# ACTIVITY PERTEMUAN 1

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**NPM : 5142648**

**KELAS : 4IA17**

**MATERI : Konsep Model View Controller (MCV)**

**MATA PRAKTIKUM : RPL 2**

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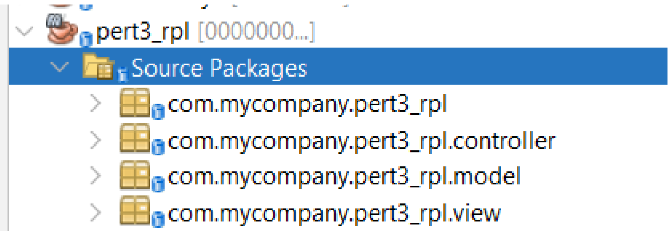
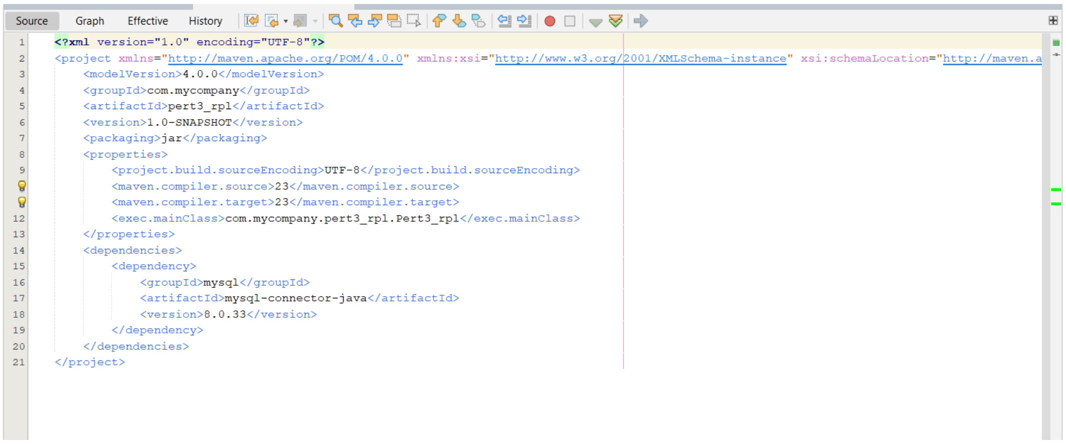


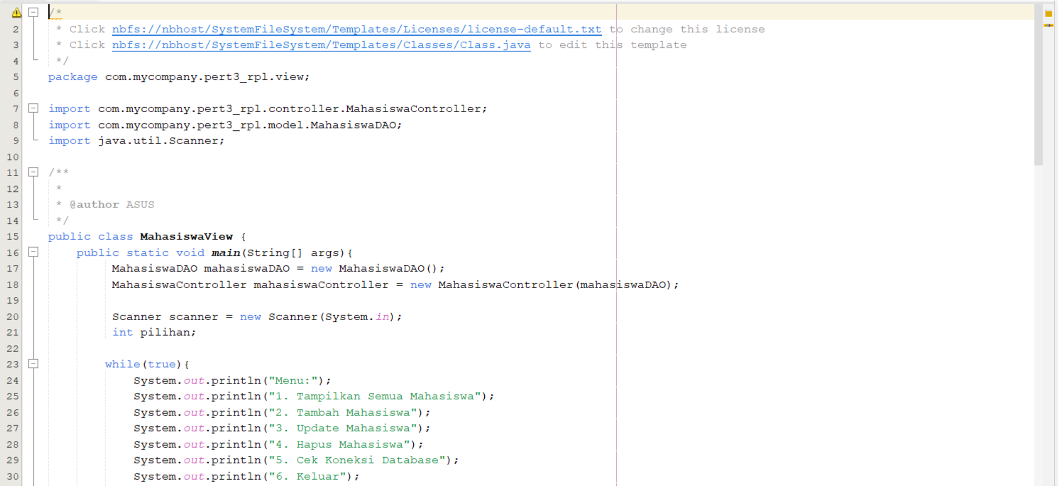
```
pert3_rpl [0000000...]
  Source Packages
    com.mycompany.pert3_rpl
    com.mycompany.pert3_rpl.controller
    com.mycompany.pert3_rpl.model
    com.mycompany.pert3_rpl.view
```

Pom.xml

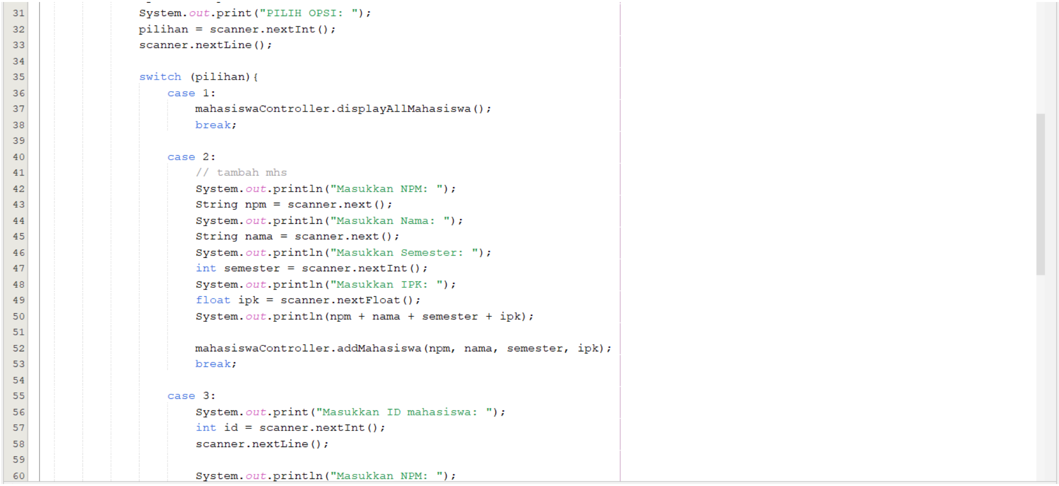


```xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.a
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.mycompany</groupId>
    <artifactId>pert3_rpl</artifactId>
    <version>1.0-SNAPSHOT</version>
    <packaging>jar</packaging>
    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <maven.compiler.source>23</maven.compiler.source>
        <maven.compiler.target>23</maven.compiler.target>
        <exec.mainClass>com.mycompany.pert3_rpl.Pert3_rpl</exec.mainClass>
    </properties>
    <dependencies>
        <dependency>
            <groupId>mysql</groupId>
            <artifactId>mysql-connector-java</artifactId>
            <version>8.0.33</version>
        </dependency>
    </dependencies>
</project>
```

