Cloud Based SQL Query Processor

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Abstract- *Cloud based SQL query processor is an effort to introduce high-level needs like graphical and features of the SQL-editing tool. It can be implemented for the various databases (DB). The work presented in this study will support the ongoing development of technologies based on them. It develop a secure web based SQL editing system that will enable the students and staff to edit, execute the SQL statements and to perform syntax checking through GUI interface with the help of online interactive support and so that one can view the database through graphical representation. Features like autocomplete/autosuggest add more user-friendliness to the system.*
Keywords- *Cloud Computing, Web service, Networking*

I   INTRODUCTION

The concept of Web Services is not new and has been around for many years now. For a person who is unaware, a better way to understand it would be to consider the example of a user who might be interested in locating a public web service that gives the weather forecast in cities. Upon invocation, the web service will respond by giving information about which services are provided by which servers. Hence, now the user knows the location of the web service but doesn't know how to invoke it. For this purpose, the web service needs to describe itself (tell us how the user should invoke it).The basic idea of a web service invocation involves sending of messages between a client and a server. For example, SOAP (Simple Object Access Protocol) specifies the format in which the requests are sent to the server and how the server should format the responses.
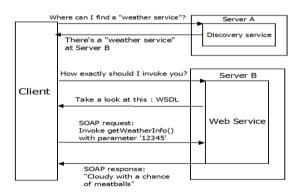

Figure 1: Web Service Discovery and Invocation

Here are various ways to access a remote database from a mobile application.

A. Accessing Remote Database on cloud using Web Services

One of the most common methods to do so is by using the concept of web services. Web Services are platform independent and language independent since they use standard XML languages. Moreover, majority of the web services use Hypertext Transport Protocol (HTTP) for transmitting the messages.One of the most interesting features of a web service is that they are self-describing. This means that once a web service is located we can ask it to describe itself and tell what operations it supports and how to invoke it. This is handled by the Web Service Description Language (WSDL).
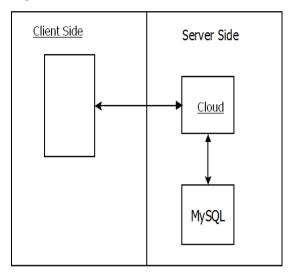
B. Accessing cloud database using Java

Figure 2: Using JWS to access remote database

The reason for choosing Java Web Start is because of the interaction with databasesit can offer. As seen in igure2, when one queries a MySQL database server, he first needs to establish the connection and provide the necessary credentials. These credentials and the connection allow us to call queries and tables on the database server. The client side has GUI for querying the server side has cloud on which MySQL is deployed. shown in Figure 2

II   Proposed System

Based on the concepts discussed above our system primarily focuses on building an efficient and user friendly application for an SQL Query processing. The application will be installed on the users computer. It intends to provide an interface to the user who will require minimal details to input for writing particular SQL query for accessing database.Apart from that, the application would support strong user authentication and quick transmission of data via the web service.Another noticeable feature of the entire application would be that no data would be stored on the user device in any form whatsoever.

III   Modular Design

Our proposed system is divided into four distinct modules described as follows:

1. **User authentication**: Initially, when the user runs the application for the first time, a login screen will be displayed that will prompt the user to enter the username and password required for 2 way authentication. The user will be provided with a unique username which would be a combination of alphanumeric characters. Also he receives password on his registered mobile as 2nd stage of authentication .Only when the user enters the correct username and password, a "success" message will be displayed and the user will get authenticated and directed to the next screen.

2. **Calling of Web Service**: In this module, the user will need to write SQL query after writing a query he will press submit as soon as he press submit web service is invoked & user query is passed to server for processing it & returning result.

3. **Query processing**: At the server side i.e. on cloud the query is processed by the database for which user has made request using MySQL as Software as a Service (SaaS) & result is obtained. This result is finally responded to the user via web service

4. **Display result on client side**: Once the server response is received the result is displayed on user's device with proper formatting. There is also provision of interactive tables through which user can edit table data just like data grid in Visual Basic 6

IV   FLOW DIAGRAM OF PROPOSED SYSTEM

The flowcharts of the various modules are described as follows:

A. User authentication process

This is the initial process of the system. The user needs to enter the username and password. Accordingly, depending on whether the user is authenticated, a "success" or "failure" message will be displayed.
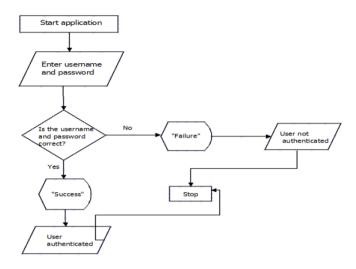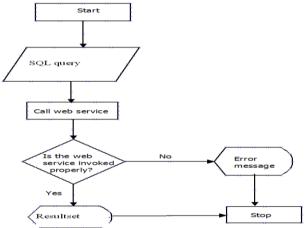
Figure 3 : Flowchart for user authentication process

B. Calling of Web Service

Once the user has entered the required details to begin the process, a web service needs to be called in order to generate a result of written query. Depending on the input, the details are fetched from the remote database and displayed on the application.

V   Technical Requirements

Software requirements of our system are:
1. Windows XP/ Windows 7 Operating System
2. Cloud (Eucalyptus)
3. J2SE
4. Netbeans IDE
5. MySQL 5.5 server
6. Glassfish Server.

As far as the hardware requirements are concerned, one needs to have a Pentium 4 processor or later with a minimum RAM of 1GB and a HDD of 80GB or more. It should also have a well-equipped network adapter. The user would require an machine with internet access & JVM installed on it.

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VI   IMPLEMENTATION

The following modules are successfully implemented:

E. User Authentication

Client side: The user authentication module on the client side involved the development of a login screen in the application. For this purpose, standard Graphical User Interface (GUI) that consists of buttons and textboxes were developed. The button is also associated with an action that sends the input parameters in the textboxes to the remote database via a web service. Server side: Similarly, on the server side the user/admin needed to enter the correct username and password for logging into the system.

F. Calling of Web Service

After user authentication he writes a query in provided GUI . After writing query he will press submit as soon as he press submit web service is invoked & user query is passed to server for processing it & returning result.

G. Query processing:

At the server side i.e. on cloud the query is processed by the database for which user has made request using MySQL as Software as a Service (SaaS) & result is obtained. This result is finally responded to the user via web service

VII   FUTURE SCOPE

In future our system plans on including multiple databases at cloud like Oracle, Microsoft SQL server, Microsoft Access etc Also in future our system plan to include GUI for various smartphone devices like android devices, apple devices & tablets etc.

VIII   Conclusion

In this paper, A cloud base SQL query processor is presented. The application offers reliability, time savings and easy control. It can be used as a base for creating similar applications for tracking attendance in offices or any workplace. It can be also integrated in healthcare sector to keep track of nurse to patient visits by streamlining the time entry, time approval and management processes

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