ACTIVITY PERTEMUAN 3

Nama : Raihan Fathan

NPM : 51421231

Kelas : 4IA28

- Listing Program
  - 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.mahasiswa.model;

import java.sql.*;
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/raihan_mvc",
"root", "");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    public boolean checkConnection(){
        try{
            if(connection != null && !connection.isClosed()) {
                return true;
            }
        }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();

            }
        }

        public void closeConnection(){
            try{
                if(connection != null){
                    connection.close();
                }
            }catch(SQLException e){
                e.printStackTrace();
            }
        }
}
```

MahasiswaDAO

```
/*
 * 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.mahasiswa.model;

import java.sql.*;
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/raihan_mvc",
"root", "");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    public boolean checkConnection(){
        try{
            if(connection != null && !connection.isClosed()) {
                return true;
            }
        }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();

        }
    }

    public void closeConnection(){
```

```
            try{
                if(connection != null){
                    connection.close();
                }
            }catch(SQLException e){
                e.printStackTrace();
            }
        }
}
```

MahasiswaController

```
/*
 * 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.mahasiswa.controller;

import com.mahasiswa.model.MahasiswaDAO;
import com.mahasiswa.model.ModelMahasiswa;
import java.util.List;

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

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

    public void displayMahasiswaList(List<ModelMahasiswa> mahasiswaList){
        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");
        }
    }

    // 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();
        }
}
```

ModelMahasiswa

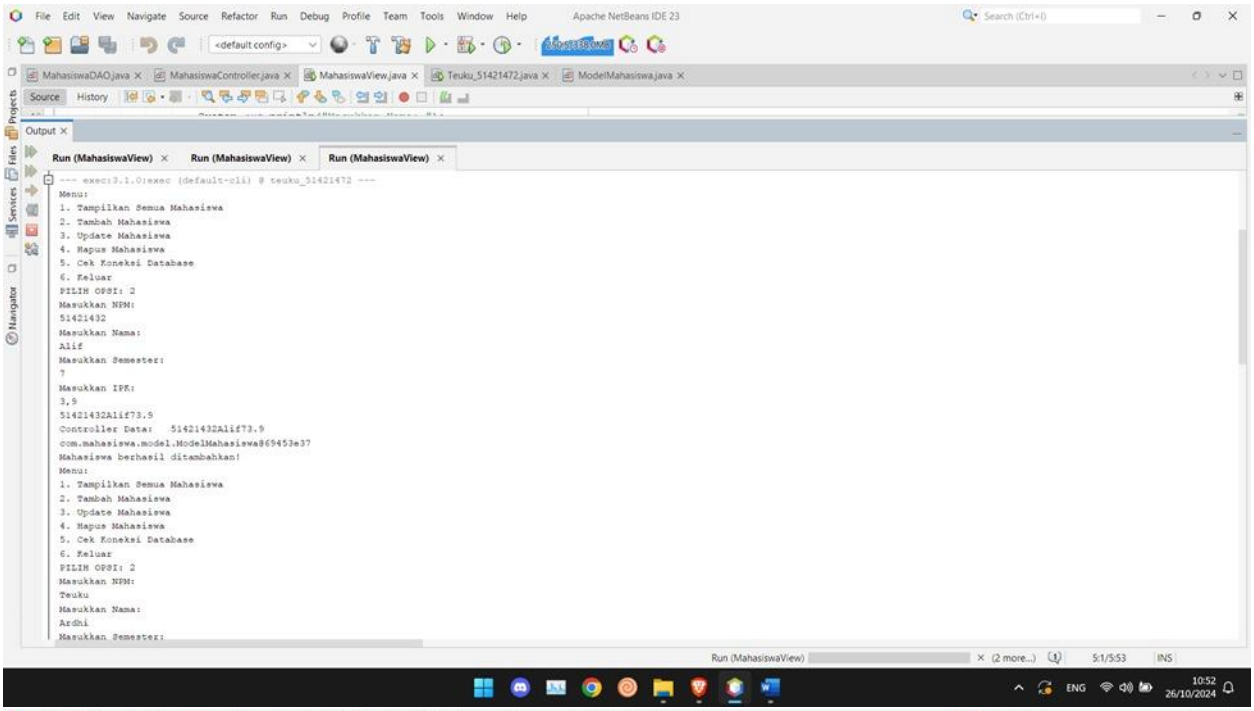
```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this template
 */
package com.mahasiswa.model;