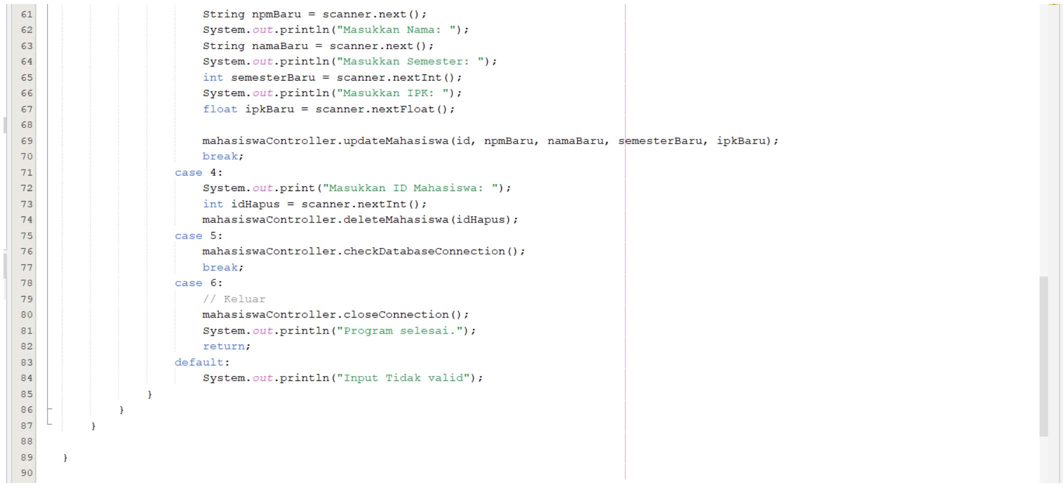
# MahasiswaView



```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package com.mycompany.pert3_rpl.view;

import com.mycompany.pert3_rpl.controller.MahasiswaController;
import com.mycompany.pert3_rpl.model.MahasiswaDAO;
import java.util.Scanner;

/**
 *
 * @author ASUS
 */
public class MahasiswaView {
    public static void main(String[] args){
        MahasiswaDAO mahasiswaDAO = new MahasiswaDAO();
        MahasiswaController mahasiswaController = new MahasiswaController(mahasiswaDAO);

        Scanner scanner = new Scanner(System.in);
        int pilihan;

        while(true){
            System.out.println("Menu:");
            System.out.println("1. Tampilkan Semua Mahasiswa");
            System.out.println("2. Tambah Mahasiswa");
            System.out.println("3. Update Mahasiswa");
            System.out.println("4. Hapus Mahasiswa");
            System.out.println("5. Cek Koneksi Database");
            System.out.println("6. Keluar");
```

