Assignment NO. A8

DOP : 06-10-2021   DOS : 30-11-2021

Title :- Database Connectivity :

Problem Deffinition :-

Write a program to implement MySQL/ Oracle database connectivity with any front end language to implement Database navigation operations (add, delete, edit etc.).

Objective :-

① To implement MySQL/Oracle database connectivity with any front end language -

② To implement database navigation operations.

Learning Outcome :-

After completion of the assignment, students will be able to use JDBC concepts to implement application using Java & SQL.

THEORY :-

The following 5 steps are basic steps involved in connecting Java application with

database using JDBC.

1.] Register the Driver
2.] Create a connection
3.] Create SQL statement
4.] Execute SQL statement
5.] Closing the connection.

1.] __Register the Driver :-__

JDBC API provides method class. forName()
which is used to load the driver class
explicitly which is used to load jdbc-odbc
driver and mongodb driver, we call it
like —

class . forName ("sun.jdbc.odbc.JdbcOdbcDriver");
and
class. forName ("mongodb.jdbc.MongoDriver);

2.] __Create Connection :-__

Connection is created using create getConnection()
method of drivermanager class. Basically
this method requires database name,
username and password to establish connection.

__Syntax :-__

getConnection (string url);

getConnection (string url, string username, string
                                             password);

getConnection (string url, properties info);

Connection con = DriverManager.getConnection(
        url, username, password);

3.] Create SQL statement :-

To create statement object. createStatement() method is used. It is used to execute SQL queries and defined in connection class.

Syntax :-

public statement createStatement () throws SQL-
                      Exception

Example,
statement s = con.createStatement ();

4.] Execute SQL Statement :-

To execute created statement, executeQuery() method is used.

Syntax :

public ResultSet executeQuery (string query)
                throws SQL.Exception

Example,

```
ResultSet rs = s.executeQuery (select * from
                                        user )

while (rs.next())
{
        System.out.println (rs.getstring(1) + " " +
                              rs.getstring(2));

}
```

5.] Closing the connection :-

    The close() method of connection interface is used to close connection that we opened in above steps.

    Syntax :-

```
public void close () throws sqlException
    con.close();
```

CONCLUSION :-

    Thus, we have successfully implemented MySQL Database connectivity with Java as a front end language.

CODE :-

Assignment No 8.java

```java
/*
 * Problem Statement :-
 *  Database Connectivity:
 *      Write a program to implement MySQL/Oracle database connectivity with any front
 *      end language to implement Database navigation operations (add, delete, edit
etc.)
*/

package assignmentNo_8;

import java.sql.*;
import java.util.Scanner;

public class Assignment_No_8
{

    public static void main(String[] args)
    {
        try
        {
            Class.forName("com.mysql.cj.jdbc.Driver");
            Scanner sc = new Scanner(System.in);

            String url = "jdbc:mysql://localhost:3306/assignment_no_8";
            String user = "Rushi-Bhagu", password = "1234", query = "";

            int studentID = 0, UG_POYear = 0;
            String fName = "", lName = "", UG_Dept = "", curr_city = "", email = "";

            Connection conn = DriverManager.getConnection(url, user, password);

            Statement s = conn.createStatement();
            String firstStatement = "CREATE TABLE IF NOT EXISTS Student (studentID INT
PRIMARY KEY, "
                                    + "fName VARCHAR(15), lName VARCHAR(15),"
                                    + "UG_POYear YEAR, UG_Dept VARCHAR(15),"
                                    + "curr_city VARCHAR(15), email
VARCHAR(40));";

            s.executeUpdate(firstStatement);
            int choice;
            while(true)
            {
                System.out.println("\n\t === Main Menu === \n\t\t 1. Insert Data
(INSERT) "
                                    + "\n\t\t 2. Display Data (SELECT)"
                                    + "\n\t\t 3. Update Data(UPDATE)"
                                    + "\n\t\t 4. Delete Data (DELETE)"
                                    + "\n\t\t 5. Delete Table (DROP)"
```

```java
                                        + "\n\t\t 6. Exit");

        System.out.print("\n\t Enter Choice : ");
        choice = sc.nextInt();

        switch(choice)
        {
        case 1:
            System.out.print("\n\t Enter the ID of Student : ");
            studentID = sc.nextInt();
            System.out.print("\n\t Enter the First Name of Student : ");
            fName = sc.next();
            System.out.print("\n\t Enter the Last Name of Student : ");
            lName = sc.next();
            System.out.print("\n\t Enter the UG_POYear of Student : ");
            UG_POYear = sc.nextInt();
            System.out.print("\n\t Enter the UG_Dept of Student : ");
            UG_Dept = sc.next();
            System.out.print("\n\t Enter the curr_city of Student : ");
            curr_city = sc.next();
            System.out.print("\n\t Enter the email of Student : ");
            email = sc.next();


            query = "INSERT INTO student VALUES(" + studentID + ", '"+ fName
                        + "', '" + lName + "', " + UG_POYear + ", '" + UG_Dept
                        + "', '" + curr_city + "', '" + email + "');";

            s.executeUpdate(query);
            System.out.println("\n\t Record Inserted Successfully...!! \n");
            break;

        case 2:
            query = "SELECT * FROM Student";
            ResultSet rs  = s.executeQuery(query);
            System.out.println("\n\t\t\t _____DATA_____ :- \n\n");
            Setw.left("", 130, '-');
            System.out.print("\n\t ");
            Setw.left("studentID", 10);
            System.out.print(" | ");
            Setw.left("fName", 15);
            System.out.print(" | ");
            Setw.left("lName", 15);
            System.out.print(" | ");
            Setw.left("UG_POYear", 10);
            System.out.print(" | ");
            Setw.left("UG_Dept", 15);
            System.out.print(" | ");
            Setw.left("curr_city", 15);
            System.out.print(" | ");
            Setw.left("email", 50);
            System.out.println("");
            Setw.left("", 130, '-');
            System.out.println("");

            while(rs.next())
            {
                studentID = rs.getInt("studentID");
```

