

**LAPORAN PRAKTIKUM
PEMROGRAMAN DASAR**



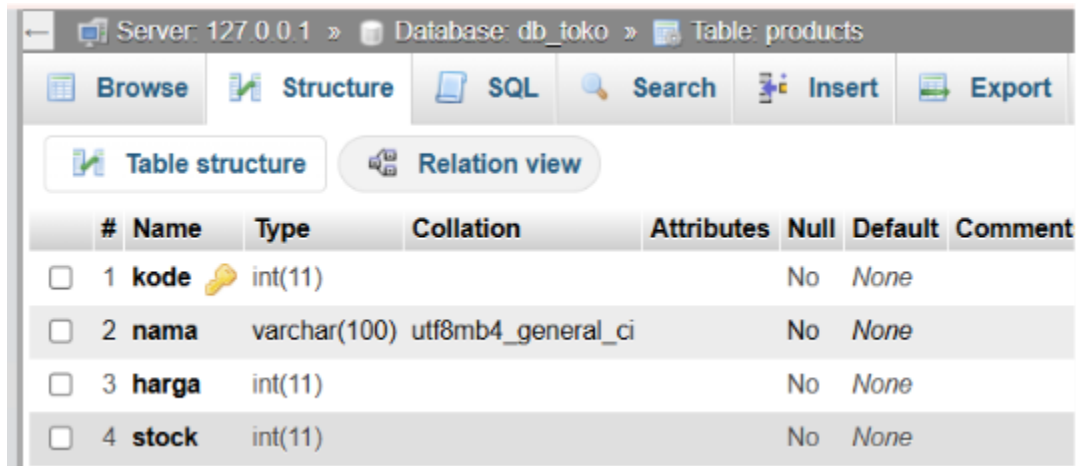
NAMA: ARIENTA AMANDA PUTRI

NIM: 24104410022

PERIODE: SEMESTER GANJIL 2024/2025

**PROGRAM STUDI TEKNIK INFORMATIKA
FAKULTAS TEKNOLOGI INFORMASI
UNIVERSITAS ISLAM BALITAR
PRATIKUM**

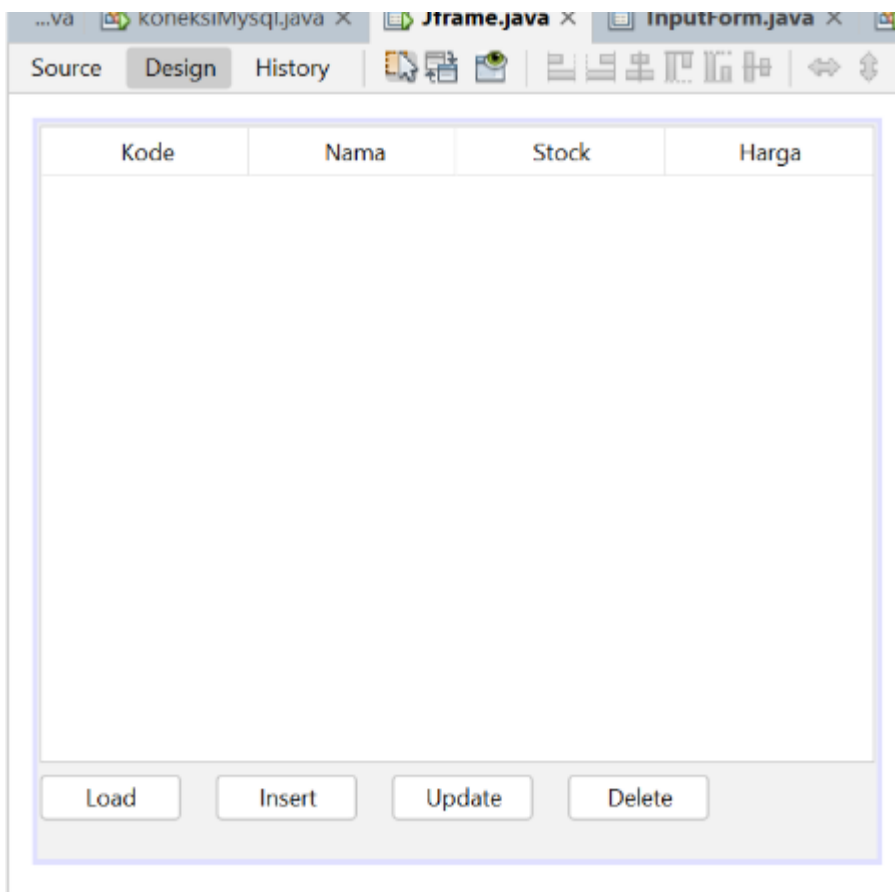
1. Pembuatan Database dengan nama db_toko dan table product