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


    public int getId() {
        return id;
    }

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

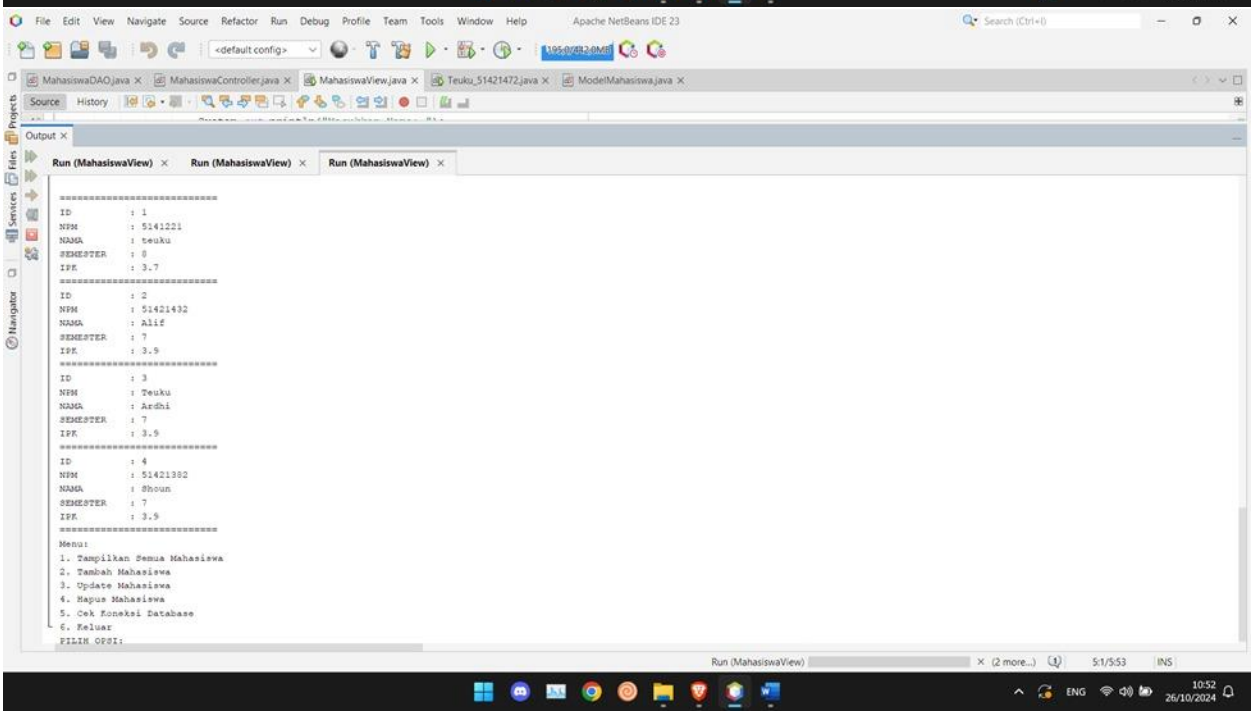
```
    public String getNpm() {
        return npm;
    }

    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;
    }

}
```

