

A STUDY ON ADVANCE JAVA WITH DATABASE MANAGEMENT

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ABSTRACT

This paper gives a short description about the java and database connectivity. It describes the advance java features with database

connectivity. It also describes the application programming interface with applets and swings. This paper explains about the java and its connectivity with database. It describes the structured query language as a data definition and data manipulation language. It also defines the java platform.

1. INTRODUCTION

Java is a high-level object-oriented programming language developed by the Sun Microsystems. Though it is associated with the World Wide Web but it is older than the origin of Web. It was only developed keeping in mind the consumer electronics and communication equipment's. It came into existence as a part of web application, web services and a platform independent programming language in the 1990s. Earlier, C++ was widely used to write object oriented programming languages, however, it was not a platform independent and needed to be recompiled for each different CPUs. A team of Sun Microsystems including Patrick Naughton, Mike Sheridan in the guidance of James Goslings decided to develop an advanced programming language for the betterment of consumer electronic devices. They wanted to make it new software based on the power of networks that can run on different application areas, such as computers and electronic devices.

1.1 API

Application programming Interface is a set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service.

There are 3 types of Java Programming Language Application Programming Interfaces (APIs)

- 1) The official core Java API, contained in the JDK or JRE, of one of the editions of the Java Platform. The three editions of the Java Platform are
Java ME (Micro edition), Java SE (Standard edition), and Java EE (Enterprise edition).
- 2) Optional official APIs that can be downloaded separately. The specification of these APIs are defined according to a Java Specification Request (JSR), and sometimes some of these APIs are later included in the core APIs of the platform.

- 3) Unofficial APIs, developed by third parties, but not related to any JSRs.

1.2 APPLETS

In computing, an applet is any small application that performs one specific task that runs within the scope of a dedicated widget engine or a larger program, often as a plug-in. The term is frequently used to refer to a Java applet, a program written in the Java programming language that is designed to be placed on a web page. Applets are typical examples of transient and auxiliary applications that don't monopolize the user's attention. Applets are not full-featured application programs, and are intended to be easily accessible.

1.3 SWING

Swing is the primary Java GUI widget toolkit. It is part of Oracle's Java Foundation Classes (JFC) — an API for providing a graphical user interface (GUI) for Java programs. Swing was developed to provide a more sophisticated set of GUI components than the earlier Abstract Window Toolkit (AWT). Swing provides a native look and feel that emulates the look and feel of several platforms, and also supports a pluggable look and feel that allows applications to have a look and feel unrelated to the underlying platform. It has more powerful and flexible components than AWT. In addition to familiar components such as buttons, check boxes and labels, Swing provides several advanced components such as tabbed panel, scroll panes, trees, tables, and lists.

1.4 JAVA SOFTWARE: NETBEANS

Net Beans is a integrated development environment (IDE) for developing primarily with Java, but also with other languages, in particular PHP, C/C++, and HTML5-

It is also an application platform framework for Java desktop applications and others. The Net Beans IDE is written in Java and can run on Windows, OS X, Linux, Solaris and other platforms supporting a compatible JVM. The Net Beans Platform allows applications to be developed from a set of modular software components

called modules. Applications based on the Net Beans Platform (including the Net Beans IDE itself) can be extended by third party developers. The Net Beans Team actively support the product and seek feature suggestions from the wider community. Every release is preceded by a time for Community testing and feedback.

1.5 FEATURES OF ADVANCE JAVA

Java is Simple:

Java is easy to learn and developed by taking the best features from other languages mainly like C and C++.

Java is Platform Independent

Java provides the facility to "Write once -Run anywhere. Java Provide the facility of cross-platform programs by compiling in intermediate code known as byte code. this byte code can be interpreted on any system which have Java Virtual Machine(JVM).

Java is Object-oriented

The object oriented language must support the characteristics of the OOPs and Java is a fully object oriented language . it supports all the characteristics needed to be object oriented.

Java is Distributed

The widely used protocols like HTTP and FTP are developed in java. Internet programmers can call functions on these protocols and can get access the files from any remote machine on the internet rather than writing codes on their local system.

Java is Portable

The feature of java "write once -run anywhere" make java portable. Many type of computers and operating systems are used for programs By porting an interpreter for the Java Virtual Machine to any computer hardware/operating system, one is assured

that all code compiled for it will run on that system. This forms the basis for Java's portability.

2. DATABASE MANAGEMENT

Database is the information, held over a period of time in computer platform. A database is a shared collection of interrelated data designed to meet the varied information needs of an organization. Consider an example, in a payroll application each person's record has NAME, AGE, DESIGNATION, BASIC PAY etc as columns. So payroll database has collection of all employees of all employees records, that are interrelated. From the database, various reports like payslip, persons with particular designation, service report etc can be obtained. The database acts as a media to store the data in an organized way so that it can be managed effectively. A database has two important properties: It is integrated and shared.

2.1 SQL AS A DATA DEFINITION LANGUAGE

SQL is used to define a database means creating a database, creating tables and adding them to a database, updating the design of existing tables, and removing tables from a database. The Create Database Statement. The CREATE DATABASE Statement can be used to create a database:

The Create Table Statement : The CREATE TABLE statement creates a table and adds it to the database:

```
CREATE TABLE tableName (columnDefinition,... , columnDefinition)
```

Each columnDefinition is of the form ColumnName columnType

The columnName is unique to a particular column in the table. The columnType identifies the type of data that may be contained in the table. Common data types are

Char(n) - An n character text string

Int - An integer value

Float - A floating point value

Bit - A boolean (1 or 0) value

The following is an example of a CREATE TABLE statement:

```
CREATE TABLE Customers (  
CustName char(30),
```

```
Company char(50),  
Cust_rep integer,  
Credit_limit money  
)
```

SQL is also used as a data manipulation language. One of the primary uses of SQL is to update the data contained in a database. There are SQL statements for inserting new rows into a database, deleting rows from a database, and updating existing rows.