The screenshot shows the MySQL Workbench interface. The top bar indicates the connection to 'Server: 127.0.0.1', the selected database is 'Database: db_toko', and the selected table is 'Table: products'. Below the top bar are tabs for 'Browse', 'Structure', 'SQL', 'Search', 'Insert', and 'Export'. The 'Structure' tab is active, showing the 'Table structure' view. The table structure is as follows:

#	Name	Type	Collation	Attributes	Null	Default	Comment
<input type="checkbox"/> 1	kode	int(11)			No	None	
<input type="checkbox"/> 2	nama	varchar(100)	utf8mb4_general_ci		No	None	
<input type="checkbox"/> 3	harga	int(11)			No	None	
<input type="checkbox"/> 4	stock	int(11)			No	None	

2. Pembuatan JFrame yang dilengkapi dengan 4 JButton dan 1 JTable

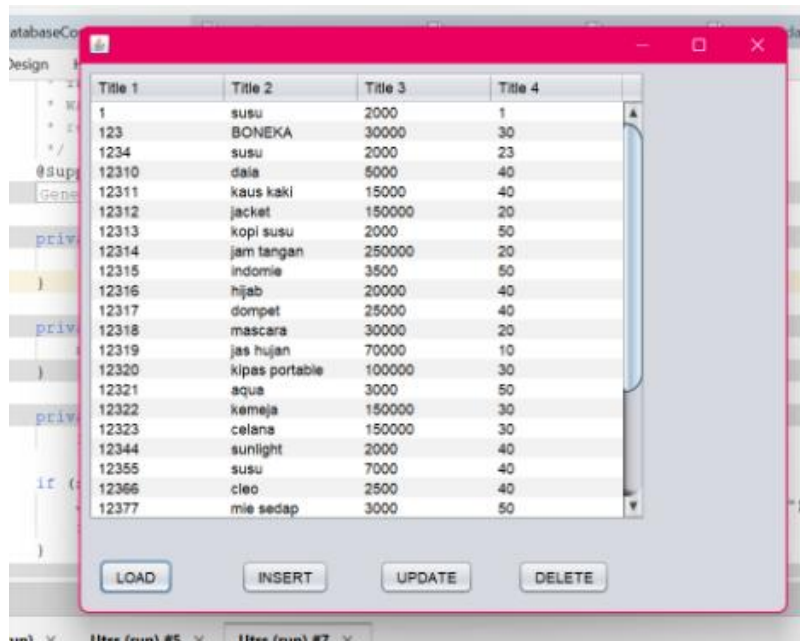


The screenshot shows a Java Swing JFrame window. The window has a title bar with several tabs: '...va', 'koneksimysql.java', 'JFrame.java', and 'Input-form.java'. The 'JFrame.java' tab is active. The window contains a table with four columns: 'Kode', 'Nama', 'Stock', and 'Harga'. Below the table are four buttons: 'Load', 'Insert', 'Update', and 'Delete'.