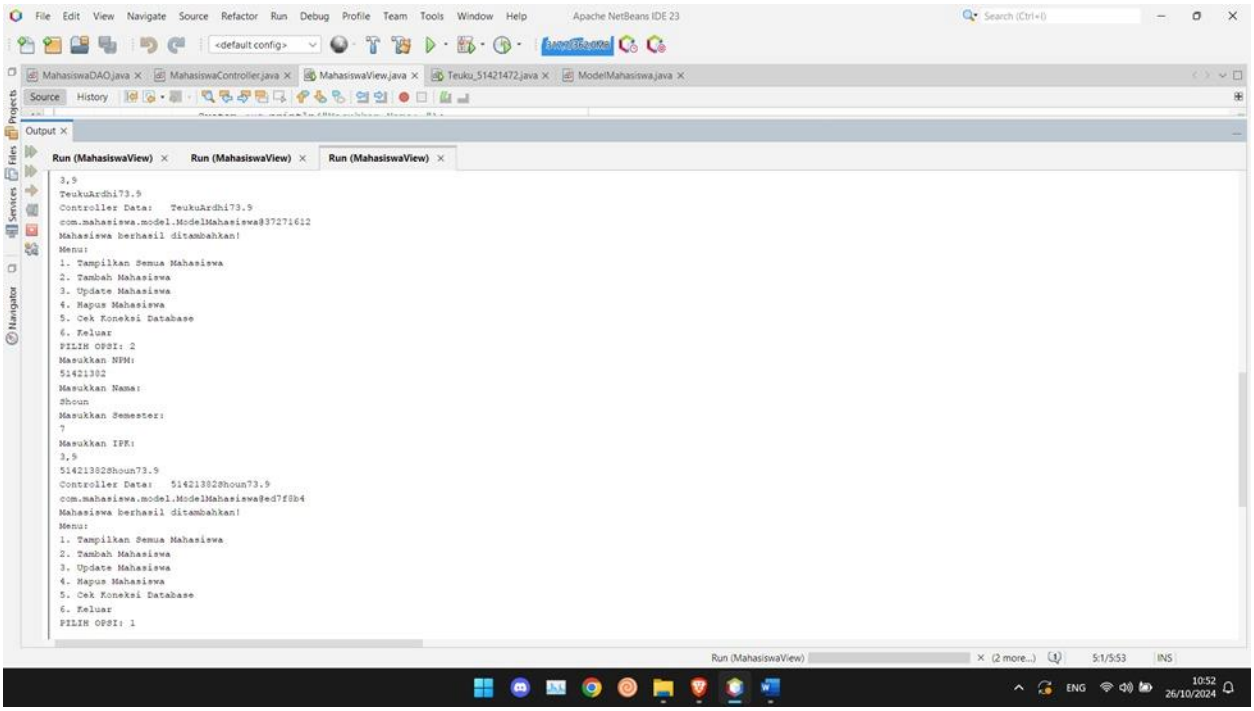
- Output Program

```
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI: 5
Koneksi ke db berhasil
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
```

```
] --- exec:3.1.0:exec (default-cli) @ RaihanFa
 Menu:
 1. Tampilkan Semua Mahasiswa
 2. Tambah Mahasiswa
 3. Update Mahasiswa
 4. Hapus Mahasiswa
 5. Cek Koneksi Database
 6. Keluar
 PILIH OPSI: 2
 Masukkan NPM:
 51421231
 Masukkan Nama:
 RaihanFathan
 Masukkan Semester:
 7
 Masukkan IPK:
 3,88
 51421231RaihanFathan73.88
 Controller Data:   51421231RaihanFathan73.88
 com.mahasiswa.model.ModelMahasiswa@150c158
 Mahasiswa berhasil ditambahkan!
 Menu:
 1. Tampilkan Semua Mahasiswa
 2. Tambah Mahasiswa
 3. Update Mahasiswa
 4. Hapus Mahasiswa
 5. Cek Koneksi Database
 6. Keluar
 PILIH OPSI:
```


File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Apache NetBeans IDE 23
MahasiswaDAO.java
MahasiswaController.java
MahasiswaView.java
Teuku_51421472.java
ModelMahasiswa.java
Source History
Output
Run (MahasiswaView)
--- exec:3.1.0:exec (default-cli) @ teuku_51421472 ---
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI: 2
Masukkan NPM:
51421432
Masukkan Nama:
Alif
Masukkan Semester:
7
Masukkan IPK:
3,9
51421432Alif73.9
Controller Data: 51421432Alif73.9
com.mahasiswa.model.ModelMahasiswa@69453e37
Mahasiswa berhasil ditambahkan!
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI: 2
Masukkan NPM:
Teuku
Masukkan Nama:
Ardhi
Masukkan Semester:
Run (MahasiswaView)
(2 more...)
5:1/5:53
INS
ENG
10:52
26/10/2024