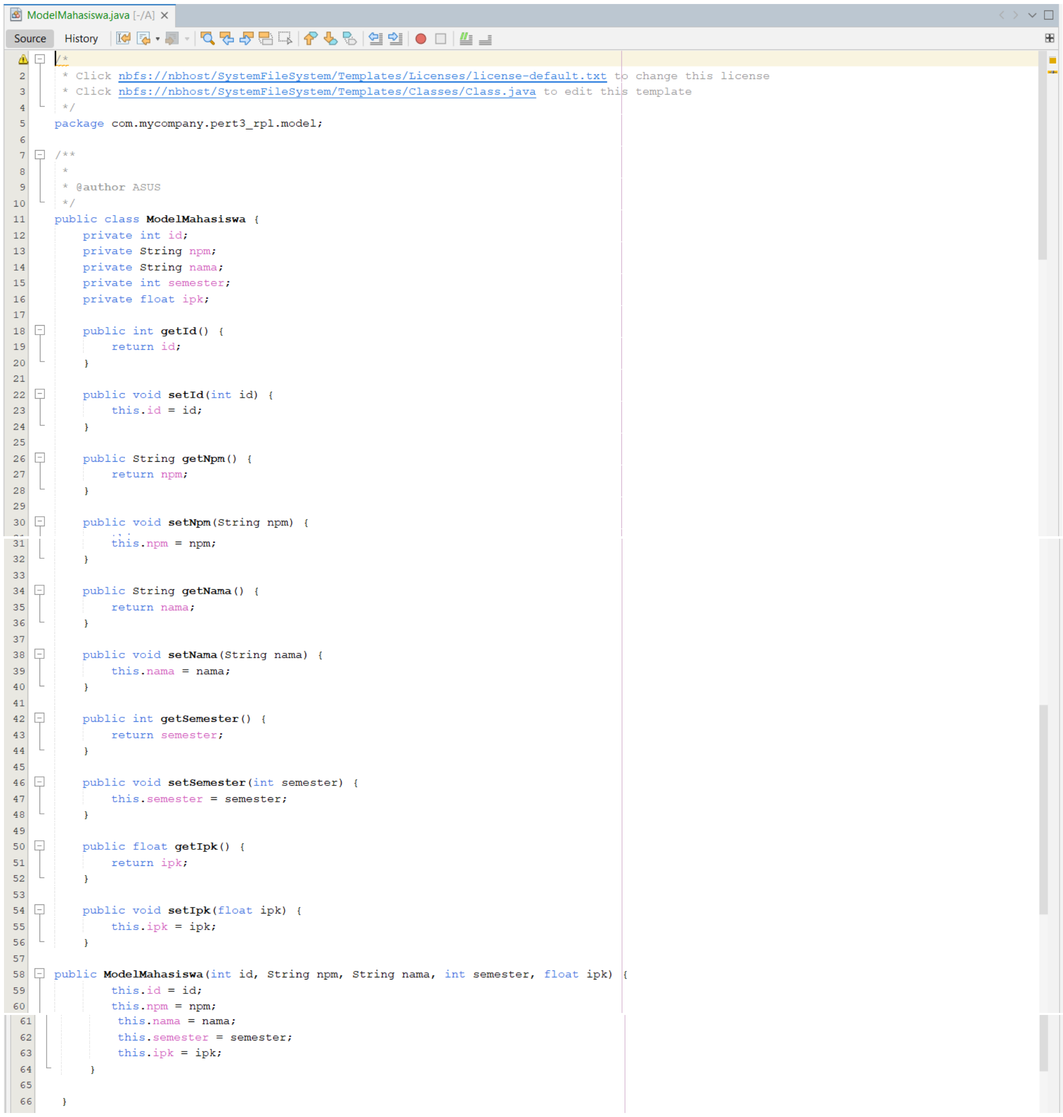


```
            System.out.print("PILIH OPSI: ");
            pilihan = scanner.nextInt();
            scanner.nextLine();

            switch (pilihan){
                case 1:
                    mahasiswaController.displayAllMahasiswa();
                    break;

                case 2:
                    // tambah mhs
                    System.out.println("Masukkan NPM: ");
                    String npm = scanner.next();
                    System.out.println("Masukkan Nama: ");
                    String nama = scanner.next();
                    System.out.println("Masukkan Semester: ");
                    int semester = scanner.nextInt();
                    System.out.println("Masukkan IPK: ");
                    float ipk = scanner.nextFloat();
                    System.out.println(npm + nama + semester + ipk);

                    mahasiswaController.addMahasiswa(npm, nama, semester, ipk);
                    break;

                case 3:
                    System.out.print("Masukkan ID mahasiswa: ");
                    int id = scanner.nextInt();
                    scanner.nextLine();

                    System.out.println("Masukkan NPM: ");
```



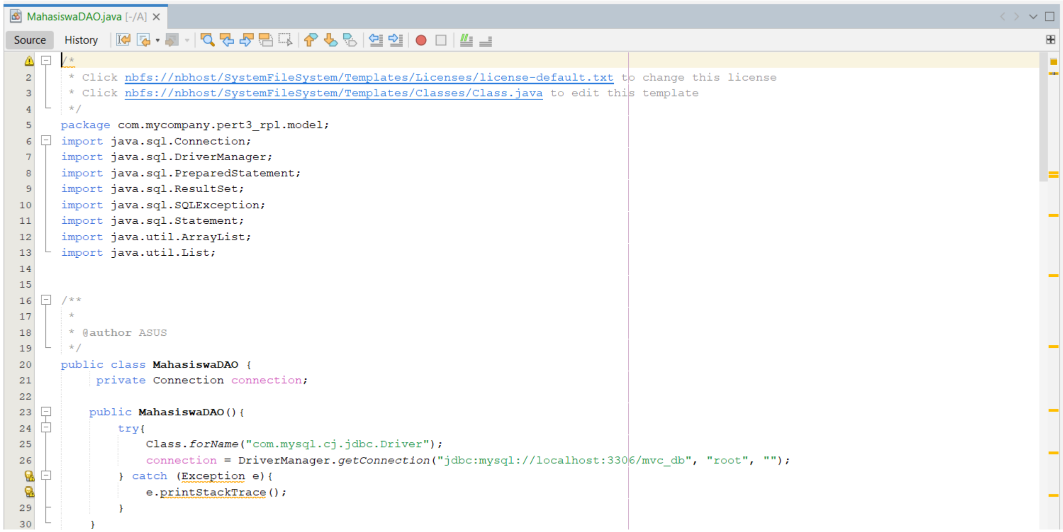
```
                    String npmBaru = scanner.next();
                    System.out.println("Masukkan Nama: ");
                    String namaBaru = scanner.next();
                    System.out.println("Masukkan Semester: ");
                    int semesterBaru = scanner.nextInt();
                    System.out.println("Masukkan IPK: ");
                    float ipkBaru = scanner.nextFloat();

                    mahasiswaController.updateMahasiswa(id, npmBaru, namaBaru, semesterBaru, ipkBaru);
                    break;
                case 4:
                    System.out.print("Masukkan ID Mahasiswa: ");
                    int idHapus = scanner.nextInt();
                    mahasiswaController.deleteMahasiswa(idHapus);
                case 5:
                    mahasiswaController.checkDatabaseConnection();
                    break;
                case 6:
                    // Keluar
                    mahasiswaController.closeConnection();
                    System.out.println("Program selesai.");
                    return;
                default:
                    System.out.println("Input Tidak valid");
            }
        }
    }

}
```