Kode	Nama	Stock	Harga
------	------	-------	-------

Load Insert Update Delete

- Load: seleksi semua data di tabel produk



3. Insert: memasukkan satu produk baru

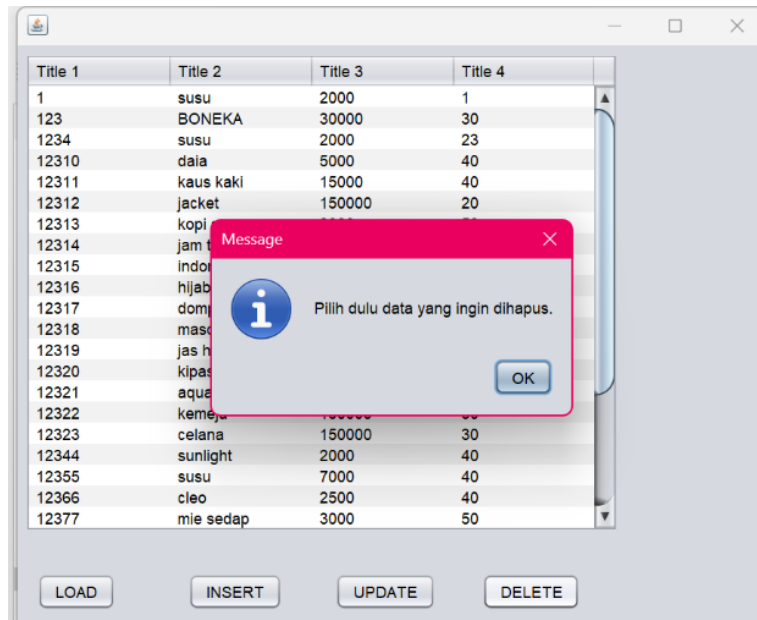
kode Nama Harga Stock

- Update: menyeleksi salah satu isi tabel dan melakukan update

Kode Lama

Kode Nama Harga Stock

- Delete: menyeleksi salah satu isi tabel dan melakukan delete



4. Pada project anda harus menerapkan enkapsulasi, Inheritance, try-catch SQLException, GUI Swing

a. Enkapsulasi

```

17  @Override
18  public void simpanKeDatabase() {
19      try {
20          Connection conn = DatabaseConnection.getConnection();
21          PreparedStatement stmt = conn.prepareStatement(
22              "INSERT INTO product (kode, nama, harga, stock) VALUES (?, ?, ?, ?)"
23          );
24          stmt.setInt(1, getKode());
25          stmt.setString(2, getNama());
26          stmt.setInt(3, getHarga());
27          stmt.setInt(4, getStok());
28          stmt.executeUpdate();
29          System.out.println("Produk berhasil disimpan ke database.");
30      } catch (SQLException e) {
31          System.err.println("Gagal menyimpan produk: " + e.getMessage());
32      }
33  }
34
35  Object getKode() {
36      throw new UnsupportedOperationException("Not supported yet."); // Generated from nt
37  }
38
39  Object getStok() {
40      throw new UnsupportedOperationException("Not supported yet."); // Generated from nt
41  }
42  }

```

b. Inheritance

```
public class Product extends AbstrackProduk {  
  
    public Product(int kode, String nama, int harga, int stok) {  
        super(kode, nama, harga, stok);  
    }  
  
    @Override  
    public void simpanKeDatabase() {  
        try {  
            Connection conn = DatabaseConnection.getConnection();  
            PreparedStatement stmt = conn.prepareStatement(  
                "INSERT INTO product (kode, nama, harga, stock) VALUES (?, ?, ?, ?)"  
            );  
            stmt.setInt(1, getKode());  
            stmt.setString(2, getNama());  
            stmt.setInt(3, getHarga());  
            stmt.setInt(4, getStok());  
            stmt.executeUpdate();  
            System.out.println("Produk berhasil disimpan ke database.");  
        } catch (SQLException e) {  
            System.err.println("Gagal menyimpan produk: " + e.getMessage());  
        }  
    }  
}
```

c. Try-catch SQLException

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5. Kerjakan codingnya dan tulis laporannya disertai penjelasan coding dan hasil screenshot outputnya.

A. Kelas Kasir

```
package projectpbo;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;
import java.util.Vector;
import javax.swing.table.DefaultTableModel;
import java.sql.Statement;
import java.sql.ResultSet;
/*
 * 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
 */
/**
 *
 * @author ASUS
 */
public class Kasir extends javax.swing.JFrame {
    /**
     * Creates new form Kasir
     */
    public Kasir() {
        initComponents();
    }
    /**
     * 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();
        Load = new javax.swing.JButton();
        Insert = new javax.swing.JButton();
    }
}
```

```

Update = new javax.swing.JButton();
Delete = new javax.swing.JButton();
setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

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 [] {
        "Kode", "Nama", "Harga", "Stock"
    }
));
jScrollPane1.setViewportView(jTable1);
Load.setText("Load");
Load.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        LoadActionPerformed(evt);
    }
});

Insert.setText("Insert");
Insert.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        InsertActionPerformed(evt);
    }
});
Update.setText("Update");
Update.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        UpdateActionPerformed(evt);
    }
});
Delete.setText("Delete");
Delete.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        DeleteActionPerformed(evt);
    }
});
javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
getContentPane().setLayout(layout);
layout.setHorizontalGroup(

