

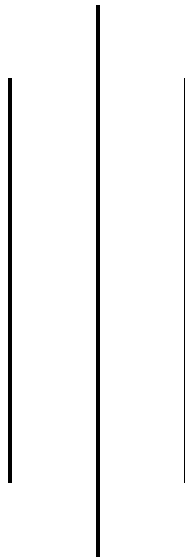


(Affiliated to Tribhuvan University)

Advanced Java Programming

Lab 005

JDBC, Batch, and Transactions



Submitted by:

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BSc. CSIT - VII

Submitted to:

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1. JDBC

1.1. Write programs to create/insert/update/delete/select student table in the db. Student table

will have the following fields:

- Student ID
- Name
- Class
- Marks.

1.1.1. Create table

```
/*
    Title:
        Create table

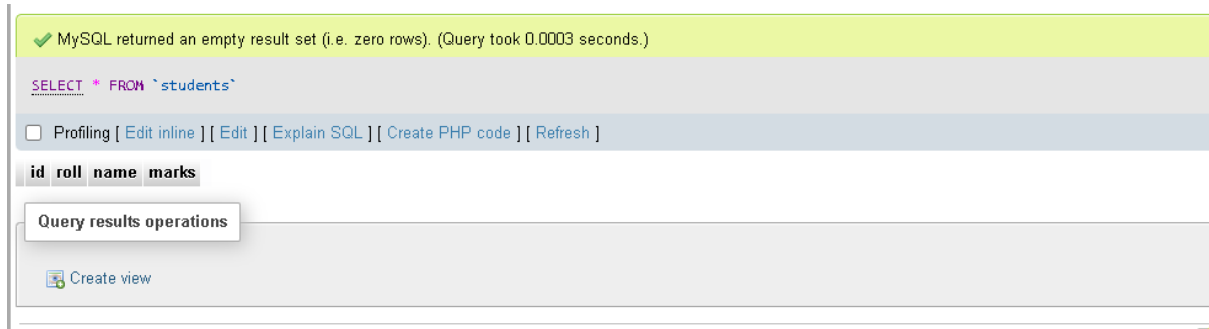
    Date modified; Author(s); Modification details
    2022-02-21; abhinna; Created the program
*/

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;

public class CreateTable {
    Connection connection;
    Statement statement;

    public CreateTable() {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");
            statement = connection.createStatement();
            statement.executeUpdate("CREATE TABLE students (id int, roll int, name
varchar(100), marks float);");
        } catch (Exception exception) {
            exception.printStackTrace();
        }
    }

    public static void main(String[] args) {
        new CreateTable();
    }
}
```



1.1.2. Insert Records

/*

Title:

Insert Record

Date modified; Author(s); Modification details

2022-02-21; abhinna; Created the program

*/

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.Statement;

public class InsertRecord {
    Connection connection;
    Statement statement;

    public InsertRecord() {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");
            statement = connection.createStatement();

            statement.executeUpdate("INSERT INTO students VALUES (1, 101, 'Ram', 89.21)");
            statement.executeUpdate("INSERT INTO students VALUES (2, 201, 'Shyam',
65.23)");
            statement.executeUpdate("INSERT INTO students VALUES (3, 202, 'Hari', 49.66)");
            statement.executeUpdate("INSERT INTO students VALUES (4, 203, 'Sita', 53.45)");
            statement.executeUpdate("INSERT INTO students VALUES (5, 103, 'Gita', 78.12)");

        } catch (Exception exception) {
            exception.printStackTrace();
        }
    }
}
```

```

    public static void main(String[] args) {
        new InsertRecord();
    }
}

```

✓ Showing rows 0 - 4 (5 total, Query took 0.0002 seconds.)

[SELECT * FROM `students`](#)

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 | Filter rows:

+ Options

id	roll	name	marks
1	101	Ram	89.21
2	201	Shyam	65.23
3	202	Hari	49.66
4	203	Sita	53.45
5	103	Gita	78.12

☐ Show all | Number of rows: 25 | Filter rows:

1.1.3. Update record

/*

Title:

Update record

Date modified; Author(s); Modification details

2022-02-21; abhinna; Created the program

*/