File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Apache NetBeans IDE 23
MahasiswaDAO.java
MahasiswaController.java
MahasiswaView.java
Teuku_51421472.java
ModelMahasiswa.java
Source History
Output
Run (MahasiswaView)
==========
ID : 1
NPM : 5141221
NAMA : teuku
SEMESTER : 8
IPK : 3.7
==========
ID : 2
NPM : 51421432
NAMA : Alif
SEMESTER : 7
IPK : 3.9
==========
ID : 3
NPM : Teuku
NAMA : Ardhi
SEMESTER : 7
IPK : 3.9
==========
ID : 4
NPM : 51421382
NAMA : Shoun
SEMESTER : 7
IPK : 3.9
==========
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI:
Run (MahasiswaView)
(2 more...)
5:1/5:53
INS
ENG
10:52
26/10/2024


File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Apache NetBeans IDE 23
MahasiswaDAO.java
MahasiswaController.java
MahasiswaView.java
Teuku_51421472.java
ModelMahasiswa.java
Source
History
Output
Run (MahasiswaView)
Run (MahasiswaView)
Run (MahasiswaView)
3,9
TeukuArdhi73.9
Controller Data: TeukuArdhi73.9
com.mahasiswa.model.ModelMahasiswa@37271612
Mahasiswa berhasil ditambahkan!
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI: 2
Masukkan NPM:
51421302
Masukkan Nama:
Shoun
Masukkan Semester:
7
Masukkan IPK:
3,9
514213028houn73.9
Controller Data: 514213028houn73.9
com.mahasiswa.model.ModelMahasiswa@ed7f8b4
Mahasiswa berhasil ditambahkan!
Menu:
1. Tampilkan Semua Mahasiswa
2. Tambah Mahasiswa
3. Update Mahasiswa
4. Hapus Mahasiswa
5. Cek Koneksi Database
6. Keluar
PILIH OPSI: 1
Run (MahasiswaView)
(2 more...)
5:1/5:53
INS
ENG
10:52
26/10/2024

ACTIVITY PERTEMUAN 4

Nama : Raihan Fathan

NPM : 51421231

Kelas : 4IA28

- Listing Program

MahasiswaController

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

import com.mahasiswa.model.ModelMahasiswa;
import java.util.List;
/**
 *
 * @author raihan
 */
public interface MahasiswaController {
    public void addMhs(ModelMahasiswa mhs);
    public ModelMahasiswa getMhs(int id);
    public void updateMhs(ModelMahasiswa mhs);
    public void deleteMhs(int id);
    public List<ModelMahasiswa> getAllMahasiswa();
}
```

MahasiswaControllerImpl

```
/*
 * 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.mahasiswa.controller;

import com.mahasiswa.model.HibernateUtil;
import com.mahasiswa.model.ModelMahasiswa;
import java.util.List;
import org.hibernate.Session;
import org.hibernate.Transaction;
import org.hibernate.query.Query;
```

```
/**
 *
 * @author raihan
 */
public class MahasiswaControllerImpl implements MahasiswaController {

    @Override
    public void addMhs(ModelMahasiswa mhs){
        Transaction trx = null;

        try (Session session = HibernateUtil.getSessionFactory().openSession()){
            trx = session.beginTransaction();
            session.save(mhs);
            trx.commit();
        }catch (Exception e){
            if (trx != null){
                trx.rollback();
            }
            e.printStackTrace();
        }
    }

    @Override
    public ModelMahasiswa getMhs(int id) {
        throw new UnsupportedOperationException("Not supported yet."); // Generated from
nbfs://nbhost/SystemFileSystem/Templates/Classes/Code/GeneratedMethodBody
    }

    @Override
    public void updateMhs(ModelMahasiswa mhs) {
        Transaction trx = null;

        try (Session session = HibernateUtil.getSessionFactory().openSession()){
            trx = session.beginTransaction();
            session.update(mhs);
            trx.commit();
        } catch (Exception e){
            if (trx != null){
                trx.rollback();
            }
            e.printStackTrace();
        }

