Java Database Connectivity (JDBC)
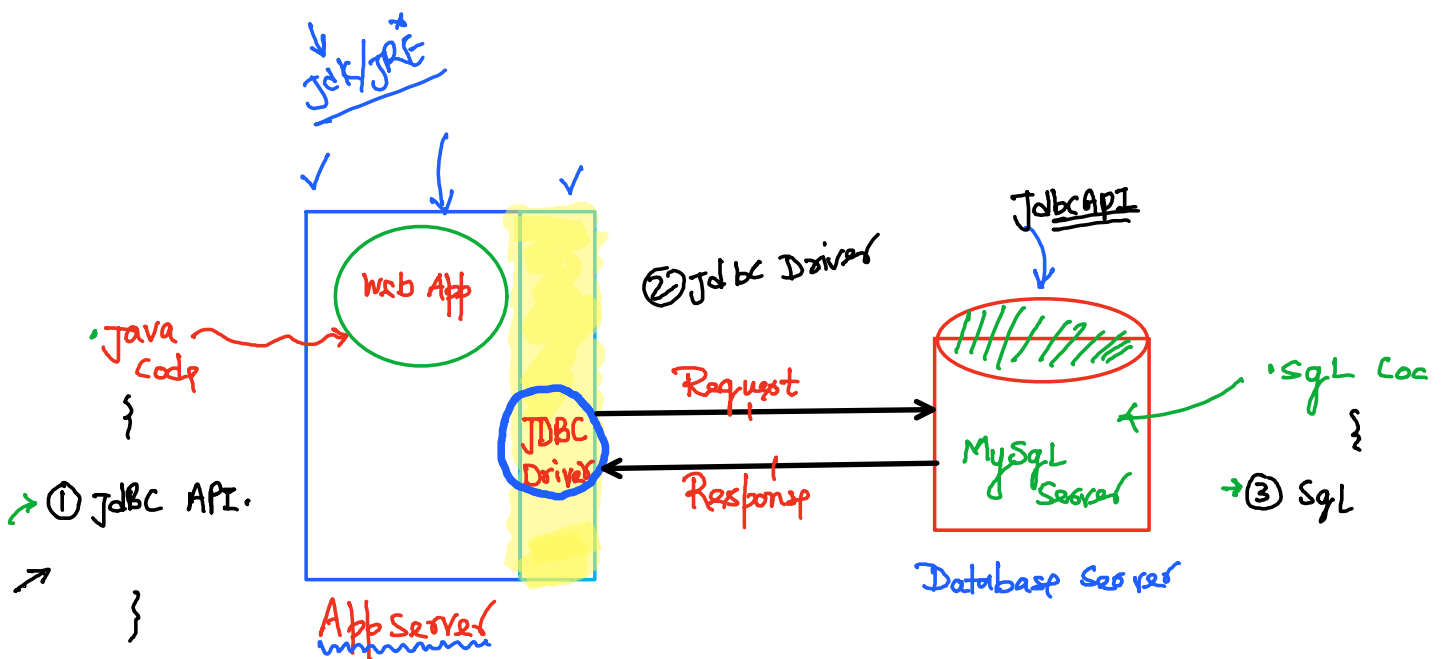
- ☐ The Concept of JDBC
- ☐ JBDC drivers(Type1 Driver,Type4 Driver)
- ☐ Connection interface
- ☐ Statement interface
- ☐ ResultSet interface
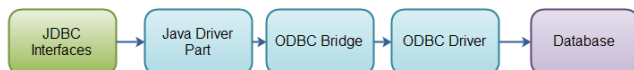- ☐ Creating and executing SQL statements.

The Concept of JDBC:

JBDC drivers(Type1 Driver,Type4 Driver):
- Type 1: JDBC-ODBC Bridge Driver
- Type 2: JDBC-Native API
- Type 3: JDBC-Net pure Java
- Type 4: 100% Pure Java

   ### Type 1: JDBC-ODBC Bridge Driver
   - A type 1 JDBC driver consists of a Java part that translates the JDBC interface calls to ODBC calls.
   - An ODBC bridge then calls the ODBC driver of the given database.

   ### Type 2: JDBC-Native API
   - A type 2 JDBC driver is like a type 1 driver, except the ODBC part is replaced with a native code part instead.
   - The native code part is targeted at a specific database product.