# ModelMahasiswa

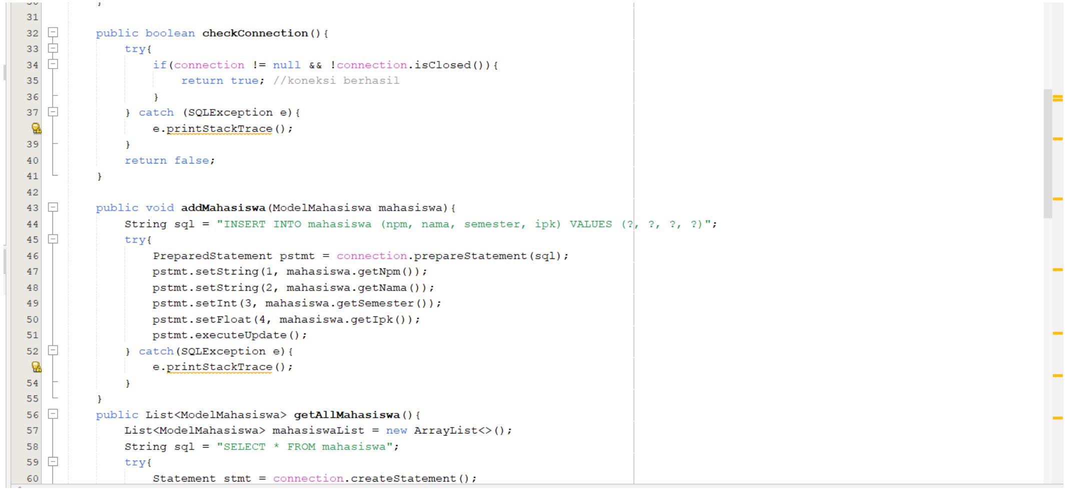


```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package com.mycompany.pert3_rpl.model;

/**
 *
 * @author ASUS
 */
public class ModelMahasiswa {
    private int id;
    private String npm;
    private String nama;
    private int semester;
    private float ipk;

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getNpm() {
        return npm;
    }

    public void setNpm(String npm) {
        this.npm = npm;
    }

    public String getNama() {
        return nama;
    }

    public void setNama(String nama) {
        this.nama = nama;
    }

    public int getSemester() {
        return semester;
    }

    public void setSemester(int semester) {
        this.semester = semester;
    }

    public float getIpk() {
        return ipk;
    }

    public void setIpk(float ipk) {
        this.ipk = ipk;
    }

public ModelMahasiswa(int id, String npm, String nama, int semester, float ipk) {
        this.id = id;
        this.npm = npm;
        this.nama = nama;
        this.semester = semester;
        this.ipk = ipk;
    }

}
```