    }
```

```
    @Override
    public void deleteMhs(int id) {
        Transaction trx = null;

        try (Session session = HibernateUtil.getSessionFactory().openSession()){
            trx = session.beginTransaction();
            ModelMahasiswa mhs = session.get(ModelMahasiswa.class, id);
            if(mhs != null){
                session.delete(mhs);
                System.out.println("Berhasil hapus");
            }
            trx.commit();
        } catch (Exception e){
            if (trx != null){
                trx.rollback();
            }
            e.printStackTrace();
        }

    }

    @Override
    public List<ModelMahasiswa> getAllMahasiswa() {
        Transaction trx = null;
        List<ModelMahasiswa> listMhs = null;

        try (Session session = HibernateUtil.getSessionFactory().openSession()){
            trx = session.beginTransaction();
            // Using HQL (Hibernate Query Language) to fetch all records
            Query<ModelMahasiswa> query = session.createQuery("from ModelMahasiswa",
ModelMahasiswa.class);
            listMhs = query.list(); // Fetch all results

            trx.commit(); // Commit transaction
        } catch (Exception e) {
            if (trx != null) {
                trx.rollback(); // Rollback transaction in case of error
            }
            e.printStackTrace();
        }

        // Return the fetched list
        return listMhs;
    }

}
```

HibernateUtil

```
/*
 * 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.mahasiswa.model;

import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.cfg.Configuration;

/**
 *
 * @author raihan
 */
public class HibernateUtil {
    private static SessionFactory sessionFactory;

    static {
        try {
            // Create the SessionFactory from hibernate.cfg.xml
            sessionFactory = new Configuration().configure().buildSessionFactory();
        } catch (Throwable ex) {
            // Make sure you log the exception, as it might be swallowed
            System.err.println("Initial SessionFactory creation failed." + ex);
            throw new ExceptionInInitializerError(ex);
        }
    }

    public static SessionFactory getSessionFactory() {
        return sessionFactory;
    }
    public static void testConnection() {
        try (Session session = sessionFactory.openSession()) {
            System.out.println("Connection to the database was successful!");
        } catch (Exception e) {
            System.err.println("Failed to connect to the database.");
            e.printStackTrace();
        }
    }
}
```

ModelMahasiswa

```
/*
```

```
 * 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.mahasiswa.model;

import jakarta.persistence.*;
/**
 *
 * @author raihan
 */
@Entity
@Table(name = "mahasiswa")
public class ModelMahasiswa {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)

    public int getId() {
        return id;
    }

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

    public int getSemester() {
        return semester;
    }

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

    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 float getIpk() {
        return ipk;
    }

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

    @Column(name = "semester")
    private int id;
    private int semester;
    @Column(name = "npm", nullable = false, length = 8)
    private String npm;
    @Column(name = "nama", nullable = false, length = 8)
    private String nama;
    @Column(name = "ipk")
    private float 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;
    }

    public ModelMahasiswa() {

    }
}
```

ModelTabelMahasiswa

```
/*
 * 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.mahasiswa.model;

import java.util.List;
import javax.swing.table.AbstractTableModel;

/**
```

```
 *
 * @author raihan
 */
public class ModelTabelMahasiswa extends AbstractTableModel {
    private List<ModelMahasiswa> mahasiswaList;
    private String[] columnNames = {"ID", "NPM", "Nama", "Semester", "IPK"};

    public ModelTabelMahasiswa(List<ModelMahasiswa> mahasiswaList) {
        this.mahasiswaList = mahasiswaList;
    }

    @Override
    public int getRowCount() {
        return mahasiswaList.size(); // Jumlah baris sesuai dengan jumlah data mahasiswa
    }

    @Override
    public int getColumnCount() {
        return columnNames.length; // Jumlah kolom sesuai dengan jumlah elemen dalam
columnNames
    }

    @Override
    public Object getValueAt(int rowIndex, int columnIndex) {
        ModelMahasiswa mahasiswa = mahasiswaList.get(rowIndex);
        switch (columnIndex) {
            case 0:
                return mahasiswa.getId();
            case 1:
                return mahasiswa.getNpm();
            case 2:
                return mahasiswa.getNama();
            case 3:
                return mahasiswa.getSemester();
            case 4:
                return mahasiswa.getIpk();
            default:
                return null;
        }
    }