   ### Type 3: JDBC-Net pure Java
   - A type 3 JDBC driver is an all Java driver that sends the JDBC interface calls to an intermediate server.
   - The intermediate server then connects to the database on behalf of the JDBC driver.

- ○ **Type 4: 100% Pure Java**
  - · A type 4 JDBC driver is an all Java driver which connects directly to the database.
  - · It is implemented for a specific database product.
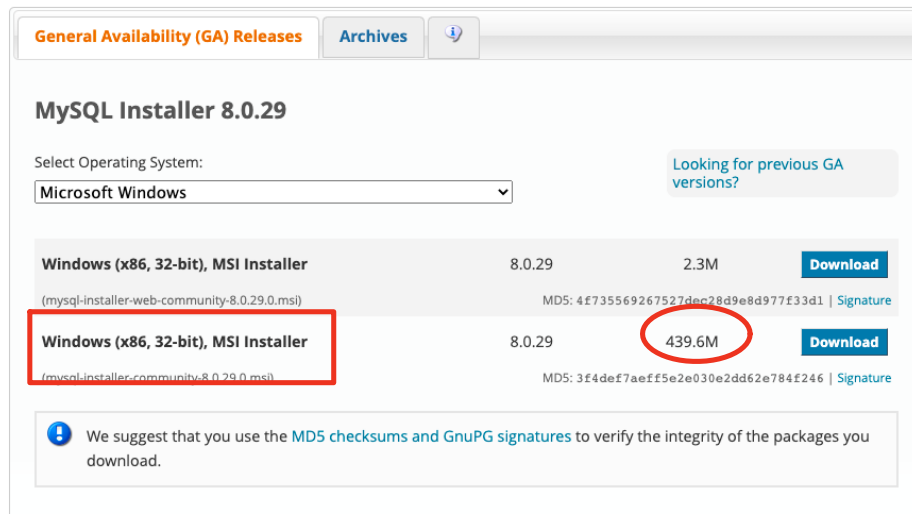

1. Installation MySql server:

- • Install MySQL server and create a Database there and one Table as well
- • https://www.mysql.com/downloads/
  - ○ MySQL Community (GPL) Downloads »
  - ○ MySQL Community Server
  - ○ Go to download page
    - ⊙ **MySQL Community Downloads**
    - ‹ MySQL Installer
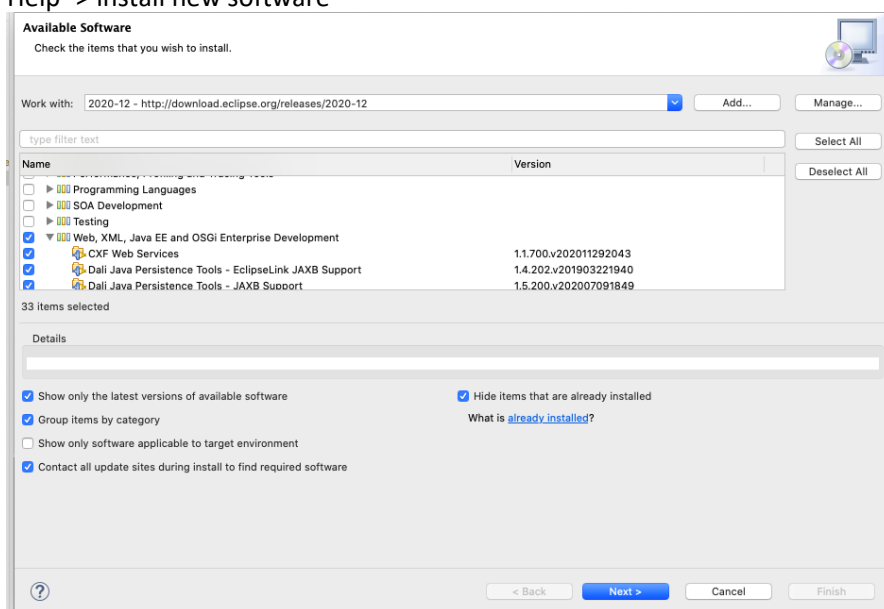
  - •

  - ○ Windows (x86, 32-bit), MSI Installer {this setup = ~ 450MB}
  - ○ 'Server only' ->next
  - ○ Name [short name], root
  - ○ Username and password[server]
    - · root,root [admin]
  - ○ Windows:
    - · Mysql search
    - · Task manager -> services -> mysql -> right click start
  - ○ Mac
    - · System preferences [start/stop]
    - · Terminal
      - · mysql -u root -p
        - · root
- • Database operations
  - ○ Show dabases;
  - ○ create database jdbcDatabase;
  - ○ use jdbcDatabase;
  - ○ CREATE TABLE jdbc_tbl(
      jdbc_id int,
      title varchar(255),
      author varchar(255),
      submission_date varchar(255)