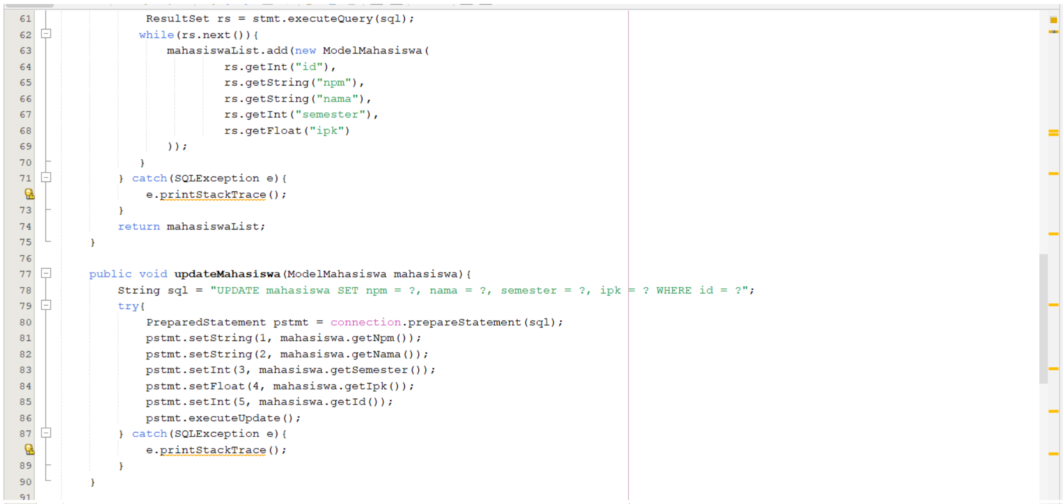
# MahasiswaDAO



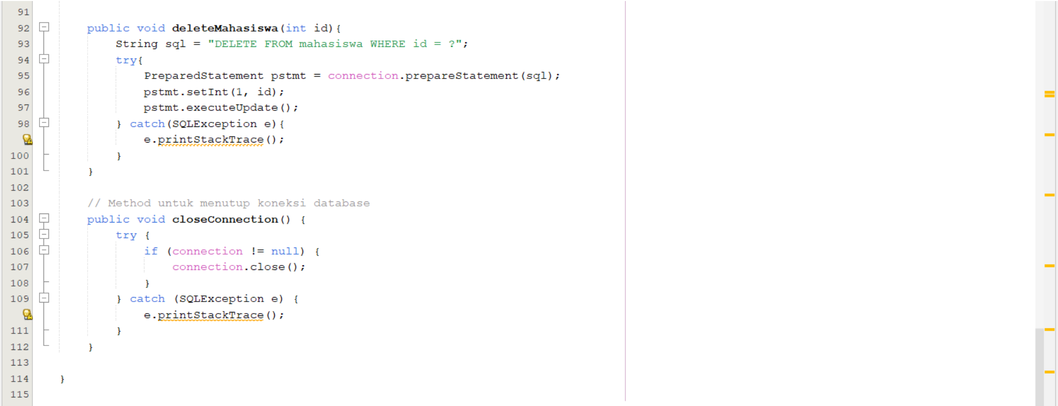
```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package com.mycompany.pert3_rpl.model;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.ArrayList;
import java.util.List;


/**
 *
 * @author ASUS
 */
public class MahasiswaDAO {
     private Connection connection;

    public MahasiswaDAO(){
        try{
            Class.forName("com.mysql.cj.jdbc.Driver");
            connection = DriverManager.getConnection("jdbc:mysql://localhost:3306/mvc_db", "root", "");
        } catch (Exception e){
            e.printStackTrace();
        }
    }
```



```java

    public boolean checkConnection(){
        try{
            if(connection != null && !connection.isClosed()){
                return true; //koneksi berhasil
            }
        } catch (SQLException e){
            e.printStackTrace();
        }
        return false;
    }

    public void addMahasiswa(ModelMahasiswa mahasiswa){
        String sql = "INSERT INTO mahasiswa (npm, nama, semester, ipk) VALUES (?, ?, ?, ?)";
        try{
            PreparedStatement pstmt = connection.prepareStatement(sql);
            pstmt.setString(1, mahasiswa.getNpm());
            pstmt.setString(2, mahasiswa.getNama());
            pstmt.setInt(3, mahasiswa.getSemester());
            pstmt.setFloat(4, mahasiswa.getIpk());
            pstmt.executeUpdate();
        } catch(SQLException e){
            e.printStackTrace();
        }
    }
    public List<ModelMahasiswa> getAllMahasiswa(){
        List<ModelMahasiswa> mahasiswaList = new ArrayList<>();
        String sql = "SELECT * FROM mahasiswa";
        try{
            Statement stmt = connection.createStatement();
```

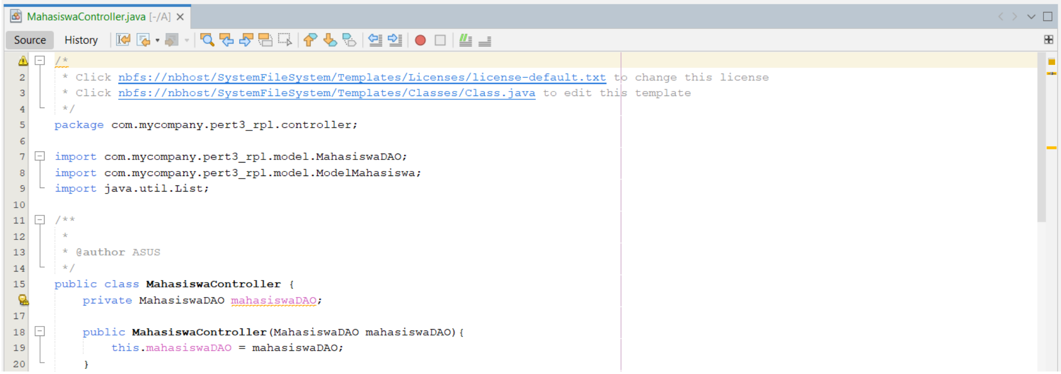


```
            ResultSet rs = stmt.executeQuery(sql);
            while(rs.next()){
                mahasiswaList.add(new ModelMahasiswa(
                        rs.getInt("id"),
                        rs.getString("npm"),
                        rs.getString("nama"),
                        rs.getInt("semester"),
                        rs.getFloat("ipk")
                ));
            }
        } catch(SQLException e){
            e.printStackTrace();
        }
        return mahasiswaList;
    }

    public void updateMahasiswa(ModelMahasiswa mahasiswa){
        String sql = "UPDATE mahasiswa SET npm = ?, nama = ?, semester = ?, ipk = ? WHERE id = ?";
        try{
            PreparedStatement pstmt = connection.prepareStatement(sql);
            pstmt.setString(1, mahasiswa.getNpm());
            pstmt.setString(2, mahasiswa.getNama());
            pstmt.setInt(3, mahasiswa.getSemester());
            pstmt.setFloat(4, mahasiswa.getIpk());
            pstmt.setInt(5, mahasiswa.getId());
            pstmt.executeUpdate();
        } catch(SQLException e){
            e.printStackTrace();
        }
    }
```