```

```

        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addContainerGap()
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT_SIZE, 664,
Short.MAX_VALUE)
                .addGroup(layout.createSequentialGroup()
                    .addComponent(Load)
                    .addGap(18, 18, 18)
                    .addComponent(Insert)
                    .addGap(18, 18, 18)
                    .addComponent(Update)
                    .addGap(18, 18, 18)
                    .addComponent(Delete)
                    .addGap(0, 0, Short.MAX_VALUE)))
                .addContainerGap())
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 280,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(36, 36, 36)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(Load)
                    .addComponent(Insert)
                    .addComponent(Update)
                    .addComponent(Delete))
                .addGap(0, 10, Short.MAX_VALUE))
            );
        pack();
    } // </editor-fold>

    private void LoadActionPerformed(java.awt.event.ActionEvent evt) {
try (Connection conn = DatabaseConnection.DatabaseConnection(); Statement stmt =
conn.createStatement(); ResultSet rs = stmt.executeQuery("SELECT * FROM products")) {
    DefaultTableModel model = (DefaultTableModel) jTable1.getModel();
    model.setRowCount(0);
    while (rs.next()) {
        Vector<Object> row = new Vector<>();
        row.add(rs.getInt("kode"));
        row.add(rs.getString("nama"));
        row.add(rs.getInt("harga"));
        row.add(rs.getInt("stock"));
        model.addRow(row);
    }
}
    }

```



```

    }
    } catch (SQLException ex) {
        JOptionPane.showMessageDialog(this, "Error saat memuat data: " + ex.getMessage(),
"Database Error", JOptionPane.ERROR_MESSAGE);
        ex.printStackTrace();
    }
}

private void InsertActionPerformed(java.awt.event.ActionEvent evt) {
    new FormInput().setVisible(true);
}
private void UpdateActionPerformed(java.awt.event.ActionEvent evt) {
    new FormUpdate().setVisible(true);
}
private void DeleteActionPerformed(java.awt.event.ActionEvent evt) {
    int selectedRow = jTable1.getSelectedRow();
    if (selectedRow == -1) {
        JOptionPane.showMessageDialog(this, "Pilih dulu data yang ingin dihapus.");
        return;
    }
    int confirm = JOptionPane.showConfirmDialog(this, "Yakin ingin menghapus data ini?",
"Konfirmasi Hapus", JOptionPane.YES_NO_OPTION);
    if (confirm == JOptionPane.YES_OPTION) {
        try {
            int id = Integer.parseInt(jTable1.getValueAt(selectedRow, 0).toString()); // Ambil ID dari
kolom pertama (index 0)
            Connection conn = DatabaseConnection.DatabaseConnection();
            String sql = "DELETE FROM products WHERE kode = ?";
            PreparedStatement stmt = conn.prepareStatement(sql);
            stmt.setInt(1, id);
            stmt.executeUpdate();

            // Hapus dari JTable juga
            DefaultTableModel model = (DefaultTableModel) jTable1.getModel();
            model.removeRow(selectedRow);

            JOptionPane.showMessageDialog(this, "Data berhasil dihapus!");
        } catch (SQLException e) {
            JOptionPane.showMessageDialog(this, "Gagal hapus data: " + e.getMessage());
        }
    }
}
}
}
/**
 * @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(Kasir.class.getName()).log(java.util.logging.Level.SEVERE,
                null, ex);
        } catch (InstantiationException ex) {

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

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

            java.util.logging.Logger.getLogger(Kasir.class.getName()).log(java.util.logging.Level.SEVERE,
                null, ex);
        }
        //</editor-fold>
        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new Kasir().setVisible(true);
            }
        });
    }
    // Variables declaration - do not modify
    private javax.swing.JButton Delete;
    private javax.swing.JButton Insert;

```

```

private javax.swing.JButton Load;
private javax.swing.JButton Update;
private javax.swing.JScrollPane jScrollPane1;
private javax.swing.JTable jTable1;
// End of variables declaration
}

```

Penjelasan :

Kode ini merupakan aplikasi berbasis Java dengan antarmuka grafis (GUI) menggunakan Swing, yang dirancang untuk mengelola data produk di sebuah toko. Dalam aplikasi ini, pengguna dapat melakukan berbagai operasi seperti memuat (Load), menambah (Insert), memperbarui (Update), dan menghapus (Delete) data produk yang tersimpan di database.

