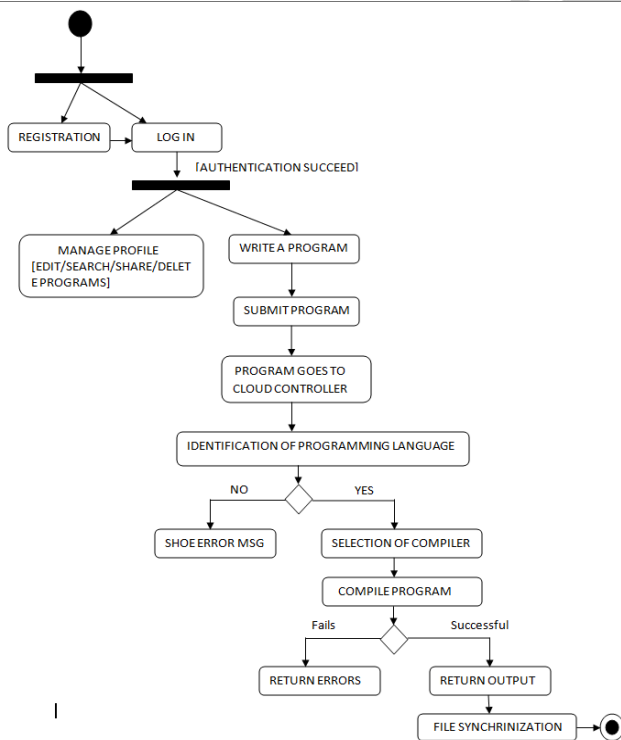


figure 4

E. Data Flow Diagram

Level 0: As shown in figure 5, User visits the web application and write the code and save it user database.

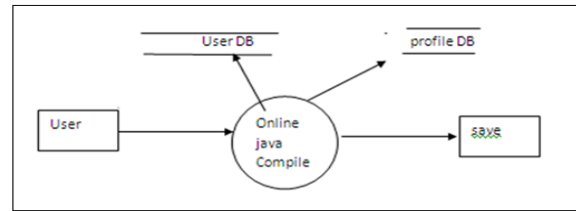


figure 5

Level 1: As shown in the figure 6, user visits the web application and register themselves , if not a registered member, then login with his userId and password. After signing in the user writes the code, cloud controller fetches the code and compiles it by assigning a compiler instances, the output will be displayed to the user. If user wishes to save the code, then he can save the code in the user's database.

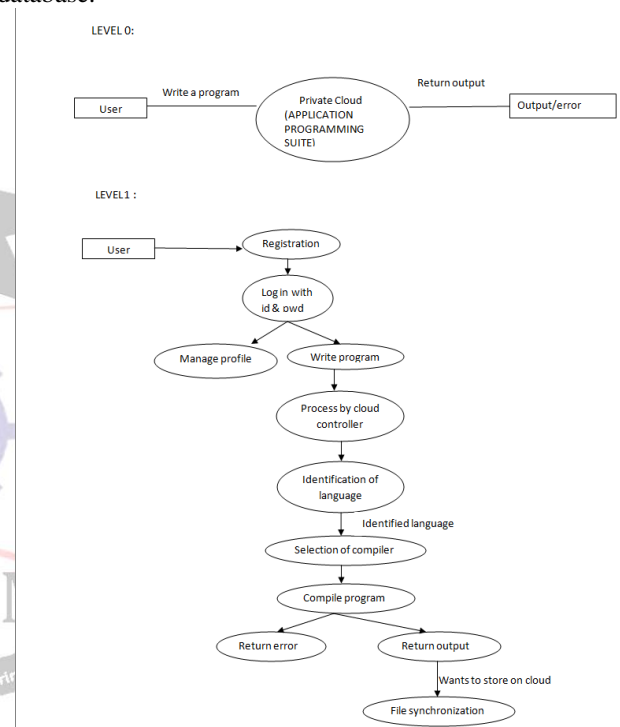


figure 6

F. Load balancing

Load balancing ensures high system availability through the distribution of workload across multiple components. Using multiple components with load balancing, instead of a single component, may increase reliability through redundancy.

