LAPORAN PRAKTIKUM

PEMROGRAMAN DASAR

NAMA: ARIENTA AMANDA PUTRI

NIM: 24104410022

PERIODE: SEMESTER GANJIL 2024/2025

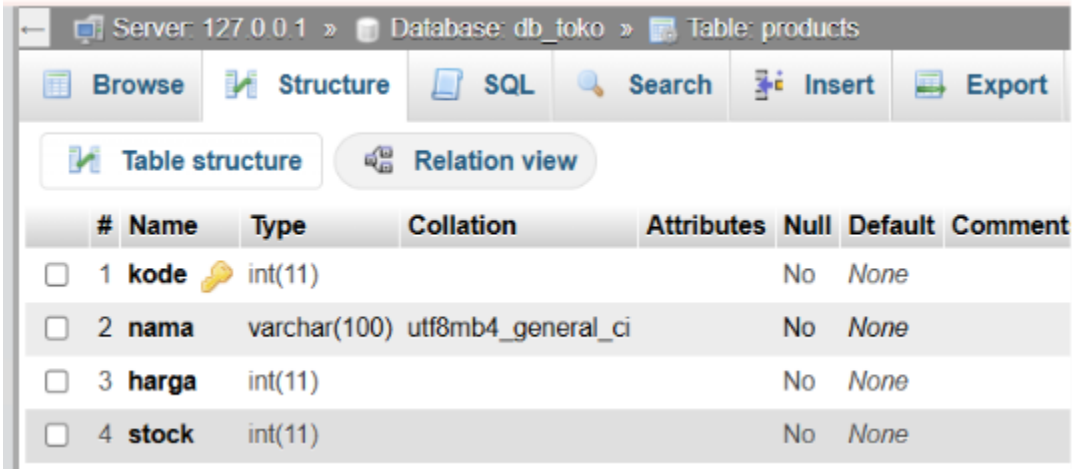
PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS TEKNOLOGI INFORMASI

