

## Assignment: Database Connectivity using JDBC

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Roll No: 21

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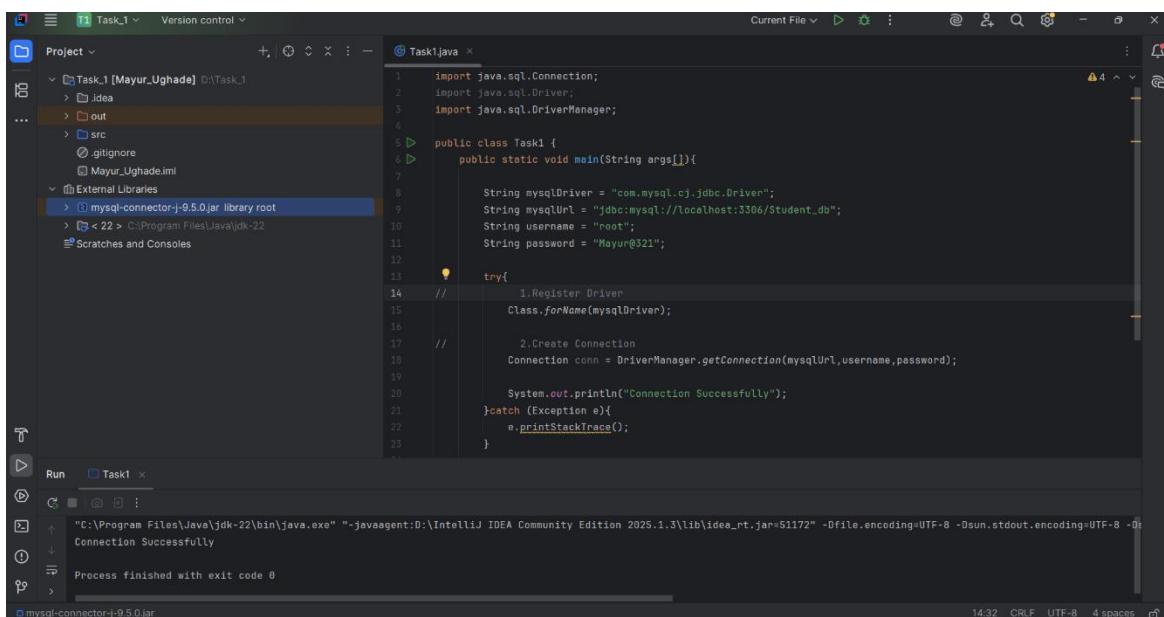
### Task 1: Establishing Database Connection

File Name: Task1.java

#### 1. Description

The objective of this task is to establish a connection between the Java application and the MySQL database Student\_db. It utilizes the DriverManager class and the MySQL JDBC driver.

#### 2. Source Code with output



The screenshot shows the IntelliJ IDEA interface with the Task1.java file open. The code establishes a connection to a MySQL database using the JDBC driver. The run output window shows the connection was successful.

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

public class Task1 {
    public static void main(String args[]) {
        String mysqlDriver = "com.mysql.cj.jdbc.Driver";
        String mysqlUrl = "jdbc:mysql://localhost:3306/Student_db";
        String username = "root";
        String password = "Mayur@321";

        try {
            // 1.Register Driver
            Class.forName(mysqlDriver);

            // 2.Create Connection
            Connection conn = DriverManager.getConnection(mysqlUrl,username,password);