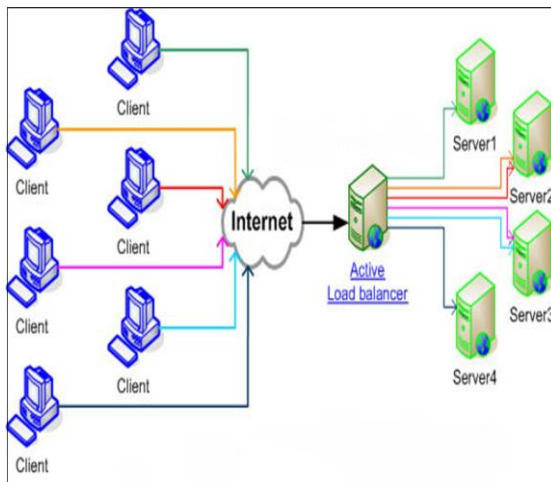


figure 7

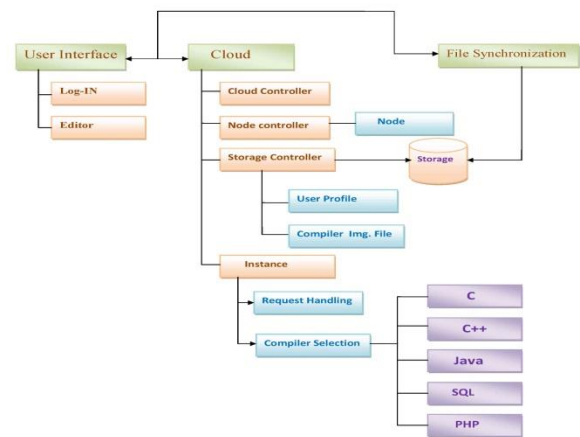


figure 9

Throttled Load Balancer Algorithm:

It maintain a record of the state of each virtual machine (busy/ideal), if a request arrive concerning the allocation of virtual machine, throttled load balancer send the ID of ideal virtual machine to the data center controller and data center controller allocates the ideal virtual machine. Formulae are as follows:[7]

Expected response time can be determined

Response Time = $F_{int} - A_{rrt} + T_{delay}$

Where, s is the arrival time of user request
 F_{int} is the finish time of user request
 A_{rrt} is request

The transmission delay can be determined

$T_{Delay} = T_{latency} + T_{transfer}$

Where, T_{Delay} is the transmission delay
 $T_{latency}$ is the network latency
 $T_{transfer}$ is the time taken to transfer the size of data of a single request (D) from source location to destination.

$T_{transfer} = D / B_{wperuser}$

$B_{wperuser} = B_{wtotal} / N_r$

Where, B_{wtotal} is the total available bandwidth
 N_r is the number of user requests currently in transmission.

figure 8

COMPARISON BETWEEN EXISTING AND MULTILANGUAGE COMPILER

Feature	Existing Online Compiler	Online Multilanguage Compiler
Storage	Does not exist. If exists, then its on trial basis or storage is paid.	Storage service is provided free to user.
Cost	Expensive	Free
No. Of Clients	5	10
compilation	Single language	Multilanguage
Extensibility & tolerance	Hard to extend as difficult to predict load	Can be easily extend through clustering and on demand access to shared pool of resources.
File synchronization	Not available	available

IV. SYSTEM EVALUATION

Modules as shown in fig.9 User interface – portal, Multilanguage compilers (c, c++, java, sql, php etc.), Storage Back-end database.

V. RESULT AND CONCLUSION

The project tries to create an online multiple programming languages compiler that acts as a layer of glue between the hardware cloud providers and the presentation of the user interface where objects are already emulated and used. It should be possible to use an array of services provided in the cloud, through published objects, in an independent and transparent way. Also project tries to implement features like file synchronization, public sharing ,Usage tracking & load balancing.

VI. FUTURE SCOPE

The project can be extended to conduct online programming test and to test our programming skills by giving you the percentage of accuracy of written code. Capability of cloud can be extended by using clusters. The concept of Clusters can be implemented for load balancing. Also, in some cases it can be possible to convert one programming language code to another. Usage tracking and pay-per-use-service are another important aspects possible to implement in this project.

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