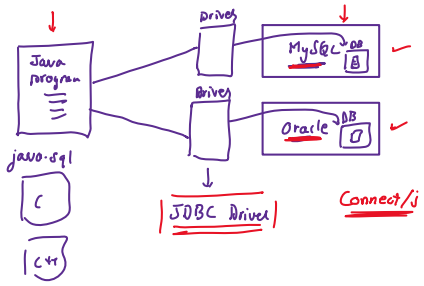
JDBC → Java Database Connectivity



com.mysql.cj.jdbc.Driver
↓
jdbc driver class

Driver x = new Driver();
Driver x;

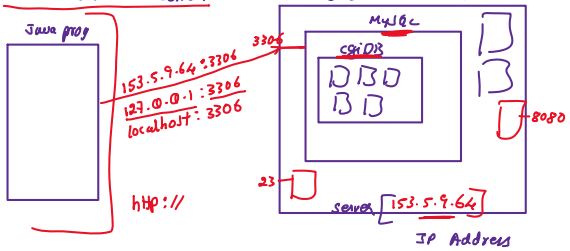
① Load JDBC driver class into RAM

Class.forName("class name")
↳ ClassNotFoundException

```
try
{
   Class.forName("com.mysql.cj.jdbc.Driver");
}catch(ClassNotFoundException e)
{

}
```

② Establish Connection to back-end database



a) URL : protocol :// IPAddress : portno / database_name
"jdbc:mysql://localhost:3306/cgidb"

b) User name

c) password

- String url = "jdbc:mysql://localhost:3306/cgidb";
- String username = "scott";
- String password = "tiger";

Connection DriverManager.getConnection(url, username, password)
↓
SQLException

```
Connection conn = null;
try
{
    conn = DriverManager.getConnection(url, username, password);
}catch(SQLException e)
{

}
```

Connection
↓
java.sql

③ Create Statement / PreparedStatement class object to issue SQL commands

{ Statement, PreparedStatement } → Connection
→ Statement createStatement()
→ PreparedStatement prepareStatement(sql)

Statement st = conn.createStatement();

④ Issue SQL commands

Statement & preparedStatement

int executeUpdate(DML)

INSERT
UPDATE
DELETE
↓
DDL

resultset

Statement & preparedStatement

int executeUpdate (DML) — INSERT UPDATE DELETE

ResultSet executeQuery (DQL) → SELECT

↳ SQLException

(5) Close the Connection

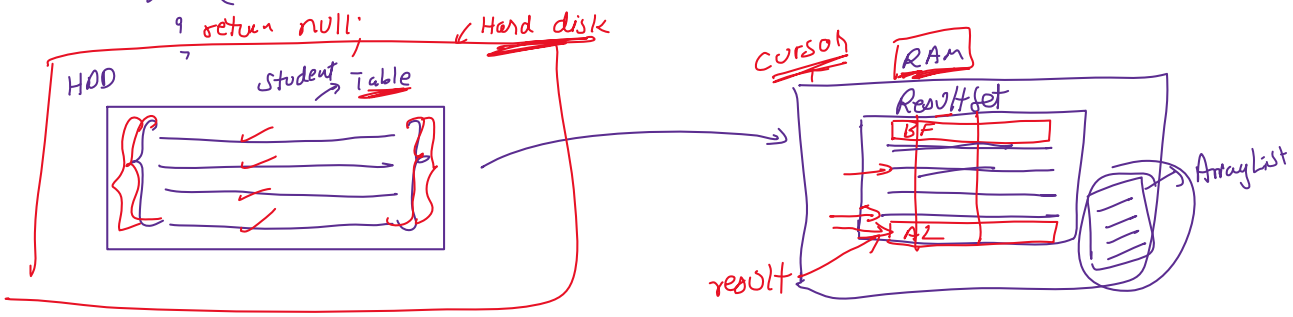
conn.close()

↳ SQLException

---

insertStudent

```
public Student insertStudent(Student stud)
{
    Statement st;
    String sql;
    try
    {
        st = connection.createStatement();
        sql = "INSERT INTO student VALUES (" + stud.getRollno() + "," + stud.getName() + " " + stud.getPercentage();
        int cnt = st.executeUpdate(sql)
        if(cnt > 0)
            return stud;
    }catch(SQLException e)
    {
        return null;
    }
```

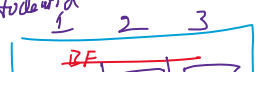



```
Statement st = connection.createStatement();
ResultSet result = st.executeQuery("SELECT * FROM student");
```

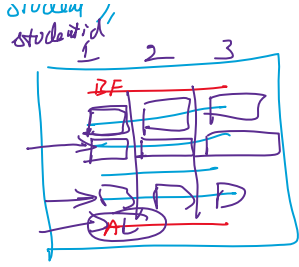
ResultSet

```
boolean next()
boolean previous()
boolean first()
boolean last()
```

```
public void displayAllStudents
{
    try
    {
        Statement st = connection.createStatement();
        ResultSet result = st.executeQuery("SELECT * FROM student");
        while (result.next())
```



```
while (result.next())
{
    S.O.p(result.getInt(1) + " " + result.getString(2) +
                                " " + result.getFloat(3));
}
st.close();
}catch(SQLException e)
{
}
```



DML
- INSERT → Create
- UPDATE → update
- DELETE → Delete

DQL
- SELECT → Retrieve

} CRUD operations

```
sql = "INSERT INTO student VALUES(" + student.studentid +
      "," + student.getName() + "'," + student.getPercentage()
```

```
sql = "INSERT INTO student VALUES(?,?,?)";
PreparedStatement ps = connection.prepareStatement(sql);
ps.setInt(1, student.getStudentId());
ps.setString(2, student.getName())
ps.setFloat(3, student.getPercentage());
int count = ps.executeUpdate();
```

```
package com.cgiwave.config;

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

public class CgiWaveDatabase implements Database{

	private Connection connection;

	public CgiWaveDatabase() {
		super();

		try {
			Class.forName("com.mysql.cj.jdbc.Driver");
		} catch (ClassNotFoundException e) {
			// TODO Auto-generated catch block
			e.printStackTrace();
		}

		String url = "jdbc:mysql://localhost:3306/cgiwave";
		String username = "scott";
		String password = "tiger";

		try {
			connection = DriverManager.getConnection(url,username,password);
		} catch (SQLException e) {
			// TODO Auto-generated catch block
			e.printStackTrace();
		}

	}

	public void closeConnection() {
		try {
			connection.close();
		} catch (SQLException e) {
			// TODO Auto-generated catch block
			e.printStackTrace();
		}
	}

	@Override
	public Connection getConnection() {
		return connection;
	}

}
```