UNIVERSITAS ISLAM BALITAR

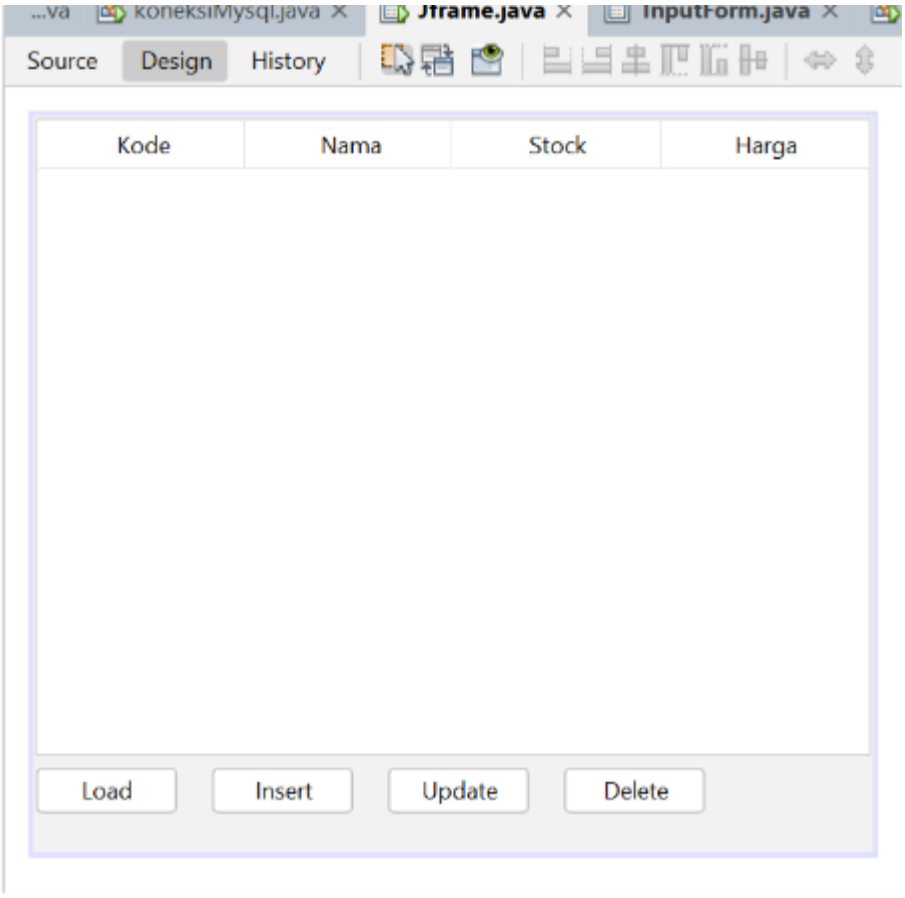
PRATIKUM

1. **Pembuatan Database dengan nama db_toko dan table product**

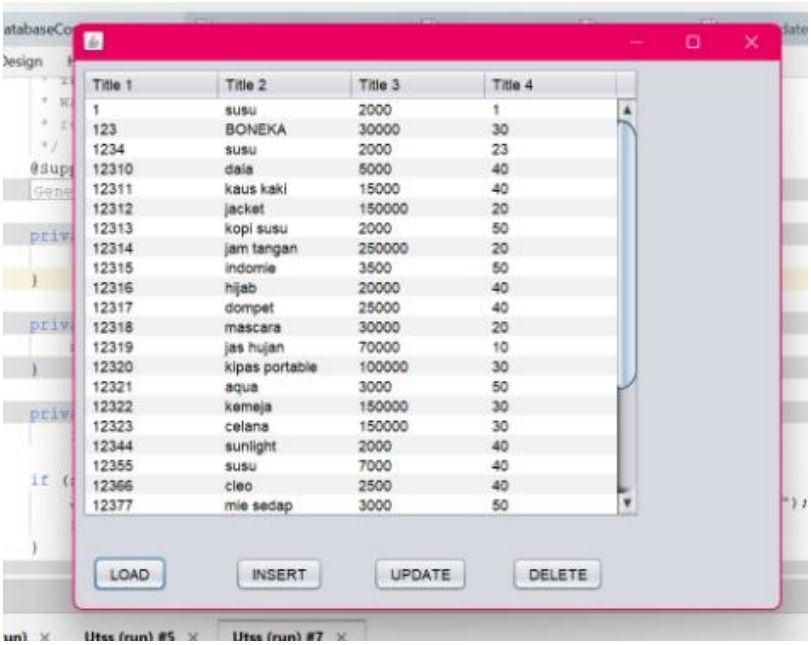


#	Name	Type	Collation	Attributes	Null	Default	Comment
1	kode	int(11)			No	None	
2	nama	varchar(100)	utf8mb4_general_ci		No	None	
3	harga	int(11)			No	None	
4	stock	int(11)			No	None	

