

Database Management by Using Java Database Connectivity Architecture of JAVA

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Abstract- This paper consist of Java database connectivity (JDBC).The JDBC consists of a set of interfaces and classes written in the Java programming language .This shows how the JDBC environment provides the facility to manage database for multiple applications for updating, retrieving, modify. First three steps are, Selecting the required driver for DSN, specifying the connection details for DSN and testing the creating DSN. The DSN consist of specific information for data.

Keywords: Java database connectivity, Data source name database connectivity.

I. INTRODUCTION

Java applications cannot directly communicate with a database to submit data and retrieve the results of queries. This is because a database can interpret only SQL statements and not Java language statements. For this reason, there is need a mechanism to translate Java statements into SQL statements. The JDBC architecture provides the mechanism for this kind of [1] translation. The JDBC provides maximum flexibility to developers.

The JDBC architecture can be classified into two layers:

➤ **JDBC application layer:** Java application that uses the JDBC API to interact with the JDBC drivers. A JDBC driver is software that a Java application uses to access a database. The JDBC driver manager of JDBC API connects the Java application to the driver.

➤ **JDBC driver layer:** Acts as an interface between a Java application and a database. This layer contains a driver, such as a SQL Server driver or an Oracle driver, which enables connectivity to a database. A driver send request of a Java application to the database. After processing the request, then database sends the response back to the driver. Then driver translates and sends the response to the JDBC API. The JDBC API forwards it to the Java application. When the environment is set up, then it ready to start sending SQL commands to database using JDBC.[2] So there is need to first connect to the database, which is a fairly simple process. Load the database driver and then request a connection.

For this connection code is: Class. For name ([Location of Driver]); connection JDBC connection = Driver manager. Get connection. (Location of data source);

Manuscript published on 30 February 2013.

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The JDBC driver can communicate with particular data source being accessed and commands are delivered to the database or other data source. The results of those statements are sent back to the user. The data source may be located on another machine to which the user is connected via a network. The client/server configuration, with the user's [3] machine as the client, the machine housing the data source as the server. The network can be an intranet, which, for example, connects employees within a corporation, or it can be the Internet.

Two tier architecture of JDBC for data access.

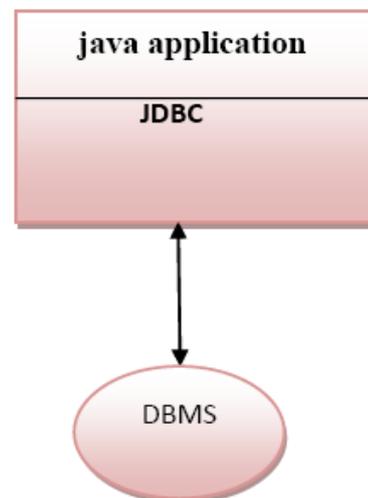


Figure 1.Two tier JDBC architecture

This Two tier architecture consist of three components:

- Client machine.
- DBMS proprietary protocol.
- Database server.[3]

The three tier architecture of JDBC for data access:

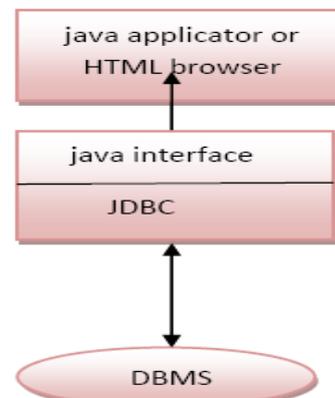


Figure 2.Two tier architecture of JDBC for data access.

This two tier architecture consists of four components:

- Client Machine.
- Server Machine.
- DBMS proprietary protocol.
- Database server.

The application retrieve information (author id, name, address, city, and state) Authors who are living in the city where the city-name begins with the letter 'O'. Before developing this type of code there is need to set up this.

1. Create a data source-name (DSN).
 - Consider a scenario, where develop an application for an Airlines company to maintain a record of daily transactions. Install SQL Server, design the airlines database, and ask Airlines personnel to use it. Will the database alone be of any use to the Airline personnel? The answer is No! The task of updating the data in SQL Server by using SQL statements alone will be a tedious process. An application will need to be developed that user friendly and provides a client, the options to retrieve, add, and modify data at the touch of a key.
 - This program will show how the database is maintained JDBC. It are consist of two processes:
 - Store and update the data in the database.
 - Retrieve the data stored in the database and present it to users in a proper format.

Code for retrieve information

```
import java.sql.*;
public class authorinfo
{
    public static void main(String arg[])
    {
        try
        {
            String str="SELECT * FROM
            authors WHERE city LIKE 'O%'";

            Class.forName("sun.jdbc.odbc.JdbcOdbc
            Driver");

            Connection
            con=DriverManager.getConnection("jdbc:odbc:
            amandatasource","sa","sa123");

            Statement
            stat=con.createStatement();

            ResultSet
            rs=stat.executeQuery(str);

            System.out.println("Author ID\t First
            Name\t Last Name\t City");
            while(rs.next())
            {
                String
                id=rs.getString("au_id");
                String
                lname=rs.getString("au_lname");
                String
                fname=rs.getString("au_fname");
                String
                city=rs.getString("city");

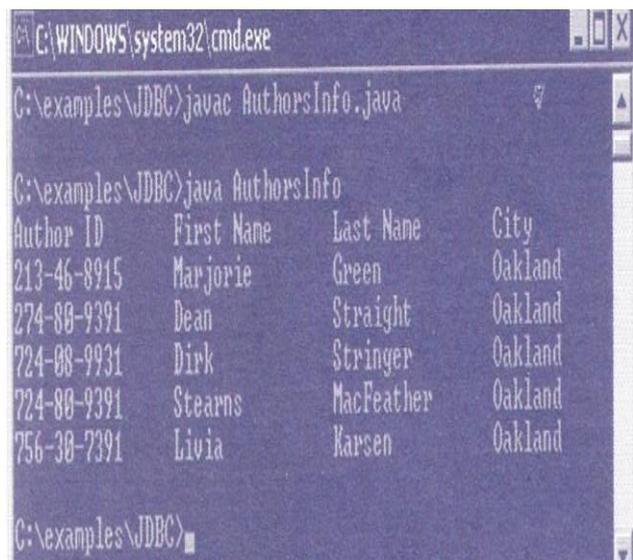
                System.out.print(id+"\t");
```

```
if(fname.length() <=7)
    {
        System.out.print(fname+"\t");
    }
    else
    {
        System.out.print(fname+"\t");
    }
    if(      lname
    .length() <=7)
    {
        System .out.print(lname+"\t")
    }
    else
    {
        System.out.print(lname+"\t");
    }
    System.out.println(city);
}
con.close();
}
}
catch(Exception ex)
{
    System.out.println("error occured:"+ex);
}
}
```

Compile and Execute the code

To compile write the following in cmd Javac authorinfo.java
To execute write the following in cmd Java authorinfo.java

OUTPUT BASED ON ABOVE PROGRAM



Conclusion: Java's JDBC API gives a shared language which application can talk to database engines. There are set of classes for particular database engine. This above scenario shows how the JDBC architecture work to maintain the database for airline system and provides a client, the options to retrieve, add, and modify data. In the future work will to provide more flexibility in this process.

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