    @Override
    public String getColumnName(int column) {
        return columnNames[column]; // Mengatur nama kolom
    }
```

```
    @Override
    public boolean isCellEditable(int rowIndex, int columnIndex) {
        return false; // Semua sel tidak dapat diedit
    }

    // Method untuk menambahkan atau memodifikasi data, jika dibutuhkan
    public void setMahasiswaList(List<ModelMahasiswa> mahasiswaList) {
        this.mahasiswaList = mahasiswaList;
        fireTableDataChanged(); // Memberitahu JTable bahwa data telah berubah
    }
}
```

MahasiswaView

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this
license
 * Click nbfs://nbhost/SystemFileSystem/Templates/GUIForms/JFrame.java to edit this
template
 */
package com.mahasiswa.view;

import com.mahasiswa.controller.MahasiswaControllerImpl;
import com.mahasiswa.model.HibernateUtil;
import com.mahasiswa.model.ModelMahasiswa;
import com.mahasiswa.model.ModelTabelMahasiswa;
import java.util.List;
import javax.swing.JLabel;
import javax.swing.JOptionPane;
import javax.swing.JPanel;
import javax.swing.JTextField;

/**
 *
 * @author bangk
 */
public class MahasiswaView extends javax.swing.JFrame {

    /**
     * Creates new form MahasiswaView
     */
    private MahasiswaControllerImpl controller;
    public MahasiswaView() {
        initComponents();
        controller = new MahasiswaControllerImpl();
        HibernateUtil.testConnection();
        loadMahasiswaTable();
    }
```

```
public void loadMahasiswaTable() {
// Ambil data dari controller
List<ModelMahasiswa> listMahasiswa = controller.getAllMahasiswa();

// Buat model tabel kustom dengan data mahasiswa
ModelTabelMahasiswa tableModel = new ModelTabelMahasiswa(listMahasiswa);

// Set model pada JTable
dataTable.setModel(tableModel);
}
/**
 * This method is called from within the constructor to initialize the form.
 * WARNING: Do NOT modify this code. The content of this method is always
 * regenerated by the Form Editor.
 */
@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">
private void initComponents() {

    jScrollPane1 = new javax.swing.JScrollPane();
    jTable1 = new javax.swing.JTable();
    NamaField = new javax.swing.JTextField();
    NpmField = new javax.swing.JTextField();
    SemesterField = new javax.swing.JTextField();
    IpkField = new javax.swing.JTextField();
    simpanButton = new javax.swing.JButton();
    refreshButton = new javax.swing.JButton();
    buangButton = new javax.swing.JButton();
    jLabel1 = new javax.swing.JLabel();
    jLabel2 = new javax.swing.JLabel();
    jLabel3 = new javax.swing.JLabel();
    jLabel4 = new javax.swing.JLabel();
    jScrollPane2 = new javax.swing.JScrollPane();
    dataTable = new javax.swing.JTable();

    jTable1.setModel(new javax.swing.table.DefaultTableModel(
        new Object [][] {
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null}
        },
        new String [] {
            "Title 1", "Title 2", "Title 3", "Title 4"
        }
    ));
```

```
jScrollPane1.setViewportView(jTable1);

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

simpanButton.setText("Save");
simpanButton.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        simpanButtonActionPerformed(evt);
    }
});

refreshButton.setText("Refresh");
refreshButton.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        refreshButtonActionPerformed(evt);