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

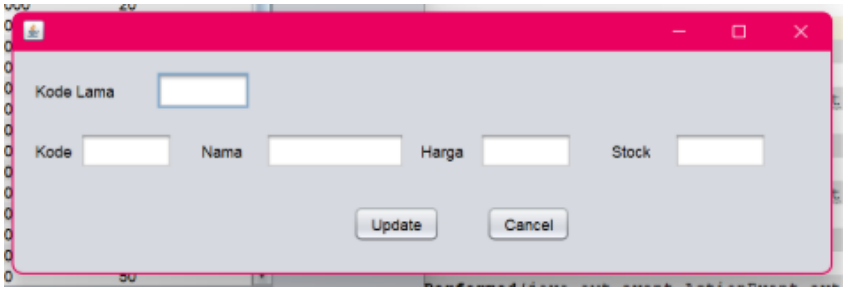


• **Load: seleksi semua data di tabel produk**

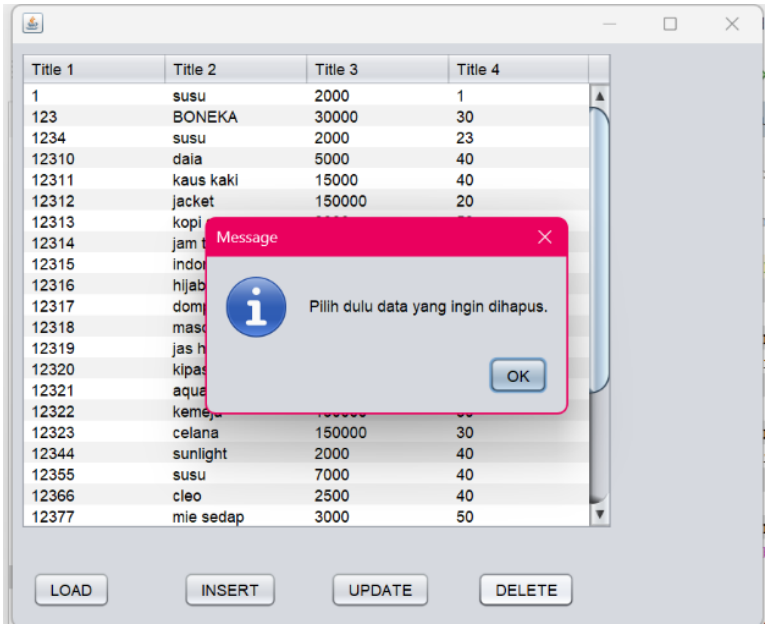


3. **Insert: memasukkan satu produk baru**

• **Update: menyeleksi salah satu isi tabel dan melakukan update**



- **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 gettock() {
36          throw new UnsupportedOperationException("Not supported yet."); // Generated from nb
37      }
38
39      Object getStock() {
40          throw new UnsupportedOperationException("Not supported yet."); // Generated from nb
41      }
42  }
```

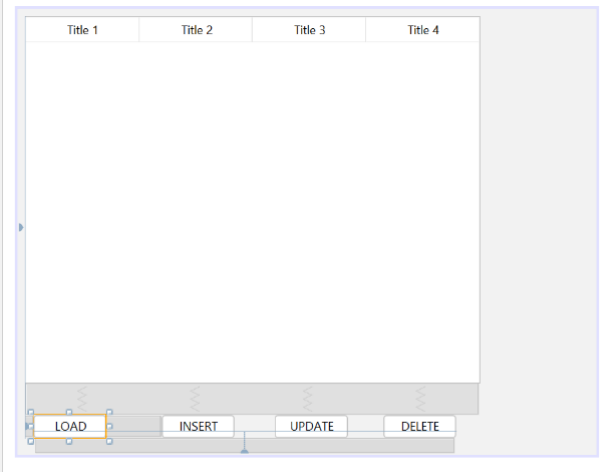
b. Inheritance

```
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

```
    @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());
        }
    }
```

