

Android Java Compiler Using Cloud

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Abstract - Online Android Java Compiler is a user friendly compiler application that supports JAVA programming language. Using this application users can edit, browse and compile Java programs. It is less in size so it is easy to install and use. App provides portability, test algorithms and practice your skills. The word "cloud" is synonymous with the internet. Cloud symbols are frequently used to depict the Internet. The Internet can be thought of as a cloud, which provides a virtual space in which millions of users across the globe can connect to by satellite networks. Android is an UNIX based operating system which is mostly used in mobile devices/ smartphones. Developed by Google and later the OHA (Open telephone set Alliance) took the main stage. Android applications are most preferably developed using Java language. The project aims at connecting our android app with the cloud to provide hassle free services for the programmers. The programming community can take the benefit of cloud service through our app.

Key Words: Compilers, Cloud Computing, Android, Web Services, Java.

1.INTRODUCTION

The process of "Compilation" includes taking the source codes and converting into corresponding executable files. While in some cases the source code might also get converted into intermediate byte code which is then interpreted by an interpreter. But in some cases, it could take a few minutes or even more. Now, that doesn't seem like much but imagine a programmer testing new code several times a day, the amount of idle time begins to add up. Cloud computing offers you high computation power, which enables you to perform the operations swiftly. Remote compilation ensures that device's hardware resources are free to do other computing intensive tasks, like encoding/decoding, testing, rendering or number crunching of any kind. Or even if you just need it to be smooth enough for use in your daily life applications.

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." The cloud service providers (like Microsoft, Citrix, etc) provide virtual hardware and software in their datacenters based on demands from users. In this app, a user can edit or browse a Java file and when we compile it, the Java File is sent to the cloud servers where the compiler is installed. Depending on the code it returns either the correct output or an error. Not only students but the developer community across the globe can find it useful.

1.1 Concepts Used

Cloud Computing: The term "cloud" is synonymous with the internet. Cloud symbols are frequently used to depict the Internet. The Internet can be thought of as a cloud, which provides a virtual space in which millions of users across the globe can connect to by satellite networks. A cloud service comprises of many different servers present at different locations. Cloud service providers own these servers and the users use an abstraction of these. All these servers are present in many remote location. Cloud provide services over either public or private networks. Many modern web applications use cloud. E-Mail, Web Conferencing, Customer Relation Manager(CRM) mainly relies on cloud services.

Accessing the web applications as utilities is another great feature of cloud service. Cloud allows us to create, configure, customize and scale business applications over the internet. Platform independency is another advantage of using cloud services. Because of this feature the software is not required to be installed locally on the PC. Hence, the Cloud Computing is making our business applications mobile and collaborative.

Android: A complete software package comes with an android device. It includes an operating system, middleware and many day to day useful android applications. Android as a new mobile operating system was built from the scratch so that the developers can take full advantage of all the hardware resources that the handset has to offer. It was built to be truly open. For instance, an app access any of the hardware resource and can call upon any of the phone's core functionality such as making calls, sending text messages, or using the camera. This feature enables developers to create smoother and more user friendly experiences for users. Android is built on the open Linux Kernel. Android also utilizes a specifically tailored virtual machine whose purpose was to optimize memory and hardware resources in a mobile environment. As Android is an open source platform; daily it is incorporating cutting edge technologies as they emerge.

2. Tools Used

Android Studio: The process of developing android app becomes a lot easier with the help of android studio. Android Virtual Device Manager and Android Device Monitor aids in the running of the android application and makes it much easier. Gradle helps in the configuration of the the application with ease. It also ensures that there are no bugs in the code. Android Studio makes android app development process very easy and fun filled, with minimal effort and a bit of coding knowledge ,any app can be developed. Android Studio provides two ways to add UI(User interface) in the app:

1. By directly writing the required code, or
2. by using the drag and drop feature of the studio. All the necessary libraries and files required for any android app is already present in Android studio. By just clicking a button on the toolbar the android SDK can be accessed. Android Studio also provides Android Virtual Device Manager and Android Device Monitor. The AVD Manager allows you to set up Android virtual devices to test apps on. The device size , the instruction set architecture ,etc can be configured for the android device. Using the Android Device Monitor, a user can monitor anything that is happening on the device at any instance. It provides a turbocharged LogCat with a graphical user interface essentially which makes the debugging of the apps very easy.

AWS EC2: Amazon Web Services is a subsidiary of E- Commerce giant Amazon which provides cloud services. It offers such various services such as:

1. Data storage,
2. Data processing,
3. Offering software as a service,
4. Infrastructure as a service and
5. Platform as a service among other things.

AWS EC2 is very competitive with "real hosting".It is build by the clock hour not by the CPU hour.

The pricing structure of AWS EC2 is a bit expensive

,that is , \$0.10 per instance hour used. In addition to that \$0.20 per GB of Data is transferred outside Amazon

3. Working and Implementation

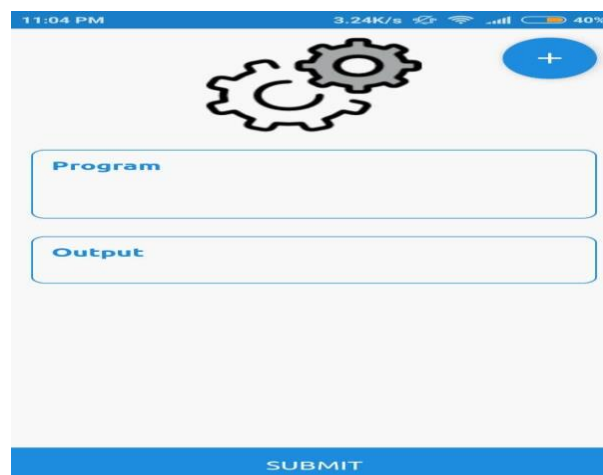


Fig 3.1: Layout of App

This application has layout as shown in the figure 3.1. We have an editor where we can write/edit our Java codes, another activity to browse a Java file. When we are done writing our code, we click on the submit button to compile the code. The Java file to be compiled is sent to the cloud servers where the compiler is installed. It returns the result which is displayed in the output area. If it's an error, it's displayed as an error in the output area, or else the correct output is displayed.