    }
});

buangButton.setText("Buang");
buangButton.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        buangButtonActionPerformed(evt);
    }
});

jLabel1.setText("Nama");

jLabel2.setText("NPM");

jLabel3.setText("Semester");

jLabel4.setText("IPK");

dataTable.setModel(new javax.swing.table.DefaultTableModel(
    new Object [][] {
        {null, null, null, null},
        {null, null, null, null},
        {null, null, null, null},
        {null, null, null, null}
    },
    new String [] {
        "Title 1", "Title 2", "Title 3", "Title 4"
    }
));
jScrollPane2.setViewportView(dataTable);
```

```
        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(40, 40, 40)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                            .addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                                    .addComponent(jLabel1)
                                    .addComponent(jLabel2)
                                    .addComponent(jLabel3)
                                    .addComponent(jLabel4))
                                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING,
false)
                                            .addComponent(NamaField,
javax.swing.GroupLayout.DEFAULT_SIZE, 127, Short.MAX_VALUE)
                                            .addComponent(NpmField)
                                            .addComponent(SemesterField)
                                            .addComponent(IpkField))
                                        .addGap(7, 7, 7))
                                    .addGroup(layout.createSequentialGroup()
                                        .addComponent(simpanButton)
                                        .addGap(68, 68, 68)
                                        .addComponent(refreshButton))))
                            .addComponent(jScrollPane2,
javax.swing.GroupLayout.PREFERRED_SIZE, 500,
javax.swing.GroupLayout.PREFERRED_SIZE)))
                    .addGroup(layout.createSequentialGroup()
                        .addGap(175, 175, 175)
                        .addComponent(buangButton)))
                .addContainerGap(235, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

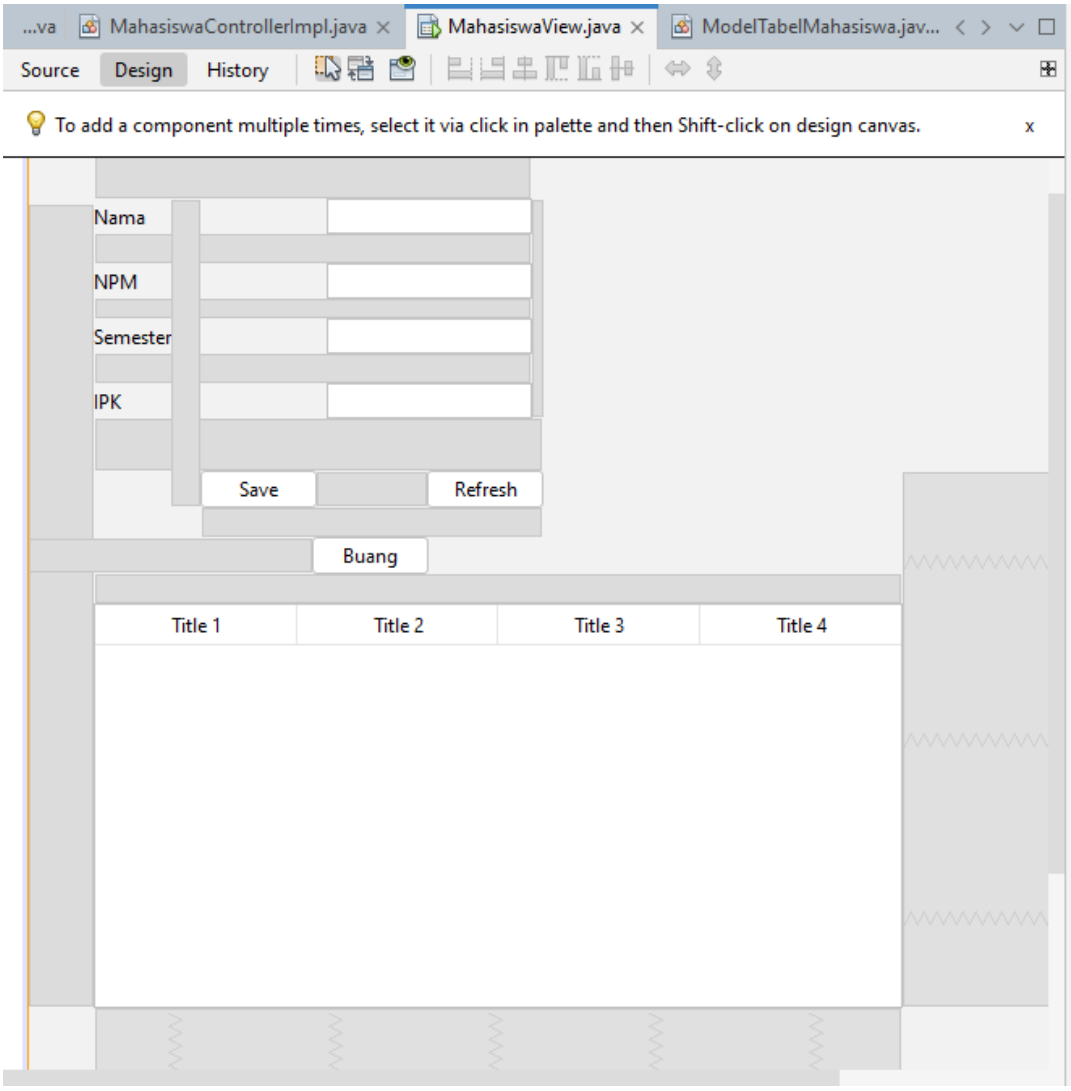
```
            .addGroup(layout.createSequentialGroup()
                .addGap(39, 39, 39)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(NamaField, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel1))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(NpmField, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel2))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(SemesterField, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel3))
                .addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(IpkField, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(jLabel4))
                .addGap(32, 32, 32)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(simpanButton)
                    .addComponent(refreshButton))
                .addGap(18, 18, 18)
                .addComponent(buangButton)
                .addGap(18, 18, 18)
                .addComponent(jScrollPane2, javax.swing.GroupLayout.PREFERRED_SIZE, 250,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addContainerGap(183, Short.MAX_VALUE))
        );