```
import java.sql.Connection;
```

```
import java.sql.DriverManager;
```

```
import java.sql.PreparedStatement;
```

```
public class UpdateRecord {
```

```
    Connection connection;
```

```
    PreparedStatement preparedStatement;
```

```
    public UpdateRecord() {
```

```
        try {
```

```
            Class.forName("com.mysql.jdbc.Driver");
```

```
            connection =
```

```
            DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");
```

```
            preparedStatement = connection.prepareStatement("UPDATE students SET roll = ?, name = ?, marks = ? WHERE id = ?");
```

```
            preparedStatement.setString(1, "103");
```

```
            preparedStatement.setString(2, "Rama");
```

```
            preparedStatement.setString(3, "84");
```

```

        preparedStatement.setString(4, "1");

        int result = preparedStatement.executeUpdate();

        if (result > 0) {
            System.out.println("Success");
        }
        else {
            System.out.println("Failed");
        }
    } catch (Exception exception) {
        exception.printStackTrace();
    }
}

public static void main(String[] args) {
    new UpdateRecord();
}
}

```

✓ Showing rows 0 - 4 (5 total, Query took 0.0003 seconds.)

`SELECT * FROM `students``

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 | Filter rows:

+ Options

id	roll	name	marks
1	103	Rama	84
2	201	Shyam	65.23
3	202	Hari	49.66
4	203	Sita	53.45
5	103	Gita	78.12

☐ Show all | Number of rows: 25 | Filter rows:

1.1.4. Select all from table

```
/*
    Title:
        Select all from table

    Date modified; Author(s); Modification details
    2022-02-21; abhinna; Created the program
*/

import java.sql.*;

public class SelectStudentTable {
    Connection connection;
    Statement statement;
    ResultSet resultSet;

    public SelectStudentTable() {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");
            statement = connection.createStatement();
            resultSet = statement.executeQuery("SELECT * FROM students");

            while (resultSet.next()) {
                System.out.println("Student ID: " + resultSet.getString(1));
                System.out.println("Student roll: " + resultSet.getString(2));
                System.out.println("Student name: " + resultSet.getString(3));
                System.out.println("Student marks: " + resultSet.getString(4) + "\n");
            }
        } catch (Exception exception) {
            exception.printStackTrace();
        }
    }

    public static void main(String[] args) {
        new SelectStudentTable();
    }
}
```

```

"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2022.2.4\lib\idea_rt.jar=7927:C:\Program Files\Java\jdk-19\bin" -Dfile.encoding=UTF-8
Student ID: 1
Student roll: 103
Student name: Rama
Student marks: 84

Student ID: 2
Student roll: 201
Student name: Shyam
Student marks: 65.23

Student ID: 3
Student roll: 202
Student name: Hari
Student marks: 49.66

Student ID: 4
Student roll: 203
Student name: Sita
Student marks: 53.45

Student ID: 5
Student roll: 103
Student name: Gita
Student marks: 78.12

```

```

Student ID: 2
Student roll: 201
Student name: Shyam
Student marks: 65.23

Student ID: 3
Student roll: 202
Student name: Hari
Student marks: 49.66

Student ID: 4
Student roll: 203
Student name: Sita
Student marks: 53.45

Student ID: 5
Student roll: 103
Student name: Gita
Student marks: 78.12

Process finished with exit code 0

```

1.1.5. Delete Record

```
/*
```

Title:

Delete Record

Date modified; Author(s); Modification details

2022-02-21; abhinna; Created the program