Scanned by TapScanner

```java
                    fName = rs.getString("fName");
                    lName = rs.getString("lName");
                    UG_POYear = rs.getInt("UG_POYear");
                    UG_Dept = rs.getString("UG_Dept");
                    curr_city = rs.getString("curr_city");
                    email = rs.getString("email");
                    System.out.print("\t ");
                    Setw.left(Integer.toString(studentID), 10);
                    System.out.print(" | ");
                    Setw.left(fName, 15);
                    System.out.print(" | ");
                    Setw.left(lName, 15);
                    System.out.print(" | ");
                    Setw.left(Integer.toString(UG_POYear), 10);
                    System.out.print(" | ");
                    Setw.left(UG_Dept, 15);
                    System.out.print(" | ");
                    Setw.left(curr_city, 15);
                    System.out.print(" | ");
                    Setw.left(email, 50);
                    System.out.println("");
                    Setw.left("", 130, '-');
                    System.out.println("");
                }

                break;

            case 3:
                int ch = 0;
                System.out.print("\n\t Enter ID of student to update Data : ");
                studentID = sc.nextInt();
                System.out.print("\n\t\t == UPDATE == \n\t\t\t 1. fName"
                        + "\n\t\t\t 2. lName \n\t\t\t 3. UG_POYear"
                        + "\n\t\t\t 4. UG_Dept \n\t\t\t 5. curr_city"
                        + "\n\t\t\t 6. email \n\t\t\t 7. Cancel"
                        + "\n\t\t Enter Choice = ");
                ch = sc.nextInt();
                if(ch == 1)
                {
                    System.out.print("\n\t Enter new First name of student : ");
                    fName = sc.next();
                    query = "UPDATE Student SET fName = '" + fName + "'WHERE
studentID = '" + studentID + "';";
                    s.executeUpdate(query);
                    System.out.println("\n\t Record Updated Successfully...!!
\n");
                }
                else if(ch == 2)
                {
                    System.out.print("\n\t Enter new Last name of student : ");
                    lName = sc.next();
                    query = "UPDATE Student SET lName = '" + lName + "'WHERE
studentID = '" + studentID + "';";
                    s.executeUpdate(query);
                    System.out.println("\n\t Record Updated Successfully...!!
\n");
                }
                else if(ch == 3)
```

```java
			{
				System.out.print("\n\t Enter new UG PassOut Year of student : ");
				UG_POYear = sc.nextInt();
				query = "UPDATE Student SET UG_POYear = '" + UG_POYear + "'WHERE studentID = '" + studentID + "';";
				s.executeUpdate(query);
			}
			else if(ch == 4)
			{
				System.out.print("\n\t Enter new UG Department of student : ");
				UG_Dept = sc.next();
				query = "UPDATE Student SET UG_Dept = '" + UG_Dept + "'WHERE studentID = '" + studentID + "';";
				s.executeUpdate(query);
				System.out.println("\n\t Record Updated Successfully...!!\n");
			}
			else if(ch == 5)
			{
				System.out.print("\n\t Enter new Current City of student : ");
				curr_city = sc.next();
				query = "UPDATE Student SET curr_city = '" + curr_city + "'WHERE studentID = '" + studentID + "';";
				s.executeUpdate(query);
				System.out.println("\n\t Record Updated Successfully...!!\n");
			}
			else if(ch == 6)
			{
				System.out.print("\n\t Enter new email of student : ");
				email = sc.next();
				query = "UPDATE Student SET email = '" + email + "'WHERE studentID = '" + studentID + "';";
				s.executeUpdate(query);
				System.out.println("\n\t Record Updated Successfully...!!");
			}
			else if(ch == 7)
			{
				System.out.println("\n\t Operation Cancelled Successfully...!!");
				break;
			}
			else
			{
				System.out.println("\n\t Invalid Choice...!!! \n");
				break;
			}
			break;

		case 4:
			System.out.print("\n\t Enter ID of student to delete Data : ");
			studentID = sc.nextInt();
			query = "DELETE FROM student WHERE studentID = '" + studentID + "';";
			s.executeUpdate(query);
			System.out.println("\n\t Record Deleted Successfully...!!\n");
```

```java
                    break;

                case 5:
                    String alert = "", str = "";
                    System.out.print("\n\t Are you sure to DROP TABLE (YES/NO): ");
                    alert = sc.next();
                    str = alert.toLowerCase();
                    if(str.equals("yes"))
                    {
                        query = "DROP TABLE Student;";
                        s.executeUpdate(query);
                    }
                    else
                    {
                        System.out.println("\n\t DROP Operation not Completed...!!\n");

                        break;
                    }
                    System.out.println("\n\t TABLE Dropped Successfully...!! \n");
                    break;

                case 6:
                    System.out.println("\n\t\t\t\t _____ Thank You ..! _____ \n");
                    sc.close();
                    conn.close();
                    System.exit(0);

                default:
                    System.out.println("\n\t Invalid Choice...!!! \n");
                    break;
                }
            }
        }
        catch(Exception e)
        {
            e.printStackTrace();
        }
    }
}
```

