

What is JDBC?

JDBC (Java Database Connectivity) is a Java API to connect and execute queries with databases.

Steps to Establish JDBC Connection:

1. **Import JDBC packages**
 2. **Load and register the JDBC driver**
 3. **Establish connection to database**
 4. **Create a Statement or PreparedStatement**
 5. **Execute SQL query**
 6. **Process the result**
 7. **Close connection**
-

Example: Connect to MySQL Database and Retrieve Data

◆ Database Setup

Assume we have a **MySQL** database with:

- DB name: school
 - Table: students(id INT, name VARCHAR(100))
-

Java Code:

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

```
public class JdbcExample {  
    public static void main(String[] args) {  
        // JDBC URL, username, password  
        String url = "jdbc:mysql://localhost:3306/school";  
        String user = "root";  
        String password = "your_password";
```

```
try {  
    // Load and register MySQL JDBC driver  
    Class.forName("com.mysql.cj.jdbc.Driver");  
  
    // Establish the connection  
    Connection con = DriverManager.getConnection(url, user, password);  
  
    // Create a Statement  
    Statement stmt = con.createStatement();  
  
    // Execute SQL query  
    ResultSet rs = stmt.executeQuery("SELECT * FROM students");  
  
    // Process the result  
    while (rs.next()) {  
        int id = rs.getInt("id");  
        String name = rs.getString("name");  
        System.out.println("ID: " + id + ", Name: " + name);  
    }  
  
    // Close resources  
    rs.close();  
    stmt.close();  
    con.close();  
  
} catch (Exception e) {  
    e.printStackTrace();  
}
```

```
}  
}  
}
```

Maven Dependency for MySQL JDBC Driver

```
<dependency>  
  <groupId>mysql</groupId>  
  <artifactId>mysql-connector-j</artifactId>  
  <version>8.0.33</version>  
</dependency>
```

Sample Output:

ID: 1, Name: Arjun
ID: 2, Name: Meera
ID: 3, Name: Sita

Notes:

Component	Purpose
DriverManager.getConnection()	Connects to the DB
Statement / PreparedStatement	Sends SQL queries
ResultSet	Holds data retrieved from SELECT queries
Class.forName()	Loads the JDBC driver class (required in old Java)
In newer Java versions (Java 6+), the driver is auto-loaded if it's on the classpath.	

Don't Forget to Close:

- Connection
- Statement

- ResultSet
→ to prevent memory leaks!
-