Tombol Load akan mengambil data produk dari tabel products dalam database dan menampilkannya pada tabel di antarmuka. Tombol Insert akan membuka formulir untuk memasukkan data produk baru. Tombol Update membuka formulir untuk mengedit data produk yang dipilih. Sementara itu, tombol Delete memungkinkan pengguna menghapus produk tertentu dari tabel setelah konfirmasi.

Seluruh operasi tersebut berkomunikasi dengan database melalui koneksi yang diatur oleh kelas DatabaseConnection. Jika terjadi kesalahan dalam proses koneksi atau operasi database, pesan kesalahan akan ditampilkan kepada pengguna menggunakan JOptionPane.

Aplikasi dijalankan melalui metode main, yang membuat instance dari kelas Kasir dan menampilkan jendela aplikasi ke layar.

B. From Update

```

/*
 * 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 projectpbo;

import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;
import java.util.Vector;

```

```

import javax.swing.table.DefaultTableModel;
import java.sql.Statement;
import java.sql.ResultSet;
/**
 *
 * @author ASUS
 */
public class FormUpdate extends javax.swing.JFrame {
    /**
     * Creates new form FormUpdate
     */
    public FormUpdate() {
        initComponents();
    }
    /**
     * 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() {
        jLabel4 = new javax.swing.JLabel();
        Stock = new javax.swing.JTextField();
        INSERT = new javax.swing.JButton();
        CANCEL = new javax.swing.JButton();
        jLabel2 = new javax.swing.JLabel();
        tfKodeBaru = new javax.swing.JTextField();
        jLabel1 = new javax.swing.JLabel();

```

```

tfNama = new javax.swing.JTextField();
jLabel3 = new javax.swing.JLabel();
Harga = new javax.swing.JTextField();
jLabel5 = new javax.swing.JLabel();
tfKode = new javax.swing.JTextField();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
jLabel4.setText("Stock");
Stock.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        StockActionPerformed(evt);
    }
});

INSERT.setText("INSERT");
INSERT.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        INSERTActionPerformed(evt);
    }
});

CANCEL.setText("CANCEL");
jLabel2.setText("Kode Baru");
tfKodeBaru.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        tfKodeBaruActionPerformed(evt);
    }
});

jLabel1.setText("Nama");
tfNama.addActionListener(new java.awt.event.ActionListener() {

```



```

        .addComponent(tfKodeBaru, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE))
        .addGroup(layout.createSequentialGroup()
        .addComponent(jLabel5)
        .addGap(18, 18, 18)
        .addComponent(tfKode, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)))
        .addGap(40, 40, 40)
        .addComponent(jLabel1)
        .addGap(18, 18, 18)
        .addComponent(tfNama, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
        .addGap(55, 55, 55)
        .addComponent(jLabel3)
        .addGap(18, 18, 18)
        .addComponent(Harga, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
        .addGap(68, 68, 68)
        .addComponent(jLabel4)
        .addGap(18, 18, 18)
        .addComponent(Stock, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
        .addContainerGap(14, Short.MAX_VALUE))
    );
    layout.setVerticalGroup(
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
        .addGap(63, 63, 63)

```

```

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
    .addComponent(jLabel1)
    .addComponent(tfNama, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
    .addComponent(jLabel3)
    .addComponent(Harga, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
    .addComponent(jLabel4)
    .addComponent(Stock, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED))
.addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
    .addContainerGap()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
    .addComponent(jLabel5)
    .addComponent(tfKode, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
    .addGap(26, 26, 26)))
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
    .addComponent(jLabel2)
    .addComponent(tfKodeBaru, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
    .addComponent(INSERT)
    .addComponent(CANCEL))
    .addContainerGap(24, Short.MAX_VALUE))
);
pack();