            System.out.println("Connection Successfully");
        }catch (Exception e){
            e.printStackTrace();
        }
    }
}
```

Run → Task1  
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:D:\IntelliJ IDEA Community Edition 2025.1.3\lib\idea\_rt.jar=51172" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8  
Connection Successfully  
Process finished with exit code 0

#### 3. Execution Logic

- **Driver Loading:** Loaded `com.mysql.cj.jdbc.Driver` to communicate with the MySQL server.
- **Connection:** Established connection using URL `jdbc:mysql://localhost:3306/Student_db`.
- **Authentication:** Used username `root` and the specified password.

#### 4. Verification

Connection Successfully

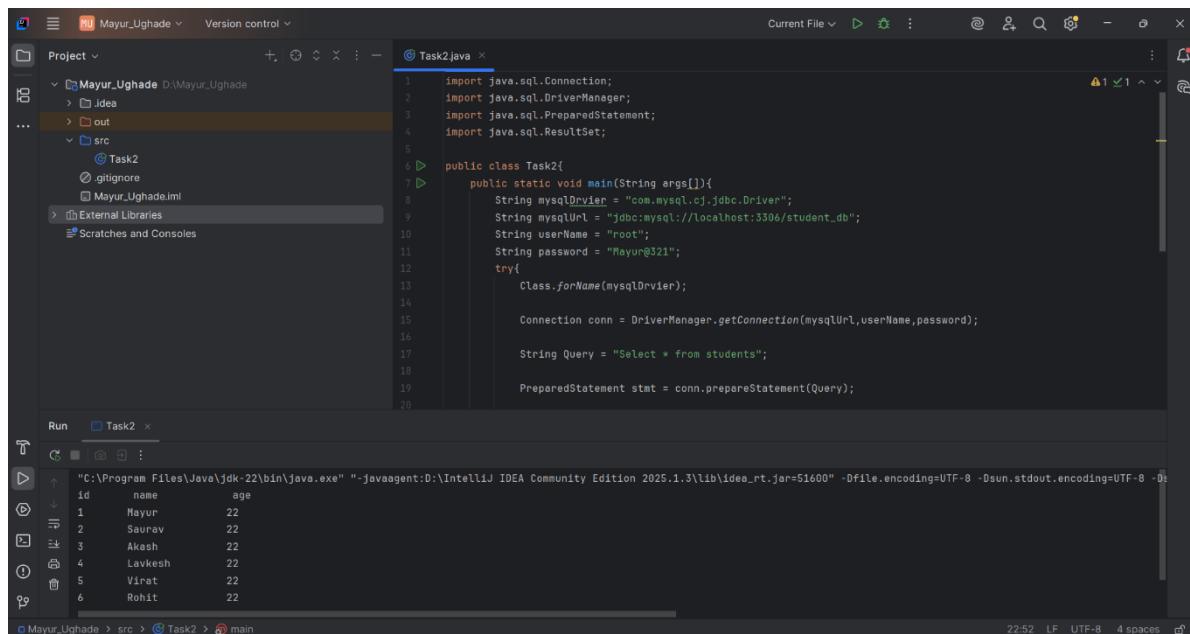
## **Task 2: Retrieving and Displaying Data**

**File Name:** Task2.java

### **Description**

This task focuses on fetching all records from the students table and displaying them in a formatted tabular manner in the Java console.

### **1. Source Code with output**



The screenshot shows the IntelliJ IDEA interface. The left sidebar displays the project structure with a 'src' folder containing 'Task2'. The main editor window shows the Java code for 'Task2.java'. The code imports necessary JDBC classes and defines a main method that connects to a MySQL database, prepares a query to select all from the 'students' table, and prints the results to the console. Below the editor, the 'Run' tool window is open, showing the command used to run the application and the resulting output. The output shows a tabular representation of student data with columns 'id', 'name', and 'age', containing 6 rows of data.

id	name	age
1	Mayur	22
2	Saurav	22
3	Akash	22
4	Lavkesh	22
5	Virat	22
6	Rohit	22

### **2. Execution Logic**

- **Query:** Executed `Select * from students.`
- **Loop:** Iterated through the ResultSet to print ID, Name, and Age.
- **Formatting:** Used tabs (`\t`) to align columns.

### **3. MySQL Verification**

```
select * from student;
```

id	name	age
1	Mayur	22
2	Saurav	22
3	Akash	22
4	Lavkesh	22

### **Task 3: Inserting Data into Database**

**File Name:** Task3.java

#### **1. Description**

This task demonstrates how to accept user input (Name and Age) from the console and insert a new record into the student table using a PreparedStatement.

#### **2. Source Code with output**

The screenshot shows an IDE interface with the following details:

- Project View:** Shows a project named "Task3" with a "src" folder containing "Task3.java". Other files like ".idea", ".gitignore", and "Task3.iml" are also listed.
- Task3.java Content:**

```
1 import java.sql.Connection;
2 import java.sql.DriverManager;
3 import java.sql.PreparedStatement;
4 import java.util.Scanner;
5
6 public class Task3{
7     public static void main(String [] args){
8         Scanner sc = new Scanner(System.in);
9         String mysqlDriver = "com.mysql.cj.jdbc.Driver";
10        String mysqlUrl = "jdbc:mysql://localhost:3306/Student_db";
11        String userName = "root";
12        String password = "Mayur@321";
13
14        try{
15            Class.forName(mysqlDriver);
16
17            Connection conn = DriverManager.getConnection(mysqlUrl,userName,password);
18
19            String Query = "Insert into students values(?, ?, ?)";
20
21        }
22    }
23 }
```
- Run Output:**