d. GUI Swing



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

A. Kelas Kasir

```
/*
        • 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 UTS;
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 Kasir2 extends javax.swing.JFrame {
/**
* Creates new form Kasir2
*/
public Kasir2() {
   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 [] {
        "Title 1", "Title 2", "Title 3", "Title 4"
    }
));
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.PREFERRED_SIZE, 452,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGroup(layout.createSequentialGroup()
               .addGap(9, 9, 9)
               .addComponent(LOAD)
               .addGap(55, 55, 55)
               .addComponent(INSERT)
               .addGap(40, 40, 40)
               .addComponent(UPDATE)
               .addGap(35, 35, 35)
               .addComponent(DELETE)))
         .addContainerGap(114, Short.MAX_VALUE))
   );
   layout.setVerticalGroup(
      layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
      .addGroup(layout.createSequentialGroup()
         .addContainerGap()
         .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 364,
javax.swing.GroupLayout.PREFERRED_SIZE)
         .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 31,
Short.MAX_VALUE)
         .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
            .addComponent(LOAD)
            .addComponent(INSERT)
            .addComponent(UPDATE)
            .addComponent(DELETE))
         .addGap(15, 15, 15))
   );

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

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.getConnection();
       String sql = "DELETE FROM product 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());
   }
}
}

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();
    }
}
```

```
/**
* @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(Kasir2.class.getName()).log(java.util.logging.Level.SEVER
E, null, ex);
    } catch (InstantiationException ex) {
        java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.SEVER
E, null, ex);
    } catch (IllegalAccessException ex) {
        java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.SEVER
E, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
        java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.SEVER
E, null, ex);
    }
```

```
    //</editor-fold>

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new Kasir2().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 :

Program Kasir2 merupakan aplikasi kasir ringkas berbasis Java yang memanfaatkan antarmuka grafis (GUI) untuk melakukan operasi menampilkan, menambah, memperbarui, serta menghapus data produk yang tersimpan di database. Pada jendela utamanya, tersedia sebuah tabel yang menampilkan data produk serta empat tombol utama: LOAD, INSERT, UPDATE, dan DELETE. Ketika tombol LOAD ditekan, data dari tabel products di database akan muncul di tabel pada aplikasi. Tombol INSERT akan membuka jendela FormInput untuk memasukkan data produk baru, sedangkan tombol UPDATE membuka FormUpdate demi mengubah data yang sudah ada. Tombol DELETE berfungsi untuk menghapus data produk yang dipilih dari tabel dan database setelah pengguna mengonfirmasi penghapusan tersebut. Kolom-kolom yang ditampilkan di tabel antara lain kode, nama, harga, dan stok. Program ini terhubung ke database melalui class DatabaseConnection serta memakai komponen seperti JTable, JScrollPane, dan JButton. Seluruh pengaturan tampilan dan komponen diatur dalam method initComponents(), sedangkan eksekusi program dilakukan lewat method main() yang membuka jendela utama Kasir2. Aplikasi ini sangat sesuai dijadikan sebagai latihan penerapan operasi CRUD (Create, Read, Update, Delete) menggunakan Java GUI dan koneksi database.

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 UTS; import java.sql.Connection; import java.sql.PreparedStatement; import java.sql.SQLException; import javax.swing.JOptionPane; /* *

 * @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() {

   jLabel1 = new javax.swing.JLabel();
   jLabel2 = new javax.swing.JLabel();
   TfKodeBaru = new javax.swing.JTextField();
   tfNama = new javax.swing.JTextField();
   jLabel3 = new javax.swing.JLabel();
   tfHarga = new javax.swing.JTextField();
   jLabel4 = new javax.swing.JLabel();
   tfStock = new javax.swing.JTextField();
   jButton1 = new javax.swing.JButton();
   jButton2 = new javax.swing.JButton();
```

```
jLabel5 = new javax.swing.JLabel();
TfKodeLama = new javax.swing.JTextField();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel1.setText("Kode");

jLabel2.setText("Nama");

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

jLabel3.setText("Harga");

jLabel4.setText("Stock");

jButton1.setText("Update");
jButton1.addActionListener(new java.awt.event.ActionListener() {
   public void actionPerformed(java.awt.event.ActionEvent evt) {
      jButton1ActionPerformed(evt);
   }
});

jButton2.setText("Cancel");
jButton2.addActionListener(new java.awt.event.ActionListener() {
   public void actionPerformed(java.awt.event.ActionEvent evt) {
      jButton2ActionPerformed(evt);
   }
});

jLabel5.setText("Kode Lama");

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(260, 260, 260)
              .addComponent(jButton1)
              .addGap(35, 35, 35)
              .addComponent(jButton2))
            .addGroup(layout.createSequentialGroup()
              .addGap(17, 17, 17)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()
                  .addComponent(jLabel5)
                  .addGap(32, 32, 32)
                  .addComponent(TfKodeLama, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGroup(layout.createSequentialGroup()
                  .addComponent(jLabel1)
                  .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                  .addComponent(TfKodeBaru, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
                  .addGap(22, 22, 22)
                  .addComponent(jLabel2)
                  .addGap(18, 18, 18)
                  .addComponent(tfNama, javax.swing.GroupLayout.PREFERRED_SIZE, 107,
javax.swing.GroupLayout.PREFERRED_SIZE)
                  .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                  .addComponent(jLabel3)
                  .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                  .addComponent(tfHarga, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
                  .addGap(30, 30, 30)
                  .addComponent(jLabel4)
                  .addGap(18, 18, 18)
                  .addComponent(tfStock, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)))))
          .addContainerGap(50, Short.MAX_VALUE))
    );
    layout.setVerticalGroup(
      layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
      .addGroup(layout.createSequentialGroup()
        .addGap(16, 16, 16)
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
```

```
            .addComponent(jLabel5)
            .addComponent(TfKodeLama, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
        .addGap(18, 18, 18)
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
            .addComponent(jLabel1)
            .addComponent(jLabel2)
            .addComponent(TfKodeBaru, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(tfNama, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(jLabel3)
            .addComponent(tfHarga, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addComponent(jLabel4)
            .addComponent(tfStock, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 28,
Short.MAX_VALUE)
        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
            .addComponent(jButton1)
            .addComponent(jButton2))
        .addGap(24, 24, 24))
    );

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

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

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
    this.dispose();
}

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
int kodeBaru = Integer.parseInt(TfKodeBaru.getText());
int kodeLama = Integer.parseInt(TfKodeLama.getText());
String nama = tfNama.getText();
int harga = Integer.parseInt(tfHarga.getText());
```

```
int stok = Integer.parseInt(tfStock.getText());


try { Connection conn = DatabaseConnection.getConnection(); // 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.SEVE
RE, null, ex);
    } catch (InstantiationException ex) {

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

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

java.util.logging.Logger.getLogger(FormUpdate.class.getName()).log(java.util.logging.Level.SEVE
RE, 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.JTextField TfKodeBaru;
private javax.swing.JTextField TfKodeLama;
private javax.swing.JButton jButton1;
private javax.swing.JButton jButton2;
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 tfHarga;
private javax.swing.JTextField tfNama;
private javax.swing.JTextField tfStock;
```

```
// End of variables declaration


}
```

