JDBC (Java Database Connectivity) is an API (Application Programming Interface) in Java that allows Java programs to interact with databases. It provides a standard set of classes and interfaces to connect to and manipulate relational databases.

Here's a step-by-step overview of using JDBC to interact with a database:

Step 1: Import JDBC Packages

To begin, you need to import the necessary JDBC packages. The main package to import is java.sql, which contains the JDBC classes and interfaces.

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

Step 2: Load the JDBC Driver

Before connecting to a database, you need to load the appropriate JDBC driver for the database you are using. Each database vendor typically provides its own JDBC driver, which you can obtain from the vendor's website or through a dependency management system like Maven or Gradle.

```
// Load the MySQL JDBC driver
Class.forName("com.mysql.cj.jdbc.Driver");
```

Step 3: Establish a Connection

To establish a connection to the database, you need to provide the connection URL,

username, and password. The connection URL varies depending on the database you are using.

```
String url = "jdbc:mysql://localhost:3306/mydatabase";
String username = "your-username";
String password = "your-password";

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

Step 4: Execute SQL Statements

Once you have a connection, you can execute SQL statements such as queries, updates, or inserts. The Statement interface is commonly used for executing SQL statements.

```
Statement statement = connection.createStatement();

// Execute a query
String sqlQuery = "SELECT * FROM users";
ResultSet resultSet = statement.executeQuery(sqlQuery);

// Process the query result
while (resultSet.next()) {
    String name = resultSet.getString("name");
    int age = resultSet.getInt("age");
    System.out.println("Name: " + name + ", Age: " + age);
}

// Execute an update statement
String updateQuery = "UPDATE users SET age = 30 WHERE id = 1";
int rowsAffected = statement.executeUpdate(updateQuery);
```

```
System.out.println("Rows affected: " + rowsAffected);
```

Step 5: Close the Resources

After you have finished using the database connection and result sets, it’s important to close them to release any resources they hold.

```
resultSet.close();
statement.close();
connection.close();
```

It’s a good practice to enclose the database operations in a try-catch block to handle any potential exceptions that may occur during the database interactions.

Note: JDBC is a low-level API, and it’s often recommended to use higher-level frameworks like JPA (Java Persistence API) or ORM (Object-Relational Mapping) frameworks like Hibernate for more convenient and object-oriented database access in Java.

Remember to include the appropriate JDBC driver JAR file in your project’s dependencies to ensure the driver is available during runtime.

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