```



```

} // </editor-fold>

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

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

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

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

private void INSERTActionPerformed(java.awt.event.ActionEvent evt) {
    int kodeLama = Integer.parseInt(tfKode.getText());
    int kodeBaru = Integer.parseInt(tfKodeBaru.getText());
    String nama = tfNama.getText();
    int harga = Integer.parseInt(Harga.getText());
    int stok = Integer.parseInt(Stock.getText());

    try {
        Connection conn = DatabaseConnection.DatabaseConnection(); // pastikan class koneksi
        sudah sesuai

        String sql = "UPDATE products SET kode = ?, nama = ?, harga = ?, stock = ? WHERE kode = ?";
        PreparedStatement stmt = conn.prepareStatement(sql);
        stmt.setInt(1, kodeBaru);
        stmt.setString(2, nama);
        stmt.setInt(3, harga);
        stmt.setInt(4, stok);
        stmt.setInt(5, kodeLama);
    }
}

```

```

int rowsUpdated = stmt.executeUpdate();
if (rowsUpdated > 0)
{
    JOptionPane.showMessageDialog(this, "Data berhasil diupdate.");
    this.dispose();
} else {
    JOptionPane.showMessageDialog(this, "Data gagal diupdate. Kode lama tidak
ditemukan.");
}

stmt.close();
conn.close();
} catch (NumberFormatException e) {
    JOptionPane.showMessageDialog(this, "Harga dan Stock harus berupa angka.");
} catch (SQLException e) {
    JOptionPane.showMessageDialog(this, "Kesalahan database: " + e.getMessage());
}
}

/**
 * @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(FormUpdate.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(FormUpdate.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(FormUpdate.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(FormUpdate.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);

        }
    }
}
//</editor-fold>

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

```

```

    });
}
// Variables declaration - do not modify
private javax.swing.JButton CANCEL;
private javax.swing.JTextField Harga;
private javax.swing.JButton INSERT;
private javax.swing.JTextField Stock;
private javax.swing.JLabel jLabel1;
private javax.swing.JLabel jLabel2;
private javax.swing.JLabel jLabel3;
private javax.swing.JLabel jLabel4;
private javax.swing.JLabel jLabel5;
private javax.swing.JTextField tfKode;
private javax.swing.JTextField tfKodeBaru;
private javax.swing.JTextField tfNama;
// End of variables declaration
}

```

Penjelasan :

Kode ini untuk memperbaiki data produk, di mana pengguna dapat mengubah informasi produk berdasarkan kode produk lama melalui input berupa Kode Lama, Kode Baru, Nama, Harga, dan Stock, serta dua tombol yaitu INSERT untuk menyimpan perubahan dan CANCEL untuk membatalkan proses. Saat tombol INSERT ditekan, data yang dimasukkan akan diolah dan disimpan ke database menggunakan query UPDATE dengan PreparedStatement guna mencegah SQL Injection; jika proses berhasil, aplikasi menampilkan pesan sukses dan menutup form, namun jika terjadi kegagalan seperti kode lama tidak ditemukan atau input tidak valid, aplikasi akan menampilkan pesan kesalahan melalui JOptionPane. Program ini juga menangani kesalahan terkait format input maupun interaksi dengan database, sementara tombol CANCEL belum memiliki logika khusus dan umumnya hanya berfungsi untuk menutup form tanpa menyimpan perubahan. Form ini dapat dijalankan langsung melalui metode main() yang menampilkan form saat aplikasi dibuka.