2.2 JDBC

Java Database Connectivity in short called as JDBC. It is a java API which enables the java programs to execute SQL statements. It is an application programming interface that defines how a java programmer can access the database in tabular format from Java code using a set of standard interfaces and classes written in the Java programming language.

JDBC has been developed under the Java Community Process that allows multiple implementations to exist and be used by the same application. JDBC provides methods for querying and updating the data in Relational Database Management system such as SQL, Oracle etc.

The Java application programming interface provides a mechanism for dynamically loading the correct Java packages and drivers and registering them with the JDBC Driver Manager that is used as a connection factory for creating JDBC connections which supports creating and executing statements such as SQL INSERT, UPDATE and DELETE. Driver Manager is the backbone of the jdbc architecture.

Generally all Relational Database Management System supports SQL and we all know that Java is platform independent, so JDBC makes it possible to write a single database application that can run on different platforms and interact with different Database Management Systems.

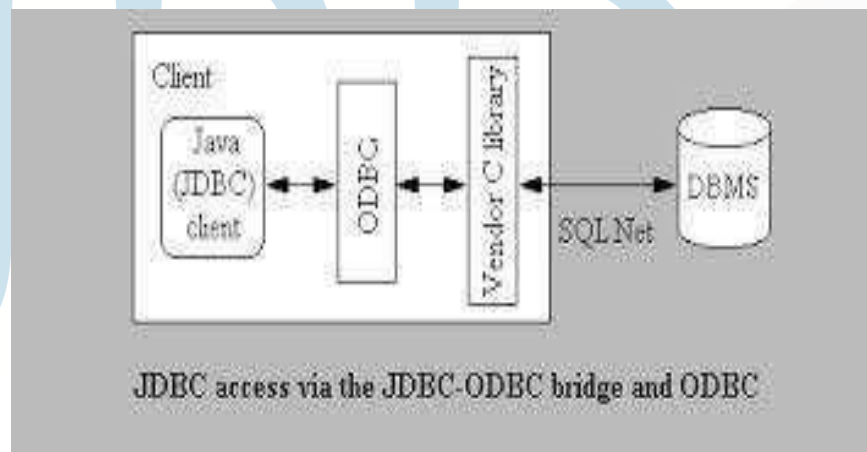
In short JDBC helps the programmers to write java applications that manage these three programming activities:

1. It helps us to connect to a data source, like a database.

2. It helps us in sending queries and updating statements to the database and
3. Retrieving and processing the results received from the database in terms of answering to your query.

2.3 MICROSOFT ODBC

Many database servers use vendor-specific protocols. This means that a database client has to learn a new language to talk to a different database server. However, Microsoft established a common standard for communicating with databases, called Open Database Connectivity (ODBC). Until ODBC, most database clients were server-specific. ODBC drivers abstract away vendor-specific protocols, providing a common application-programming interface to database clients. By writing your database clients to the ODBC API, we enable our programs to access more database servers.



3. DATABASE CONNECTIVITY

Java Database Connectivity (JDBC) is an implementation of the Java programming language that dictates how databases communicate with each other. Through a standardized application programming interface (API), connectivity from database management systems (DBMS) to a wide range of SQL databases is accomplished. By deploying database drivers laced with JDBC technology, it is possible to connect to any database -- even in a heterogeneous environment -- and access tables, tabular data, flat files and more. When using JDBC, Java programmers have

the ability to request connections to a database, send queries to the database using SQL statements, and receive results for advanced processing.

The JDBC DriverManager class defines objects which can connect Java applications to a JDBC driver. DriverManager has traditionally been the backbone of the JDBC architecture. It is quite small and simple.

JDBC drivers are divided into four types or levels. The different types of jdbc drivers are:

Type 1: JDBC-ODBC Bridge driver (Bridge)

Type 2: Native-API/partly Java driver (Native)

Type 3: All Java/Net-protocol driver (Middleware) Type 4: All Java/Native-protocol driver (Pure)

4. ADVANTAGES OF ADVANCE JAVA

5.

1. Java is a lot more complicated language than C. If we are going to learn programming, start with something simple like BASIC, JavaScript, or C. Don't start with the advanced stuff like Java or C++.
2. A Java program can run on any computer. JavaScript is the same way. It can run on any platform. Nowadays it can also run on most cell phones, which is neat. Some cell phones don't run Java, but they can run JavaScript. C language is different. Once you compile a C program, it can only run on one type of processor. The problem is that with cross-platform languages, you can't do too many things.
3. Java is slow, as previously mentioned. It's not only slow to run, but it's slow to develop. For some reason, when we compile a Java program, we have to wait more than we would wait to compile the same program in C. The Java compiler is sluggish.
4. Free. It's free. I have never paid a dime to be able to program in Pascal, C, or assembly. Most compilers are free. There are compilers that cost a lot of money, but there are free alternatives too.

5. CONCLUSION

This paper gives a short description about the java and database connectivity. It is an application programming interface that defines how a java programmer can access the database. It can also run on most cell phones. Java is easy to learn and developed by taking the best features from other languages mainly like C and C++. There are SQL statements for inserting new rows into a database, deleting rows from a database. With the data base approach, previously separate data files are integrated into a single, logical structure.

6. REFERENCES

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