```
Enter the Student name:
Lavkesh
Enter the Student age:
21
Record Executed!
Process finished with exit code 0
```
- Bottom Status Bar:** Shows file statistics: 36.50 LF, UTF-8, 4 spaces.

#### **3. Execution Logic**

- **Input:** Scanner captured Name (Lavkesh) and Age (21).
- **Query:** Used `Insert into students values(?, ?, ?)`.
- **Security:** PreparedStatement used to handle inputs safely.

#### **4. MySQL Verification**

Enter the Student name: Lavkesh Enter the Student age: 21 Record Executed:1

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## **Task 4: Updating Existing Records**

**File Name:** Task4.java

### **Description**

This task performs an update operation. It first alters the table to add a marks column, then takes a Student ID and new Marks from the user to update the record.

### **1. Source Code with output**

The screenshot shows the IntelliJ IDEA interface with the Task4.java file open. The code performs an ALTER TABLE operation to add a marks column and then updates a student record. The run output shows the command run, the input of student ID 4 and marks 60, and the successful update message.

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.util.Scanner;

public class Task4 {
    public static void main(String[] args) throws Exception {
        String mysqlDriver = "com.mysql.cj.jdbc.Driver";
        String mysqlUrl = "jdbc:mysql://localhost:3306/Student_db";
        String userName = "root";
        String password = "Mayur@521";
        Scanner sc = new Scanner(System.in);
        try {
            Class.forName(mysqlDriver);
            Connection conn = DriverManager.getConnection(mysqlUrl,userName,password);
            String query = "alter table students add column marks int default 0";
            String Query = "update students set marks = ? where id = ?";
            PreparedStatement ps = conn.prepareStatement(Query);
            ps.setInt(1, 60);
            ps.setInt(2, 4);
            ps.executeUpdate();
            System.out.println("Record Updated Successfully :1");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

Run Task4  
C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:D:\IntelliJ IDEA Community Edition 2025.1.3\lib\idea\_rt.jar=57197 -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8  
Enter the Student Id:  
4  
Enter the Student Marks:  
60  
Record Updated Successfully :1  
Process finished with exit code 0

### **2. Execution Logic**

**Alter:** alter table students add column marks int default 0.

**Update:** update students set marks = ? where id = ?.

**Input:** Updated Student ID 4 with Marks 60.

### **3. MySQL Verification**

#### **BEFORE UPDATION**

**select \* from student;**

id   name   age   marks			
-----+-----+-----+			
1   Saurav   21   0			
2   Mayur   20   0			

```
| 3 | Nikhil | 21 | 0 |
```

```
| 4 | Anand | 5 | 0 |
```

## AFTER UPDATION

```
select * from student;
```

```
| id | name | age | marks |
```

```
+----+-----+-----+-----+
```

```
| 1 | Saurav | 21 | 60 |
```

```
| 2 | Mayur | 20 | 0 |
```

```
| 3 | Nikhil | 21 | 0 |
```

```
| 4 | Anand | 5 | 0 |
```

```
| 5 | Akash | 21 | 0 |
```

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## **Task 5: Deleting Records from Database**

**File Name:** Task5.java

### **1. Description**

This task handles the removal of data. It prompts the user for a Student ID and deletes that specific record from the student table.

### **2. Source Code with output**

The screenshot shows the IntelliJ IDEA interface with the following details:

- Project View:** Shows the project structure with a file named "Task5.java" selected.
- Code Editor:** Displays the Java code for "Task5.java". The code imports necessary JDBC classes and defines a main method that connects to a MySQL database, takes a student ID as input from the user, and executes a delete query.
- Run Tab:** Shows the command used to run the program ("C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:D:\IntelliJ IDEA Community Edition 2025.1.3\lib\idea\_rt.jar=S5052" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8"). The output window shows the user entering "6" and the message "Recorded Deleted Successfully : 1".
- Status Bar:** Shows the time as 31:34 and encoding as LF UTF-8 4 spaces.

### **3. Execution Logic**

- **Input:** The user provided Student ID 6.
- **Query:** `delete from students where id = ?.`
- **Result:** The record for Student ID 6 was permanently removed.

### **4. MySQL Verification**

```
select * from student;

+-----+-----+-----+
| id | name | age | marks |
+-----+-----+-----+
| 1 | Saurav | 21 | G0 |
| 2 | Mayur | 20 | 0 |
| 3 | Nikhil | 21 | 0 |
| 4 | Anand | 5 | 0 |
```