JEE :: Advanced JDBC

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Advanced JDBC

The content in this presentation is aimed at teaching learners to:

- Operations performed by database engine
- Programming interaction on Statement interface
- Flow of Statement interface working
- Problems with Statement interface

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The content in this presentation is aimed at teaching learners to:

- Understanding PreparedStatement
- Flow of PreparedStatement working
- Programming Interaction

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Operations Performed By Database Engine

- Most databases handles JDBC/Sql Query in four steps
  - Parse the incoming query.
  - Parse the incoming query.
  - Optimize the data path.
  - Execute the optimized query to acquire and return data
- In JDBC, Statement interface and it's sub interface known as PreparedStatement interface are used to query the database.

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Statement Interface Example

```
import java.sql.*;
public class JDBCExample {
    public static void main(String[] args) {
        Connection conn = null;
        Statement stmt = null;
        String sql=âĂİâĂİ;
        try{
            //STEP 2: Register JDBC driver
            Class.forName("com.mysql.jdbc.Driver");
            conn = DriverManager.getConnection(âĂIJjdbc:
    mysql://localhost:3306/mysqlâĂİ, USER, PASS);
            stmt = conn.createStatement();
```

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```
            sql = "INSERT INTO Registration VALUES (100, '
        Veer',19)";
            stmt.executeUpdate(sql);
            sql = "INSERT INTO Registration VALUES (101, '