        pack();
    }// </editor-fold>

    private void simpanButtonActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        String npm = NpmField.getText();
        String nama = NamaField.getText();
        int semester = Integer.parseInt(SemesterField.getText());
```

```
        float ipk = Float.parseFloat(IpkField.getText());
        ModelMahasiswa mahasiswa = new ModelMahasiswa(0, npm, nama, semester, ipk);
        System.out.println(mahasiswa.getIpk());
        System.out.println(mahasiswa.getNama());
        System.out.println(mahasiswa.getSemester());
        System.out.println(mahasiswa.getNpm());

        controller.addMhs(mahasiswa);
        loadMahasiswaTable();
    }

    private void refreshButtonActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        loadMahasiswaTable();
    }

    private void buangButtonActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        // Membuat JTextField untuk memasukkan ID
    JTextField idField = new JTextField(5);

    // Membuat panel untuk menampung JTextField
    JPanel panel = new JPanel();
    panel.add(new JLabel("Masukkan ID yang ingin dihapus:"));
    panel.add(idField);

    // Menampilkan dialog box dengan JTextField, tombol OK, dan Cancel
    int result = JOptionPane.showConfirmDialog(null, panel,
        "Hapus Mahasiswa", JOptionPane.OK_CANCEL_OPTION,
JOptionPane.PLAIN_MESSAGE);

    // Jika tombol OK ditekan
    if (result == JOptionPane.OK_OPTION) {
        try {
            // Mengambil input ID dan memanggil metode deleteMhs
            int id = Integer.parseInt(idField.getText());
            controller.deleteMhs(id);
            JOptionPane.showMessageDialog(null, "Data berhasil dihapus.", "Sukses",
JOptionPane.INFORMATION_MESSAGE);
        } catch (NumberFormatException e) {
            // Menangani error jika ID yang dimasukkan bukan angka
            JOptionPane.showMessageDialog(null, "ID harus berupa angka.", "Error",
JOptionPane.ERROR_MESSAGE);
        }
    }
    }
```

```
    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and
feel.
         * For details see
http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info :
javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {

java.util.logging.Logger.getLogger(MahasiswaView.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(MahasiswaView.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(MahasiswaView.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(MahasiswaView.class.getName()).log(java.util.logging.Le
vel.SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new MahasiswaView().setVisible(true);
            }
        });
    }
```

```
    // Variables declaration - do not modify
    private javax.swing.JTextField IpkField;
    private javax.swing.JTextField NamaField;
    private javax.swing.JTextField NpmField;
    private javax.swing.JTextField SemesterField;
    private javax.swing.JButton buangButton;
    private javax.swing.JTable dataTable;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JScrollPane jScrollPane2;
    private javax.swing.JTable jTable1;
    private javax.swing.JButton refreshButton;
    private javax.swing.JButton simpanButton;
    // End of variables declaration
}
```

- Design



- Output Program