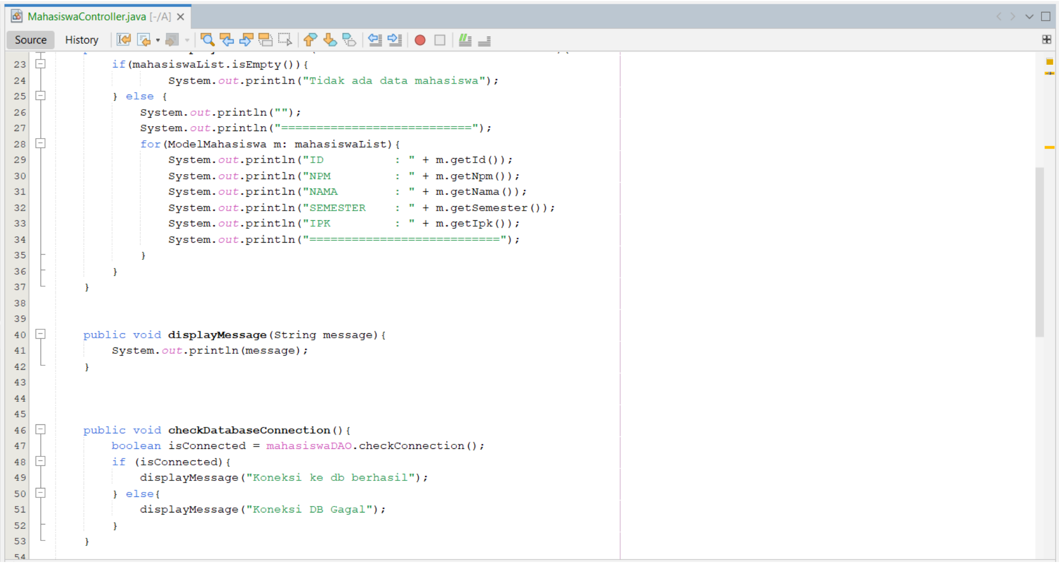


```

    public void deleteMahasiswa(int id){
        String sql = "DELETE FROM mahasiswa WHERE id = ?";
        try{
            PreparedStatement pstmt = connection.prepareStatement(sql);
            pstmt.setInt(1, id);
            pstmt.executeUpdate();
        } catch(SQLException e){
            e.printStackTrace();
        }
    }

    // Method untuk menutup koneksi database
    public void closeConnection() {
        try {
            if (connection != null) {
                connection.close();
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }

}
```

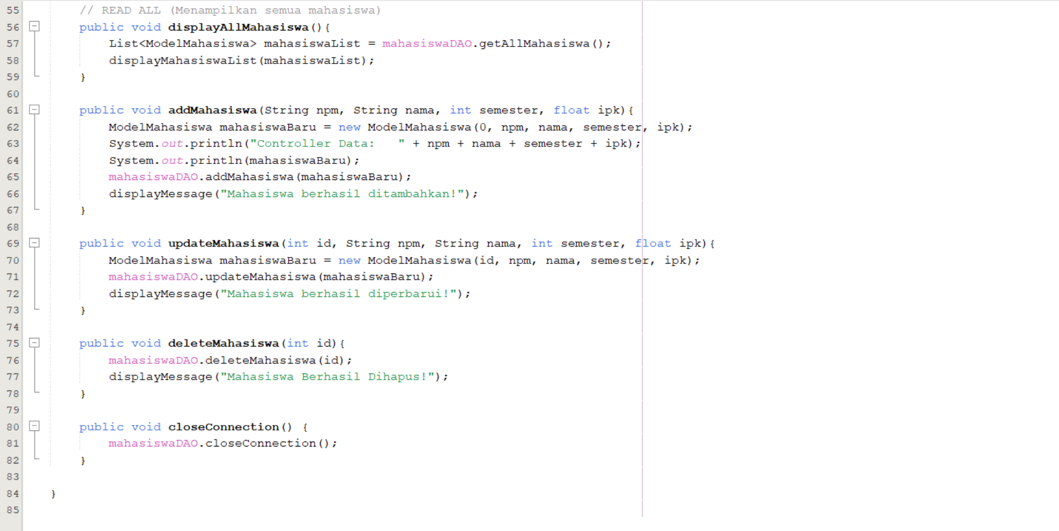
# Mahasiswa Controller



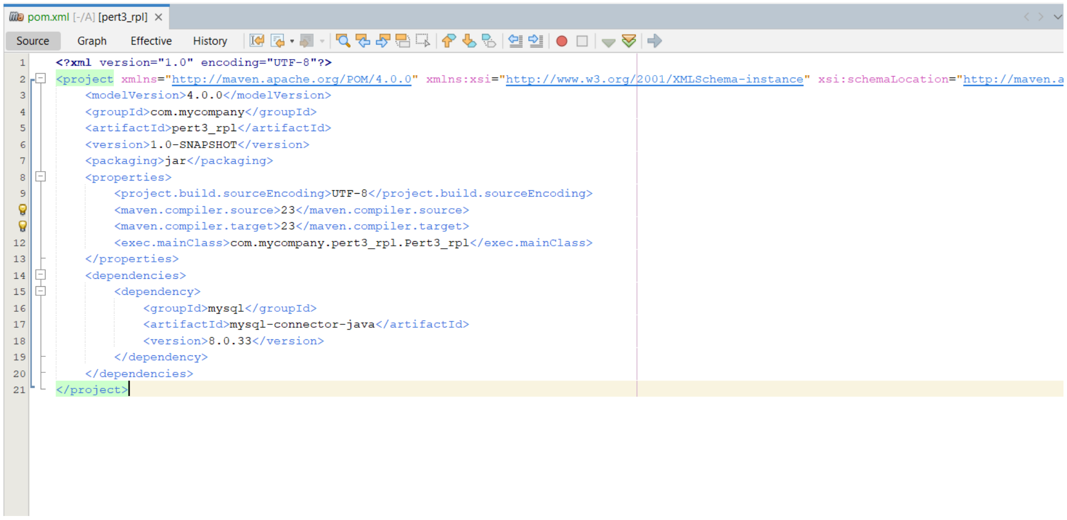
```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package com.mycompany.pert3_rpl.controller;

import com.mycompany.pert3_rpl.model.MahasiswaDAO;
import com.mycompany.pert3_rpl.model.ModelMahasiswa;
import java.util.List;

/**
 *
 * @author ASUS
 */
public class MahasiswaController {
    private MahasiswaDAO mahasiswaDAO;

    public MahasiswaController(MahasiswaDAO mahasiswaDAO){
        this.mahasiswaDAO = mahasiswaDAO;
    }
```



```java
        if(mahasiswaList.isEmpty()){
                System.out.println("Tidak ada data mahasiswa");
        } else {
            System.out.println("");
            System.out.println("==========================");
            for(ModelMahasiswa m: mahasiswaList){
                System.out.println("ID           : " + m.getId());
                System.out.println("NPM          : " + m.getNpm());
                System.out.println("NAMA         : " + m.getNama());
                System.out.println("SEMESTER     : " + m.getSemester());
                System.out.println("IPK          : " + m.getIpk());
                System.out.println("==========================");
            }
        }
    }


    public void displayMessage(String message){
        System.out.println(message);
    }



    public void checkDatabaseConnection(){
        boolean isConnected = mahasiswaDAO.checkConnection();
        if (isConnected){
            displayMessage("Koneksi ke db berhasil");
        } else{
            displayMessage("Koneksi DB Gagal");
        }
    }
```

