Lets Start With JDBC……

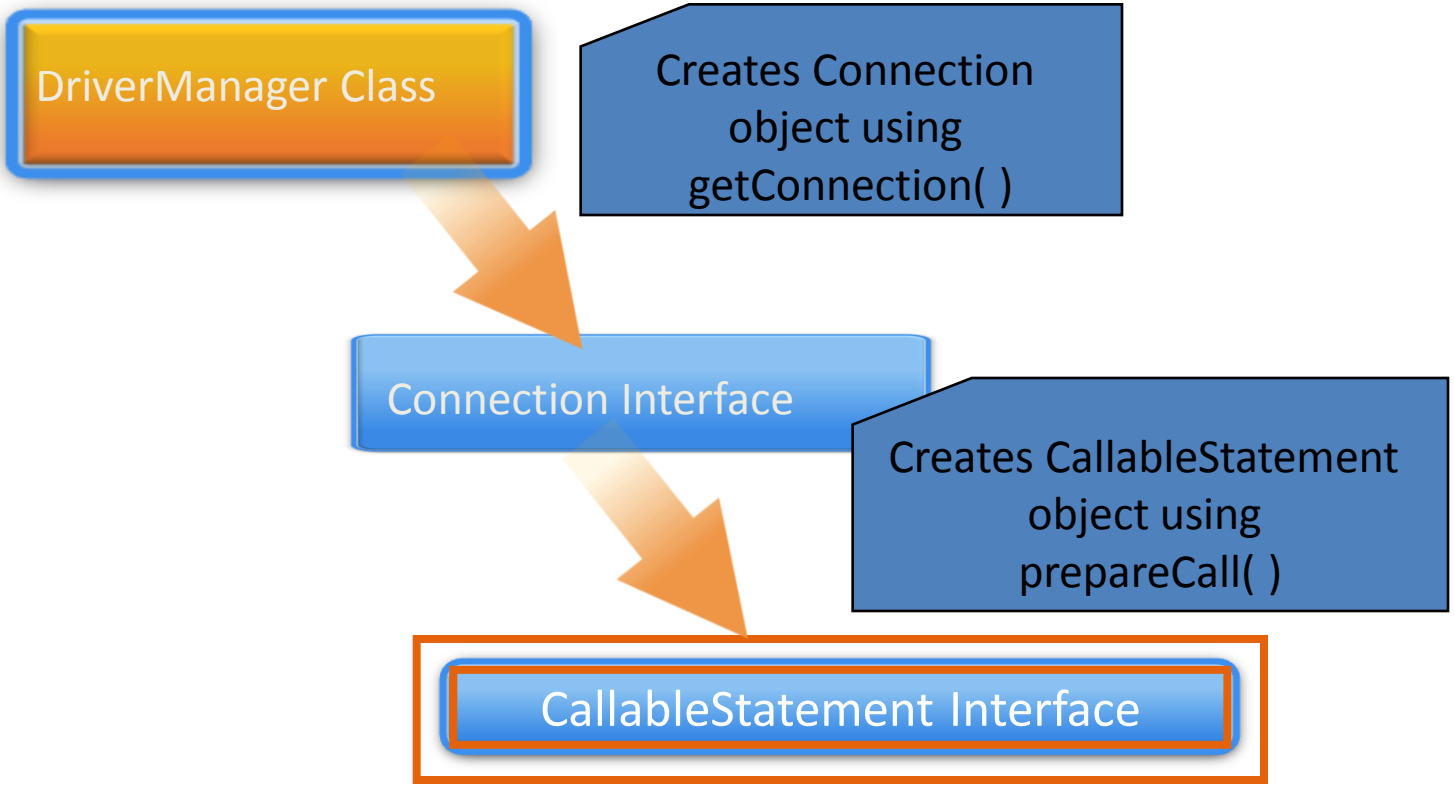
JDBC | Query To Database

Query database (Select or insert/update/delete)

- Create Statement Object
  - Create Object of Statement Interface OR
  - Create Object of PreparedStatement Interface OR
  - Create Object of CallableStatement Interface
- Execute the Query
  - Using Methods of CallableStatement Interface

JDBC | Query To Database using CallableStatement

Create object of CallableStatement Interface



JDBC | Steps for CallableStatement

The basic steps are:

Step 1: Connection.prepareCall method to create a CallableStatement object.