        Zara', 18)";
            stmt.executeUpdate(sql);
            System.out.println("Inserted records into the table
        ...");
            }
            catch(SQLException se) {
                //Handle errors for JDBC
                se.printStackTrace();
            }
            catch(Exception e) {
                //Handle errors for Class.forName
                e.printStackTrace();
            }
        }
    }
```

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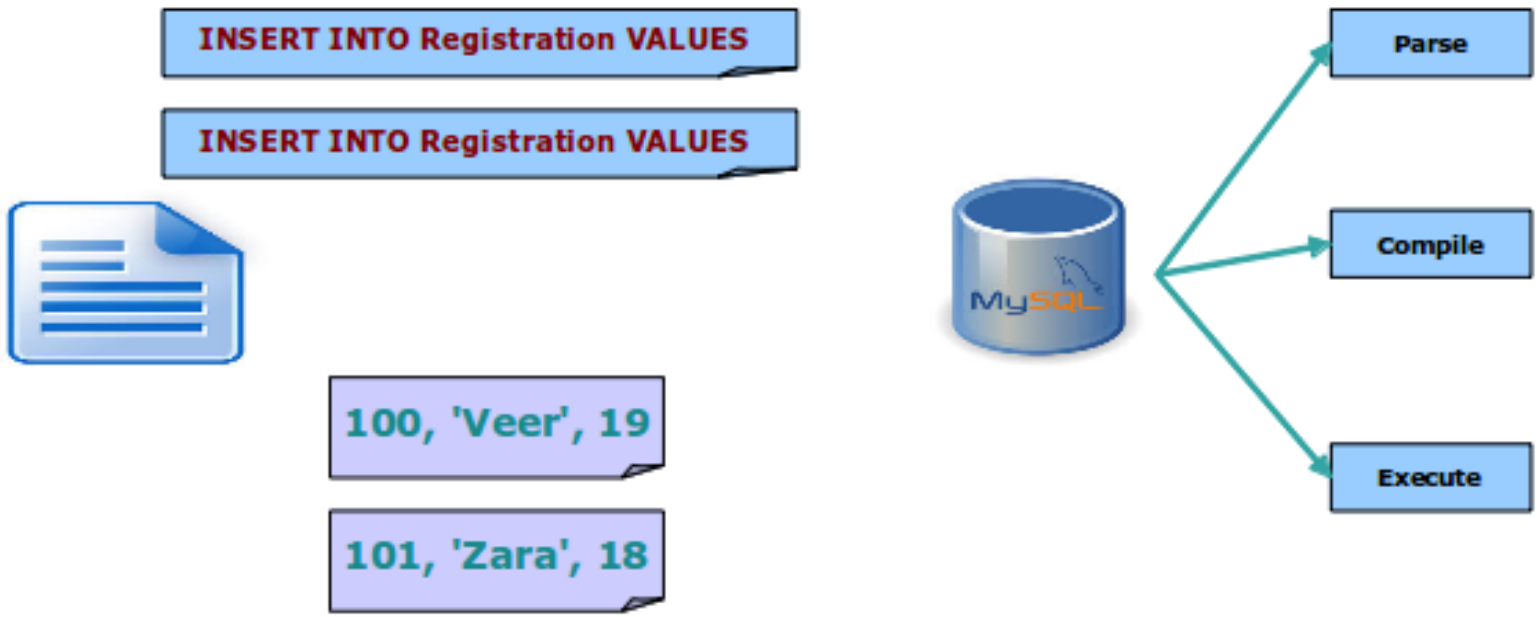
Working of Statement Interface Let us understand how Statement interface is working



It is clear now for every new statement database has to do parsing, compiling and executing operations always.

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Problems With Statement Interface

- Database parses the same query multiple times, executes and fetches the result.
- All four steps that is parsing, compiling, optimizing, fetching are always repeated.
- Network traffic to the Database is heavy since same query goes multiple times.
- To overcome this problem we have to use precompiled statements.

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PreparedStatement

- It is inherited from Statement interface.
- In database management systems, a prepared statement or parameterized statement is a feature used to execute the same or similar database statements repeatedly with high efficiency
- It pre-executes parsing, compiling, optimizing. Thus, when creating PreparedStatement some optimization is done immediately.

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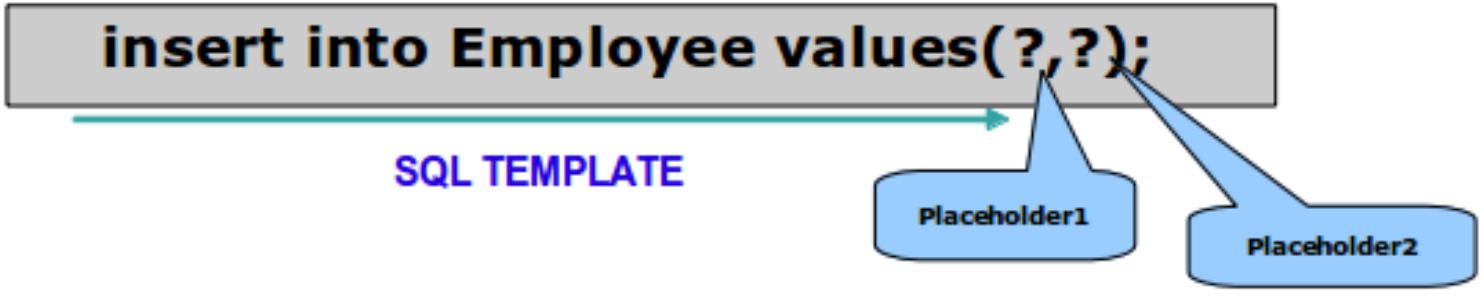
PreparedStatement