C. From Input

```
/*
 * 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 projectpbo;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;
import java.util.Vector;
import javax.swing.table.DefaultTableModel;
import java.sql.Statement;
import java.sql.ResultSet;

/**
 *
 * @author ASUS
 */
public class FormInput extends javax.swing.JFrame {

    /**
     * Creates new form FormInput
     */
    public FormInput() {
        initComponents();
    }

    /**
     * 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() {

        jLabel2 = new javax.swing.JLabel();
        tfKode = new javax.swing.JTextField();
        jLabel1 = new javax.swing.JLabel();
        Nama = new javax.swing.JTextField();
    }
}
```

```

jLabel3 = new javax.swing.JLabel();
Harga = new javax.swing.JTextField();
jLabel4 = new javax.swing.JLabel();
Stock = new javax.swing.JTextField();
INSERT = new javax.swing.JButton();
CANCEL = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel2.setText("Kode");

tfKode.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        tfKodeActionPerformed(evt);
    }
});

jLabel1.setText("Nama");

Nama.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        NamaActionPerformed(evt);
    }
});

jLabel3.setText("Harga");

Harga.setText("jTextField1");

jLabel4.setText("Stock");

Stock.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        StockActionPerformed(evt);
    }
});

INSERT.setText("INSERT");
INSERT.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        INSERTActionPerformed(evt);
    }
});

```

```

CANCEL.setText("CANCEL");

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
getContentPane().setLayout(layout);
layout.setHorizontalGroup(
    layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(22, 22, 22)
            .addComponent(jLabel2)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addComponent(tfKode, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(49, 49, 49)
            .addComponent(jLabel1)
            .addGap(18, 18, 18)
            .addComponent>Nama, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(55, 55, 55)
            .addComponent(jLabel3)
            .addGap(18, 18, 18)
            .addComponent>Harga, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(68, 68, 68)
            .addComponent(jLabel4)
            .addGap(18, 18, 18)
            .addComponent>Stock, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(49, Short.MAX_VALUE))
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
layout.createSequentialGroup()
            .addGap(49, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent>INSERT)
            .addGap(18, 18, 18)
            .addComponent>CANCEL)
            .addGap(69, 69, 69))
    );
layout.setVerticalGroup(
    layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addGap(63, 63, 63)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel2)
                .addComponent(tfKode, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)

```

```

        .addComponent(jLabel1)
        .addComponent>Nama, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
        .addComponent(jLabel3)
        .addComponent>Harga, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
        .addComponent(jLabel4)
        .addComponent>Stock, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
        .addGap(34, 34, 34)
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
            .addComponent>INSERT)
            .addComponent>CANCEL))
        .addContainerGap(31, Short.MAX_VALUE))
    );

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

```

```

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

```

```

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

```

```

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

```

```

private void>INSERTActionPerformed(java.awt.event.ActionEvent evt) {
    try (Connection conn = DatabaseConnection.DatabaseConnection()) {
        String sql = "INSERT INTO products (kode, nama, harga, stock) VALUES (?, ?, ?, ?)";
        try (PreparedStatement pstmt = conn.prepareStatement(sql)) {
            int kode = Integer.parseInt(tfKode.getText());
            String nama =>Nama.getText();
            int harga = Integer.parseInt>Harga.getText();
            int stock = Integer.parseInt>Stock.getText();

            pstmt.setInt(1, kode);
            pstmt.setString(2, nama);
            pstmt.setInt(3, harga);
            pstmt.setInt(4, stock);

```



```

        int rowsAffected = pstmt.executeUpdate();
        if (rowsAffected > 0) {
            JOptionPane.showMessageDialog(this, "Data berhasil ditambahkan!", "Sukses",
JOptionPane.INFORMATION_MESSAGE);
            this.dispose();
        } else {
            JOptionPane.showMessageDialog(this, "Gagal menambahkan data.", "Error",
JOptionPane.ERROR_MESSAGE);
        }
    }
} catch (SQLException | NumberFormatException ex) {
    JOptionPane.showMessageDialog(this, "Error: " + ex.getMessage(), "Input Error",
JOptionPane.ERROR_MESSAGE);
    ex.printStackTrace();
}
}

/**
 * @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(FormInput.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(FormInput.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    }
}

```

```

    } catch (IllegalAccessException ex) {

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

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

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

// Variables declaration - do not modify
private javax.swing.JButton CANCEL;
private javax.swing.JTextField Harga;
private javax.swing.JButton INSERT;
private javax.swing.JTextField Nama;
private javax.swing.JTextField Stock;
private javax.swing.JLabel jLabel1;
private javax.swing.JLabel jLabel2;
private javax.swing.JLabel jLabel3;
private javax.swing.JLabel jLabel4;
private javax.swing.JTextField tfKode;
// End of variables declaration
}

```

Penjelasan :

Kode ini merupakan bentuk implementasi formulir input berbasis Java Swing yang berfungsi untuk menambahkan data produk ke dalam database. Formulir ini terdiri atas empat kolom input untuk memasukkan data produk, yaitu Kode, Nama, Harga, dan Stok, serta dua tombol: INSERT untuk menyimpan data dan CANCEL untuk membatalkan proses input.