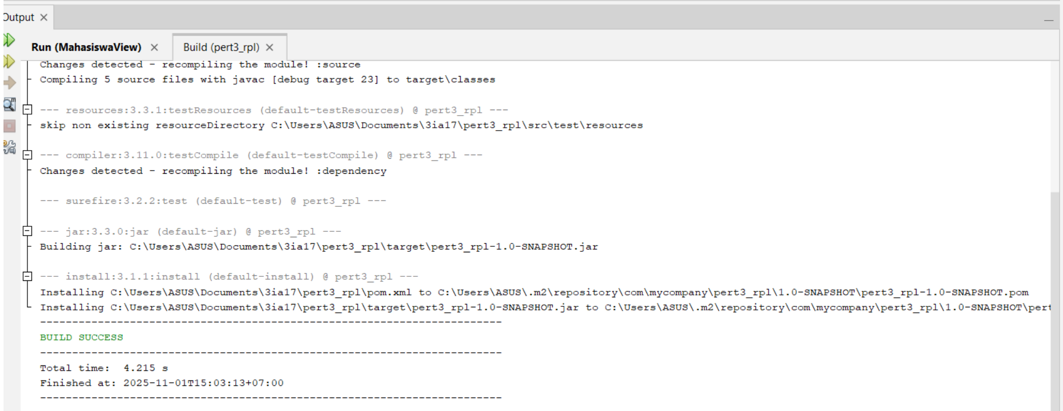


```java
    // READ ALL (Menampilkan semua mahasiswa)
    public void displayAllMahasiswa(){
        List<ModelMahasiswa> mahasiswaList = mahasiswaDAO.getAllMahasiswa();
        displayMahasiswaList(mahasiswaList);
    }

    public void addMahasiswa(String npm, String nama, int semester, float ipk){
        ModelMahasiswa mahasiswaBaru = new ModelMahasiswa(0, npm, nama, semester, ipk);
        System.out.println("Controller Data:    " + npm + nama + semester + ipk);
        System.out.println(mahasiswaBaru);
        mahasiswaDAO.addMahasiswa(mahasiswaBaru);
        displayMessage("Mahasiswa berhasil ditambahkan!");
    }

    public void updateMahasiswa(int id, String npm, String nama, int semester, float ipk){
        ModelMahasiswa mahasiswaBaru = new ModelMahasiswa(id, npm, nama, semester, ipk);
        mahasiswaDAO.updateMahasiswa(mahasiswaBaru);
        displayMessage("Mahasiswa berhasil diperbarui!");
    }

    public void deleteMahasiswa(int id){
        mahasiswaDAO.deleteMahasiswa(id);
        displayMessage("Mahasiswa Berhasil Dihapus!");
    }

    public void closeConnection() {
        mahasiswaDAO.closeConnection();
    }

}
```

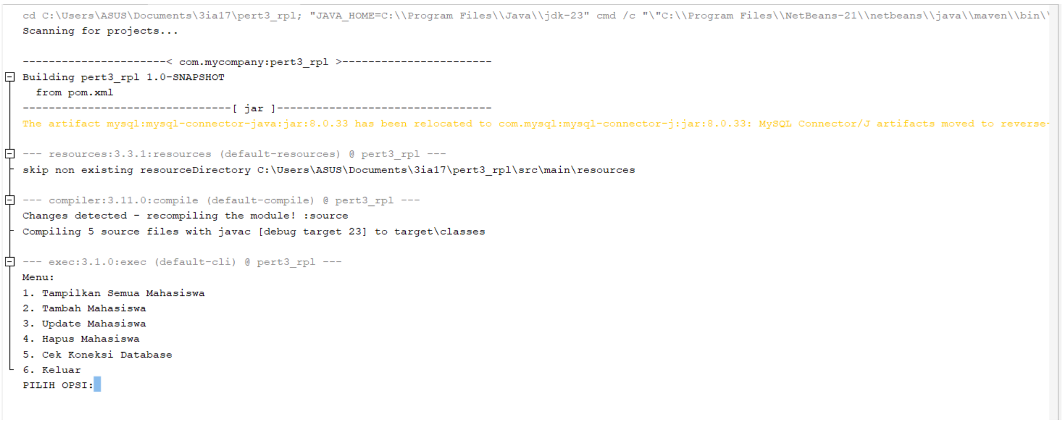


```xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.a
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.mycompany</groupId>
    <artifactId>pert3_rpl</artifactId>
    <version>1.0-SNAPSHOT</version>
    <packaging>jar</packaging>
    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <maven.compiler.source>23</maven.compiler.source>
        <maven.compiler.target>23</maven.compiler.target>
        <exec.mainClass>com.mycompany.pert3_rpl.Pert3_rpl</exec.mainClass>
    </properties>
    <dependencies>
        <dependency>
            <groupId>mysql</groupId>
            <artifactId>mysql-connector-java</artifactId>
            <version>8.0.33</version>
        </dependency>
    </dependencies>
</project>
```