- The statement template is created by the application and sent to the database management system (DBMS). Certain values are left unspecified, called parameters, placeholders or bind variables (labelled “?” below):



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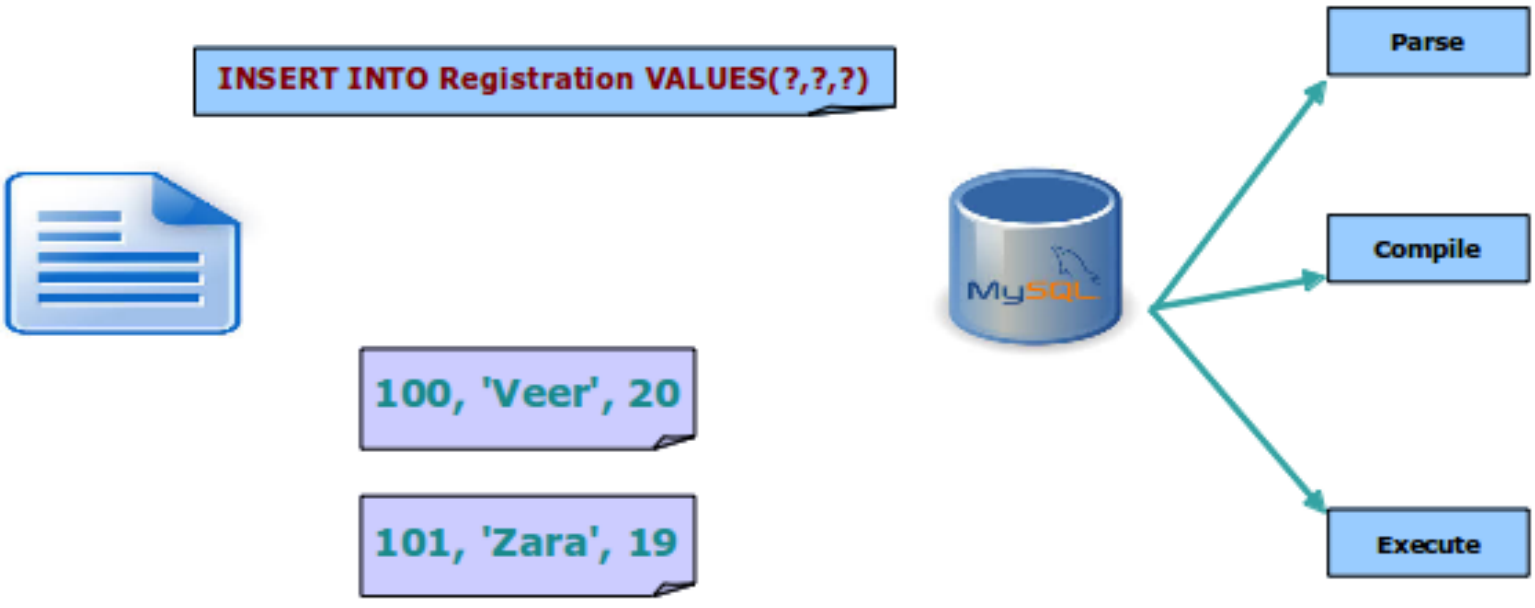
PreparedStatement Working



As we could see that PreparedStatement is parsed and compiled only once and execute many times using new values.

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PreparedStatement Interface

```
PreparedStatement ps = cn.PrepareStatement
   ("UPDATE emp SET eName= ? WHERE empno = ?");
```

First Parameter

Second Parameter

Supplying values for parameters

```
ps.setString(1,"Tom");
```

Value of the First Parameter

```
ps.setInt(2,101);
```

Value of the Second Parameter

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Rules to Remeber

Same ResultSet object should not be used again once it is terminated by while loop

```
ResultSet
rs=st.executeQuery("Select *
from emp");
while(rs.next())
{
System.out.println(rs.getInt("em
pno"));
}
```

```
ResultSet
rs1=st.executeQuery("Select *
from emp");
while(rs1.next())
{
System.out.println(rs.getInt("emp
no"));
}
```

The "rs" object is used again which will cause "operation not allowed again"

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Rules to Remeber

But using same ResultSet reference we can derive many results at different places in the program

```
ResultSet rs=st.executeQuery("Select *
from emp");
while(rs.next())
{
System.out.println(rs.getInt("empno"));
}
```

```
rs=st.executeQuery("Select * from emp");
while(rs.next())
{
System.out.println(rs.getInt("empno"));
}
```

This time "rs" will retrieve result

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