Penjelasan :

Form ini menyediakan beberapa kolom input, yaitu “Kode Lama”, “Kode Baru”, “Nama”, “Harga”, dan “Stok”, serta dua tombol, yakni Update dan Cancel. Ketika tombol Update ditekan, program akan mengambil data dari kolom input tersebut, lalu menjalankan perintah SQL UPDATE ke database untuk mengganti data lama sesuai “Kode Lama” dengan data baru yang telah diisi pengguna. Jika proses pembaruan berhasil, akan tampil pesan konfirmasi dan form pun akan tertutup. Namun, jika terjadi kegagalan—misalnya kode lama tidak ditemukan atau nilai harga serta stok bukan berupa angka—maka akan muncul pesan kesalahan. Tombol Cancel berfungsi menutup form tanpa melakukan perubahan data. Selain itu, program memastikan semua komponen antarmuka seperti label, tombol, dan field input tersusun rapi. Form ini dijalankan melalui method main() yang akan menampilkan FormUpdate saat program diaktifkan. Form ini merupakan bagian dari aplikasi yang menerapkan konsep CRUD (Create, Read, Update, Delete) menggunakan Java GUI dan koneksi database.

C. From Input

```
package UTS;

import UTS.DatabaseConnection;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.SQLException;

import javax.swing.JOptionPane;


/*

 * 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 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() {
        jPanel1 = new javax.swing.JPanel();
        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        jLabel4 = new javax.swing.JLabel();
        txtKode = new javax.swing.JTextField();
        txtNama = new javax.swing.JTextField();
        txtHarga = new javax.swing.JTextField();
```

```
txtStock = new javax.swing.JTextField();
jButton1 = new javax.swing.JButton();
jButton2 = new javax.swing.JButton();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

jLabel1.setText("kode");
jLabel2.setText("Nama");
jLabel3.setText("Harga");

jLabel4.setText("Stock");

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

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

jButton1.setText("Tambah");
jButton1.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
```

```
            jButton1ActionPerformed(evt);
        }
    });

    jButton2.setText("Cancel");
    jButton2.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            jButton2ActionPerformed(evt);
        }
    });

    javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);
    jPanel1.setLayout(jPanel1Layout);
    jPanel1Layout.setHorizontalGroup(
        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(jPanel1Layout.createSequentialGroup()
            .addGap(27, 27, 27)
            .addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED_SIZE, 40,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addComponent(txtKode, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)
            .addComponent(jLabel2)
            .addGap(5, 5, 5)
            .addComponent(txtNama, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
```

```
            .addComponent(jLabel3)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addComponent(txtHarga, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(11, 11, 11)
            .addComponent(jLabel4)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addComponent(txtStock, javax.swing.GroupLayout.PREFERRED_SIZE, 71,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addContainerGap(90, Short.MAX_VALUE))
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel1Layout.createSequentialGroup()
            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(jButton1)
            .addGap(18, 18, 18)
            .addComponent(jButton2)
            .addGap(110, 110, 110))
    );
    jPanel1Layout.setVerticalGroup(
       jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
       .addGroup(jPanel1Layout.createSequentialGroup()
            .addGap(53, 53, 53)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
              .addComponent(jLabel1)
              .addComponent(jLabel2)
              .addComponent(jLabel3)
              .addComponent(jLabel4)
```

```
                .addComponent(txtKode, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(txtNama, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(txtHarga, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(txtStock, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jButton2)
                .addComponent(jButton1))
            .addContainerGap(16, Short.MAX_VALUE))
        );

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
        );
```

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

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

    private void jButton1ActionPerformed(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(txtKode.getText());
                String nama = txtNama.getText();
                int harga = Integer.parseInt(txtHarga.getText());
                int stock = Integer.parseInt(txtStock.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();
    }

}

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
  this.dispose();
}

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

/**
 * @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.SEVER
E, null, ex);
       } catch (InstantiationException ex) {