Step 2: CallableStatement.setXXX methods to pass values to the input (IN) parameters.

Step 3: The CallableStatement.registerOutParameter method to indicate which parameters are output-only (OUT) parameters or input and output (INOUT) parameters.

Step 4: One of the following methods to call the stored procedure:

CallableStatement.executeUpdate: Invoke this method if the stored procedure does not return result sets.

CallableStatement.executeQuery: Invoke this method if the stored procedure returns one result set.

CallableStatement.execute: Invoke this method if the stored procedure returns multiple result sets.

Step 5: If the stored procedure returns result sets, retrieve the result sets. Invoke the CallableStatement.getXXX methods to retrieve values from the OUT parameters or INOUT parameters.

Step 6: The CallableStatement.close method to close the CallableStatement object when you have finished using that object.

JDBC | Query To Database using CallableStatement

Create a procedure

Example :

```
Create or replace procedure remove (name varchar2) as
Begin
    Delete from emp where emp.Empname=name;
End;
```

JDBC | Query To Database using CallableStatement

Create a object using prepareCall Method of Connection Interface

Syntax :

Public CallableStatement prepareCall(String sql) throws SQLException

Example :

```
CallableStatement cst;
cst = con.prepareCall("{call remove( ? )}" );
```

JDBC | Query To Database using CallableStatement

Merge all values in SQL query where ? is given

To merge value of ? we have to use setXXX methods of CallableStatement. Syntax of setXXX methods:

setXXX(parameterIndex,parameterValue)

Example :

```
CallableStatement cst;
cst = con.prepareCall("{call remove( ? )}" );
cst.setString(1, "Dhruvi");
```

JDBC | Query To Database using CallableStatement

Execute Query using method of CallableStatement

Following are 3 different execute methods available in CallableStatement Interface:

1. executeQuery( ):
   public ResultSet executeQuery( ) throws SQLException
   Used with select query
2. executeUpdate( ):
   public int executeUpdate( ) throws SQLException
   Used with insert, update, delete, alter table etc.
3. execute( ):
   public boolean execute( ) throws SQLException
   Generally used with multiple results are generated.
   Also used with Create table query.

Example :

```
CallableStatement cst;
cst = con.prepareCall("{call remove( ? )}" );
cst.setString(1, "Dhruvi");
cst.executeUpdate( );
```

Define the call to the Database procedure

Procedure with no parameters.
{ call procedure_name }

Procedure with input parameters.
{ call procedure_name(?, ?, ...) }

Procedure with an output parameter.
{ ?= call procedure_name }

Procedure with input and output parameters.
{ ? = call procedure_name(?, ?, ...) }

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Using Database Transactions

- When a database is updated, by default the changes are permanently written (or committed) to the database.
- However, this default behavior can be programmatically turned off.
- If autocommitting is turned off and a problem occurs with the updates, then each change to the database can be backed out (or rolled back to the original values).
- If the updates execute successfully, then the changes can later be permanently committed to the database. This approach is known as transaction management.

Using Database Transactions

- The default for a database connection is autocommit; that is, each executed statement is automatically committed to the database.
- Thus, for transaction management you first need to turn off autocommit for the connection by calling setAutoCommit(false).
- Typically, you use a try/catch/finally block to properly handle the transaction management.
- First, you should record the autocommit status.
- Then, in the try block, you should call setAutoCommit(false) and execute a set of queries or updates.
- If a failure occurs, you call rollback in the catch block; if the transactions are successful, you call commit at the end of the try block.
- Either way, you reset the autocommit status in the finally block.

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THANK YOU