Setw.java

```java
package assignmentNo_8;

public class Setw
{
    public static void right(String str, int width)
    {
        right(str, width, ' ');
    }
    public static void left(String str, int width)
    {
        left(str, width, ' ');
    }
```

```java
    public static void right(String str, int width, char fill)
    {
        for (int x = str.length(); x < width; ++x)
        {
            System.out.print(fill);
        }
        System.out.print(str);
    }
    public static void left(String str, int width, char fill)
    {
        System.out.print(str);
        for (int x = str.length(); x < width; ++x)
        {
            System.out.print(fill);
        }
    }
}
```

OUTPUT :-

```
=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 1

Enter the ID of Student : 1

Enter the First Name of Student : Rushi

Enter the Last Name of Student : Palve

Enter the UG_POYear of Student : 2023

Enter the UG_Dept of Student : Computer

Enter the curr_city of Student : Pune

Enter the email of Student : rushikeshkpalve@gmail.com

Record Inserted Successfully...!!


=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
```

```
   4. Delete Data (DELETE)
   5. Delete Table (DROP)
   6. Exit

Enter Choice : 1

Enter the ID of Student : 2

Enter the First Name of Student : Mayur

Enter the Last Name of Student : Mote

Enter the UG_POYear of Student : 2023

Enter the UG_Dept of Student : Computer

Enter the curr_city of Student : Pune

Enter the email of Student : mayurmote@gmail.com

Record Inserted Successfully...!!


=== Main Menu ===
   1. Insert Data (INSERT)
   2. Display Data (SELECT)
   3. Update Data(UPDATE)
   4. Delete Data (DELETE)
   5. Delete Table (DROP)
   6. Exit

Enter Choice : 2

        _____DATA_____ :-


---------------------------------------------------------------------------
studentID| fName | lName |UG_POYear|UG_Dept | curr_city| email
---------------------------------------------------------------------------
    1    | Rushi | Palve | 2023    | Computer | Pune | rushikeshkpalve@gmail.com
---------------------------------------------------------------------------
    2    | Mayur | Mote  | 2023    | Computer | Pune | mayurmote@gmail.com
---------------------------------------------------------------------------

=== Main Menu ===
   1. Insert Data (INSERT)
   2. Display Data (SELECT)
   3. Update Data(UPDATE)
   4. Delete Data (DELETE)
   5. Delete Table (DROP)
   6. Exit

Enter Choice : 3
```

```
Enter ID of student to update Data : 1

    == UPDATE ==
       1. fName
       2. lName
       3. UG_POYear
       4. UG_Dept
       5. curr_city
       6. email
       7. Cancel
    Enter Choice = 1

Enter new First name of student : Rushikesh

Record Updated Successfully...!!


=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 2

        _____DATA_____ :-
```

```
------------------------------------------------------------------------
studentID | fName | lName | UG_POYear | UG_Dept | curr_city | email
------------------------------------------------------------------------
    1 | Rushikesh | Palve | 2023 | Computer | Pune  | rushikeshkpalve@gmail.com
------------------------------------------------------------------------
    2 | Mayur     | Mote  | 2023 | Computer | Pune  | mayurmote@gmail.com
------------------------------------------------------------------------
```

```
=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 4

Enter ID of student to delete Data : 1

Record Deleted Successfully...!!
```

```
=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 2

           _____DATA_____  :-


--------------------------------------------------------------------
studentID | fName | lName | UG_POYear | UG_Dept | curr_city | email
--------------------------------------------------------------------
    2     | Mayur | Mote  | 2023      | Computer| Pune      | mayurmote@gmail.com
--------------------------------------------------------------------


=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 5

Are you sure to DROP TABLE (YES/NO): YES

TABLE Dropped Successfully...!!


=== Main Menu ===
    1. Insert Data (INSERT)
    2. Display Data (SELECT)
    3. Update Data(UPDATE)
    4. Delete Data (DELETE)
    5. Delete Table (DROP)
    6. Exit

Enter Choice : 6

           _____ Thank You ..! _____
```