# Output xml dan view

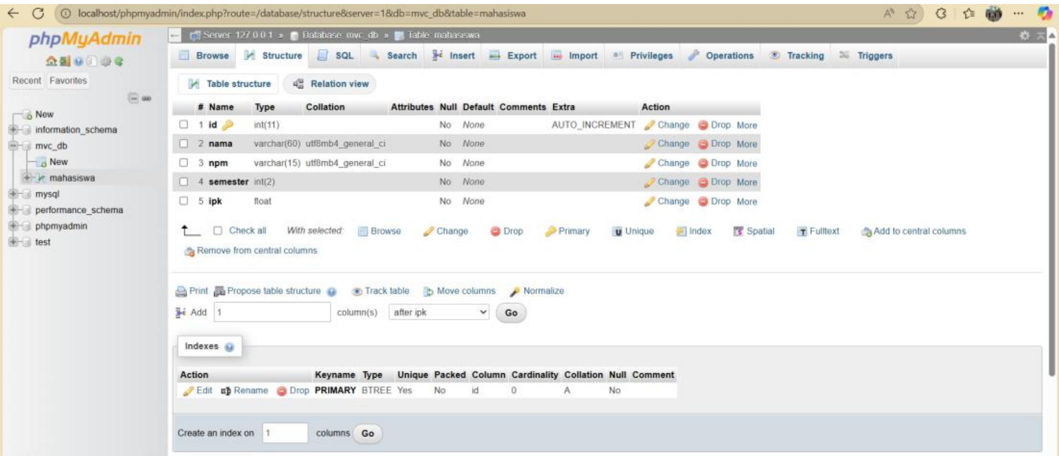


```
Changes detected - recompiling the module! :source
Compiling 5 source files with javac [debug target 23] to target\classes

--- resources:3.3.1:testResources (default-testResources) @ pert3_rpl ---
skip non existing resourceDirectory C:\Users\ASUS\Documents\3ia17\pert3_rpl\src\test\resources

--- compiler:3.11.0:testCompile (default-testCompile) @ pert3_rpl ---
Changes detected - recompiling the module! :dependency

--- surefire:3.2.2:test (default-test) @ pert3_rpl ---

--- jar:3.3.0:jar (default-jar) @ pert3_rpl ---
Building jar: C:\Users\ASUS\Documents\3ia17\pert3_rpl\target\pert3_rpl-1.0-SNAPSHOT.jar

--- install:3.1.1:install (default-install) @ pert3_rpl ---
Installing C:\Users\ASUS\Documents\3ia17\pert3_rpl\pom.xml to C:\Users\ASUS\.m2\repository\com\mycompany\pert3_rpl\1.0-SNAPSHOT\pert3_rpl-1.0-SNAPSHOT.pom
Installing C:\Users\ASUS\Documents\3ia17\pert3_rpl\target\pert3_rpl-1.0-SNAPSHOT.jar to C:\Users\ASUS\.m2\repository\com\mycompany\pert3_rpl\1.0-SNAPSHOT\pert
------------------------------------------------------------------------
BUILD SUCCESS
------------------------------------------------------------------------
Total time:  4.215 s
Finished at: 2025-11-01T15:03:13+07:00
------------------------------------------------------------------------
```



```
cd C:\Users\ASUS\Documents\3ia17\pert3_rpl; "JAVA_HOME=C:\\Program Files\\Java\\jdk-23" cmd /c "\"C:\\Program Files\\NetBeans-21\\netbeans\\java\\maven\\bin\\
Scanning for projects...

----------------------< com.mycompany:pert3_rpl >-----------------------
Building pert3_rpl 1.0-SNAPSHOT
  from pom.xml
--------------------------------[ jar ]---------------------------------
The artifact mysql:mysql-connector-java:jar:8.0.33 has been relocated to com.mysql:mysql-connector-j:jar:8.0.33: MySQL Connector/J artifacts moved to reverse-

--- resources:3.3.1:resources (default-resources) @ pert3_rpl ---
skip non existing resourceDirectory C:\Users\ASUS\Documents\3ia17\pert3_rpl\src\main\resources

--- compiler:3.11.0:compile (default-compile) @ pert3_rpl ---
Changes detected - recompiling the module! :source
Compiling 5 source files with javac [debug target 23] to target\classes

--- exec:3.1.0:exec (default-cli) @ pert3_rpl ---
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI:
```

# Phpmyadmin



|  | # | Name | Type | Collation | Attributes | Null | Default | Comments | Extra | Action |
|---|---|---|---|---|---|---|---|---|---|---|
| □ | 1 | **id** | int(11) |  |  | No | *None* |  | AUTO_INCREMENT | Change Drop More |
| □ | 2 | **nama** | varchar(60) | utf8mb4_general_ci |  | No | *None* |  |  | Change Drop More |
| □ | 3 | **npm** | varchar(15) | utf8mb4_general_ci |  | No | *None* |  |  | Change Drop More |
| □ | 4 | **semester** | int(2) |  |  | No | *None* |  |  | Change Drop More |
| □ | 5 | **ipk** | float |  |  | No | *None* |  |  | Change Drop More |

Add 1 column(s) after ipk Go

| Action | Keyname | Type | Unique | Packed | Column | Cardinality | Collation | Null | Comment |
|---|---|---|---|---|---|---|---|---|---|
| Edit Rename Drop | **PRIMARY** | BTREE | Yes | No | id | 0 | A | No |  |

Create an index on 1 columns Go