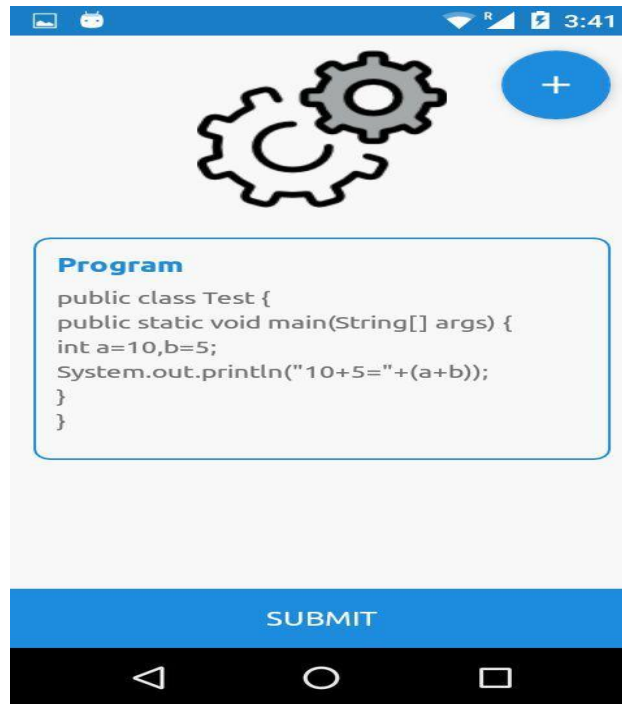


Fig 3.2: Code written in editor

Figure 3.2 shows a sample Java program for the addition of two numbers. The code is written in the editor area of the app. Once the code is written the file is stored in the directory Compiler by the respective name given.

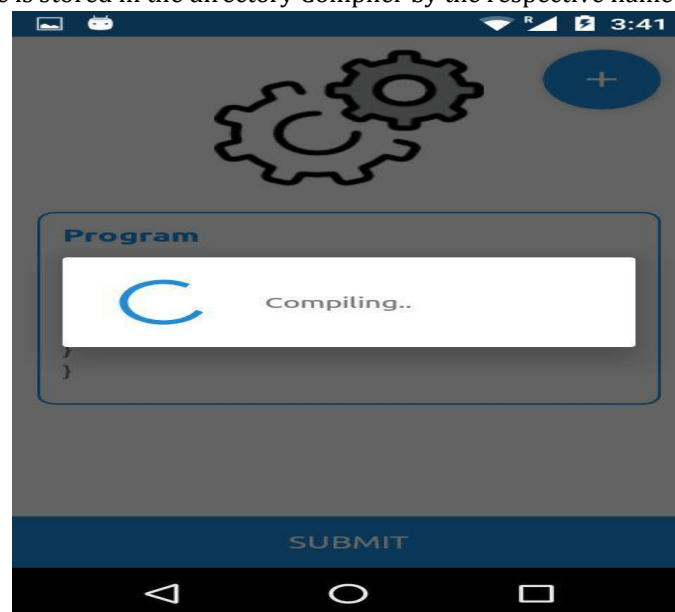


Fig 3.3: Compiling the code

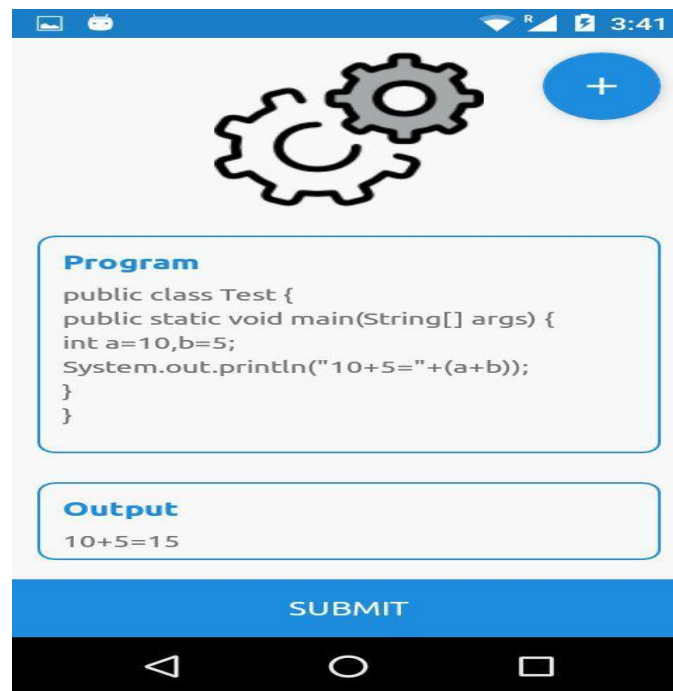


Fig 3.4 Result Displayed

After compiling, the correct results are displayed in the output area. In the given example we are compiling a simple code to add two numbers. The result is as shown in the diagram.

4. CONCLUSIONS

The main idea behind building this android application is to write java programs in the editor present in the app. The user can create and edit a new program in the text editor. The user can also open/edit java files. Once the user has written the java program he/she can upload the program on server by clicking on compile button. When user clicks on Compile button an android java activity will be executed. The result is then displayed to the user.

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