Saat tombol INSERT diklik, data dari kolom input akan diambil dan diproses untuk disimpan ke database menggunakan perintah SQL INSERT INTO bersama PreparedStatement, yang bertujuan mencegah serangan SQL Injection. Jika penyimpanan berhasil, aplikasi akan menampilkan pesan sukses dan menutup form. Namun, jika terjadi kesalahan saat proses

penyimpanan atau pengisian data, aplikasi akan menampilkan pesan kesalahan melalui JOptionPane.

Meskipun tombol CANCEL tersedia pada form, belum ada logika yang diimplementasikan untuk menangani aksi tombol tersebut dalam kode. Selain itu, program ini juga dilengkapi dengan metode main yang memungkinkan form input dijalankan secara langsung saat aplikasi dibuka.

D. DatabaseConnection

```
/*  
  
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to change this  
 license  
  
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Main.java to edit this template  
  
 */  
  
package projectpbo;  
  
import java.sql.Connection;  
  
import java.sql.DriverManager;  
  
import java.sql.SQLException;  
  
/**  
  
 *  
  
 * @author ASUS  
  
 */  
  
public class DatabaseConnection {  
  
    private static final String URL = "jdbc:mysql://localhost:3306/db_toko";  
  
    private static final String USER = "root"; // Ganti dengan username MySQL Anda  
  
    private static final String PASSWORD = ""; // Ganti dengan password MySQL Anda  
  
    private static Connection connection = null;  
  
    // Metode untuk mendapatkan koneksi
```

```

public static Connection DatabaseConnection() throws SQLException {
    if (connection == null || connection.isClosed()) {
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            connection = DriverManager.getConnection(URL, USER, PASSWORD);
            System.out.println("Koneksi ke database berhasil!");
        } catch (ClassNotFoundException e) {
            System.err.println("JDBC Driver tidak ditemukan.");
            throw new SQLException("Driver tidak ditemukan", e);
        }
    }
    return connection;
}

// Metode untuk menutup koneksi
public static void closeConnection() {
    if (connection != null) {
        try {
            connection.close();
            System.out.println("Koneksi database ditutup.");
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}

```

```

    }

    static Connection getConnection() throws SQLException, ClassNotFoundException {

        Class.forName("com.mysql.cj.jdbc.Driver");

        return DriverManager.getConnection("jdbc:mysql://localhost:3306/db_toko", "root", "");

    }

}

```

Penjelasan :

Kelas DatabaseConnection adalah kelas di Java yang bertugas mengelola koneksi ke database MySQL. Di dalam kelas ini, terdapat beberapa metode utama. Pertama, metode DatabaseConnection() yang bertugas membuka koneksi ke database dengan terlebih dahulu memeriksa apakah koneksi sudah ada atau belum, kemudian memuat driver JDBC MySQL melalui Class.forName(). Jika koneksi berhasil dibuka, maka akan muncul pesan "Koneksi ke database berhasil!", dan jika terjadi kesalahan seperti driver tidak ditemukan, maka akan ditangani dengan blok try-catch. Kedua, terdapat metode closeConnection() yang digunakan untuk menutup koneksi yang telah dibuka, dengan memastikan terlebih dahulu bahwa koneksi memang ada, lalu menutupnya menggunakan connection.close(), serta menangani kemungkinan error saat proses penutupan. Ketiga, metode getConnection() yang berfungsi untuk membuka koneksi baru ke database tanpa memeriksa status koneksi yang sudah ada. Kelas ini secara umum menggunakan blok try-catch untuk mengantisipasi berbagai kemungkinan error, seperti driver JDBC yang tidak tersedia atau kegagalan saat melakukan koneksi. Namun, penggunaan username dan password yang ditulis secara langsung di dalam kode (hardcoded) bukanlah praktik yang disarankan untuk aplikasi produksi.