```
*/
```

```
import java.sql.*;
```

```
public class DeleteRecord {
```

```
    Connection connection;
```

```
    PreparedStatement preparedStatement;
```

```
    public DeleteRecord() {
```

```
        try {
```

```

        Class.forName("com.mysql.jdbc.Driver");
        connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");

        preparedStatement = connection.prepareStatement("DELETE FROM students
WHERE id = ?");
        preparedStatement.setString(1, "1");

        int result = preparedStatement.executeUpdate();

        if (result > 0) {
            System.out.println("Success");
        }
        else {
            System.out.println("Failed");
        }
    } catch (Exception exception) {
        exception.printStackTrace();
    }
}

public static void main(String[] args) {
    new DeleteRecord();
}
}

```

✓ Showing rows 0 - 3 (4 total, Query took 0.0003 seconds.)

`SELECT * FROM `students``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: Filter rows:

+ Options

id	roll	name	marks
2	201	Shyam	65.23
3	202	Hari	49.66
4	203	Sita	53.45
5	103	Gita	78.12

☐ Show all | Number of rows: Filter rows:

2. Write a program to perform Batch processing and Transaction management for Student table created in Problem 1

2.1. Batch Processing

```
/*
    Title:
        Batch Processing

    Date modified; Author(s); Modification details
    2022-02-21; abhinna; Created the program
*/
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;

public class BatchProcessing {
    Connection connection;
    Statement statement;

    public BatchProcessing() {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");

            connection.setAutoCommit(false);
            statement = connection.createStatement();

            statement.addBatch("INSERT INTO students VALUES (8, 401, 'Sanjay', 87.77)");
            statement.addBatch("INSERT INTO students VALUES (9, 411, 'Akshay', 86.99)");
            statement.addBatch("INSERT INTO students VALUES (10, 412, 'Suniel', 89.90)");

            // execute batch
            statement.executeBatch();

            connection.commit();;
            connection.close();
        } catch (Exception exception) {
            exception.printStackTrace();
        }
    }

    public static void main(String[] args) {
        new BatchProcessing();
    }
}
```

✓ Showing rows 0 - 6 (7 total, Query took 0.0004 seconds.)

SELECT * FROM `students`

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 ▾ Filter rows:

+ Options

id	roll	name	marks
2	201	Shyam	65.23
3	202	Hari	49.66
4	203	Sita	53.45
5	103	Gita	78.12
8	401	Sanjay	87.77
9	411	Akshay	86.99
10	412	Suniel	89.9

2.2. Transaction Processing

/*

Title:

Transaction Processing

Date modified; Author(s); Modification details

2022-02-21; abhinna; Created the program

*/

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.Statement;

public class TransactionProcessing {
    Connection connection;
    public TransactionProcessing() {
        try {
            Class.forName("com.mysql.jdbc.Driver");
            connection =
DriverManager.getConnection("jdbc:mysql://localhost:3306/java_student_db", "root", "");

            connection.setAutoCommit(false);

            Statement statement = connection.createStatement();
            statement.executeUpdate("INSERT INTO students VALUES (11, 301, 'Rajesh',
56.66)");
            statement.executeUpdate("INSERT INTO students VALUES (12, 312, 'Hritik',
80.33)");
            statement.executeUpdate("INSERT INTO students VALUES (13, 313, 'Daniel',
92.34)");

            // execute batch
            statement.executeBatch();
```

```

        connection.commit();
        connection.close();
    } catch (Exception exception) {
        exception.printStackTrace();
    }
}

public static void main(String[] args) {
    new TransactionProcessing();
}
}

```

✓ Showing rows 0 - 9 (10 total, Query took 0.0003 seconds.)

`SELECT * FROM `students``

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: Filter rows:

+ Options

id	roll	name	marks
2	201	Shyam	65.23
3	202	Hari	49.66
4	203	Sita	53.45
5	103	Gita	78.12
8	401	Sanjay	87.77
9	411	Akshay	86.99
10	412	Suniel	89.9
11	301	Rajesh	56.66
12	312	Hritik	80.33
13	313	Daniel	92.34