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

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

java.util.logging.Logger.getLogger(FormInput.class.getName()).log(java.util.logging.Level.SEVER
E, 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 jButton1;
    private javax.swing.JButton jButton2;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JTextField txtHarga;
    private javax.swing.JTextField txtKode;
    private javax.swing.JTextField txtNama;
    private javax.swing.JTextField txtStock;
    // End of variables declaration
}
```

Penjelasan :

FormInput merupakan bagian dari aplikasi kasir berbasis Java yang berfungsi sebagai tampilan khusus untuk memasukkan data produk baru ke dalam database. Dalam form ini, tersedia kolom input untuk “kode”, “nama”, “harga”, dan “stok”, serta dua tombol, yakni Tambah dan Cancel. Saat tombol Tambah diklik, program akan mengambil data dari input yang diisi pengguna, lalu menjalankan perintah SQL INSERT INTO products untuk menyimpan data tersebut ke tabel products di database. Apabila proses berhasil, akan muncul pesan sukses dan form secara

otomatis akan tertutup; namun jika terjadi kegagalan—misalnya ada input kosong atau nilai yang bukan angka—maka akan tampil pesan error. Tombol Cancel berfungsi untuk menutup form tanpa menyimpan data apa pun. Seluruh komponen antarmuka, seperti label, field input, dan tombol, diatur menggunakan GroupLayout agar tampilannya rapi. FormInput juga dapat dijalankan secara mandiri melalui method main(), yang akan menampilkan form tersebut saat program diaktifkan.

D. Data Base

```
/*
 * 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 UTS;

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

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 {
```

```
            // Load driver
            Class.forName("com.mysql.cj.jdbc.Driver");
            // Buat koneksi
            connection = DriverManager.getConnection(URL, USER, PASSWORD);
            System.out.println("Koneksi ke database berhasil!");
        } catch (ClassNotFoundException e) {
            System.err.println("JDBC Driver tidak ditemukan. Pastikan file JAR sudah ditambahkan ke classpath.");
            e.printStackTrace();
        }
    }
    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() {
```

```
      try {
       Class.forName("com.mysql.cj.jdbc.Driver"); // Pastikan driver sudah ada
       return DriverManager.getConnection("jdbc:mysql://localhost:3306/db_toko", "username",
"password");
    } catch (Exception e) {
       e.printStackTrace();
       return null;
    }
    }

}
```

Penjelasan :

Kelas DatabaseConnection adalah kelas di Java yang bertugas mengelola koneksi ke database MySQL. Di dalamnya terdapat dua metode utama: DatabaseConnection() yang membuat koneksi baru hanya jika belum ada koneksi yang aktif atau koneksi sebelumnya sudah ditutup, serta getConnection() yang selalu membuat koneksi baru setiap kali dipanggil tanpa menyimpan koneksi sebelumnya. Proses pembuatan koneksi dilakukan menggunakan DriverManager.getConnection() setelah driver JDBC dimuat dengan Class.forName()**.** Jika terjadi kesalahan, seperti driver tidak ditemukan atau gagal koneksi, masalah tersebut akan ditangani oleh blok try-catch. Selain itu, terdapat metode closeConnection() yang berfungsi menutup koneksi jika sedang aktif, sehingga penggunaan sumber daya menjadi lebih efisien dan mencegah kebocoran memori

E. Products

```
/*
* 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 UTS;
```

```
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.SQLException;

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());
        }
    }
```

```
    Object gettock() {
        throw new UnsupportedOperationException("Not supported yet."); // Generated from nbfs://nbhost/SystemFileSystem/Templates/Classes/Code/GeneratedMethodBody
    }

    Object getStock() {
        throw new UnsupportedOperationException("Not supported yet."); // Generated from nbfs://nbhost/SystemFileSystem/Templates/Classes/Code/GeneratedMethodBody
    }
}
```

Penjelasan :

Kode tersebut merupakan penerapan dari kelas Product yang merupakan turunan dari kelas abstrak AbstractProduk. Kelas ini memiliki konstruktor yang menerima parameter berupa kode produk, nama produk, harga, dan stok, lalu meneruskan parameter tersebut ke konstruktor kelas induk. Selain itu, kelas ini juga mengimplementasikan metode simpanKeDatabase(), yang bertugas menyimpan data produk ke database menggunakan JDBC (Java Database Connectivity). Di dalam metode ini, dilakukan pembuatan koneksi ke database, penyusunan statement SQL, pengisian parameter statement dengan nilai-nilai properti produk, serta eksekusi perintah SQL untuk memasukkan data produk. Jika terjadi kesalahan, pesan error akan ditampilkan. Terdapat pula dua metode, yaitu gettock() dan getStock(), yang belum diimplementasikan dan akan melemparkan UnsupportedOperationException ketika dipanggil, menandakan bahwa fungsionalitas kedua metode tersebut belum tersedia.