);
- ○ Insert Data into this table:
  - INSERT INTO jdbc_tbl VALUES (1, 'Mysql', 'Akbar', '2021-02-18')
  - INSERT INTO jdbc_tbl VALUES (2, 'Mysql', 'Akbar', '2021-02-18')
  - INSERT INTO jdbc_tbl VALUES (3, 'Mysql', 'Akbar', '2021-02-18')
  - INSERT INTO jdbc_tbl VALUES (4, 'Mysql', 'Akbar', '2021-02-18')
- ○ Select * from jdbc_tbl;

```
mysql> select * from jdbc_tbl;
+---------+-------------+----------------+-----------------+
| jdbc_id | title       | author         | submission_date |
+---------+-------------+----------------+-----------------+
|       1 | Learn MySQL | Akash CHauhan  | 2021-02-17      |
|       2 | Learn MySQL | Rahul CHauhan  | 2021-02-17      |
|       3 | Mysql       | Ali            | 2021-02-18      |
|       4 | Mysql       | Ali            | 2021-02-18      |
|       5 | Mysql       | Akbar          | 2021-02-18      |
|       6 | Mysql       | Akbar          | 2021-02-18      |
|       7 | mysql       | guru           | 2022-06-03      |
+---------+-------------+----------------+-----------------+
7 rows in set (0.00 sec)
```

2. J2EE Eclipse:

- J2SE [already installed]
- 2 ways:
  - ○ New J2EE download, start
  - ○ Add J2EE Plugin in J2SE
    - Help -> install new software

3. add MySql connector into the Build Path:

- Download JDBC connecting jar [MySql connector Java jar]
  - ○ For Mac {Platform Independent}:
    - https://dev.mysql.com/downloads/connector/j/?os=26

- Add this jar into library [Build Path of your Project]

- We are going to Connection, Statement and ResultSet from import java.sql.*;

4. Download Tomcat server and Add into Eclipse

- Download link:
  - ○ https://tomcat.apache.org/download-80.cgi
  - ○ **Download the zip from code [first option]**

- Unzip this zip file in some folder
- Add Tomcat server to Eclipse
  - Add tomcat server
  - Go to window -> show view -> servers
  - Go to servers tab now [Next to console]
    - Click on the link
    - Add the bin path into Eclipse:
      - bin path {go to tomcat folder and copy the bin path}
      - Paste that path into browser location of the server

5. Create Web Dynamic Project in J2EE Eclipse

- Now Create a Dynamic web project [J2EE perspective]
  - You will only be able to see this option, when you have J2EE Eclipse

- In src folder create a package name Unit_05 and then a java class name{SampleClass.java}

- **SampleClass.java -> Paste this code there:**

```java
package com.java.jdbc;
import java.sql.*;

public class SampleClass {

    public static void main(String[] args) throws SQLException {

        Connection myConn = null;
        Statement myStmt = null;
        ResultSet myRs = null;

        try {
            myConn =
            DriverManager.getConnection("jdbc:mysql://localhost:3306/jdbcDatabase
            ", "root" , "root@123");
            myStmt = myConn.createStatement();

            int a = myStmt.executeUpdate("INSERT INTO jdbc_tbl VALUES (5, 'Mysql',
            'Akbar', '2021-02-18')");

            myRs = myStmt.executeQuery("select * from jdbc_tbl");
```

```
            while (myRs.next()) {
                System.out.println(myRs.getString("jdbc_id") + ", " +
                myRs.getString("title") + ", " + myRs.getString("author") + ", " +
                myRs.getString("submission_date"));
            }
        }

        catch (Exception exc) {
            exc.printStackTrace();
        }

        finally {
            myRs.close();
            myStmt.close();
            myConn.close();
            }
        }
}
```

- Run the project:
  - Right click on project
  - Run on server

References:
- Take Reference to Advance Java Play list by Akash Chauhan
- https://www.youtube.com/watch?
  v=06AXuNzVLQA&list=PL0a_f9x9MDQLOkgFJq00eHGQoblPNhVvC&index=10
- Take reference to Advance Java Notes from one Note!