LAPORAN PEMOGRAMAN

BERORIENTASI OBJECT

PERIODE: SEMESTER GENAP 2024/2025

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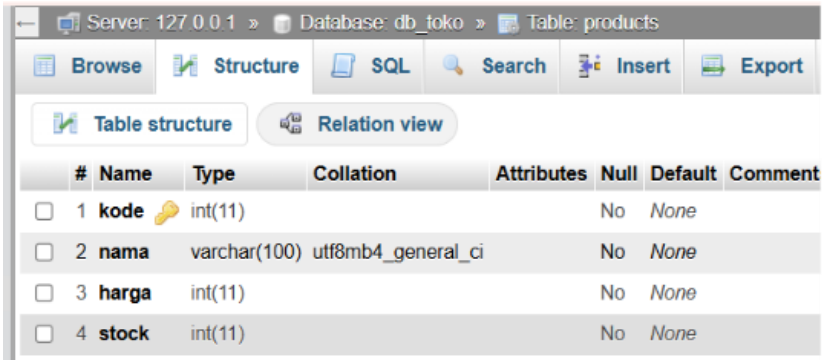
PROGRAM STUDI TEKNIK INFORMATIKA

FAKULTAS TEKNOLOGI INFORMASI

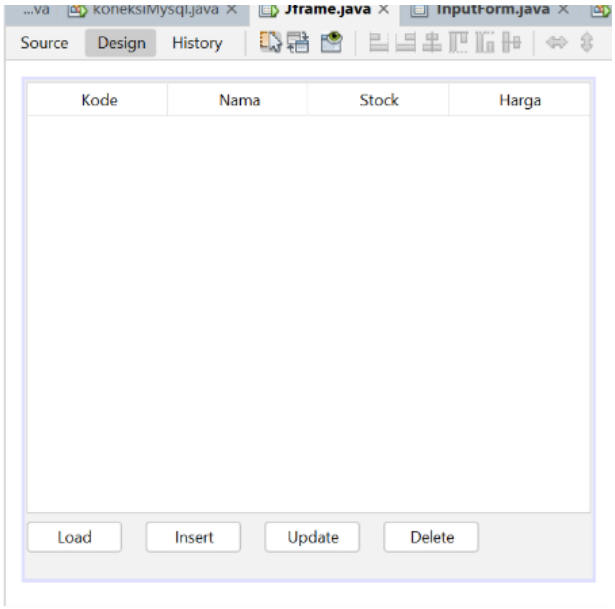
UNIVERSITASISLAM BALITAR

2025

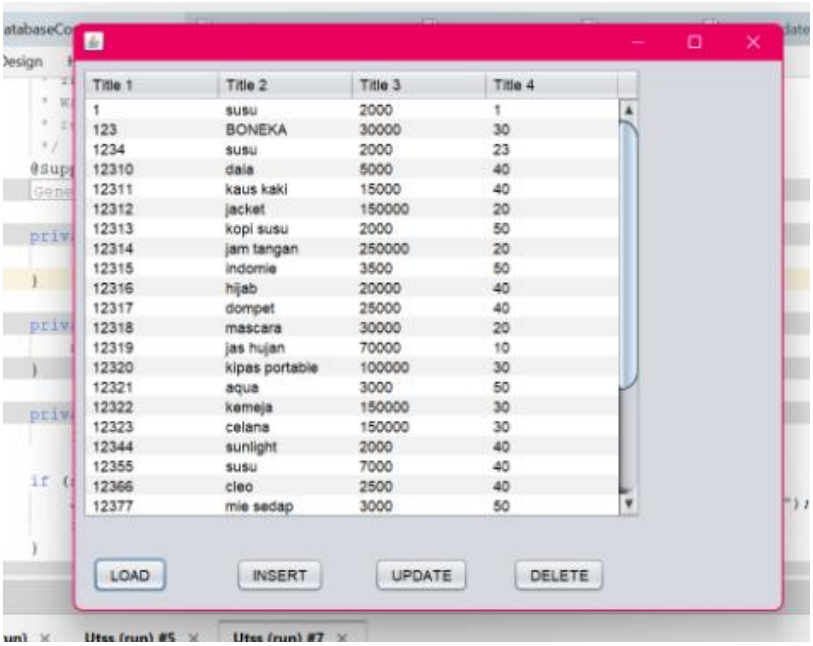
1. Pembuatan Database dengan nama db_toko dan table product



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

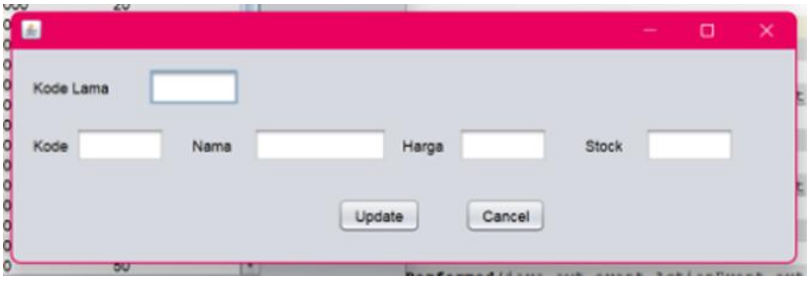


3. Load: seleksi semua data di tabel produk

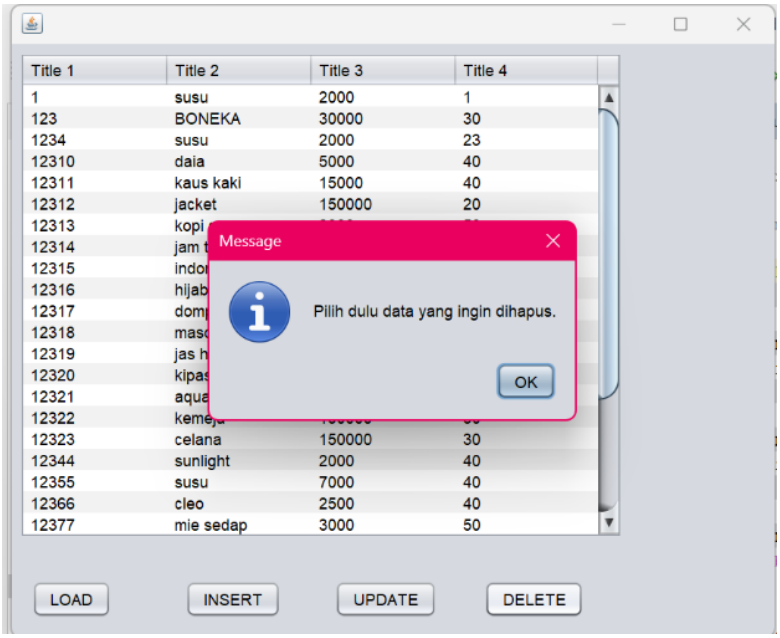


- Insert: memasukkan satu produk baru

- 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. Enkaspulasi

```
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."); //
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y
    }

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

b. Inheritance

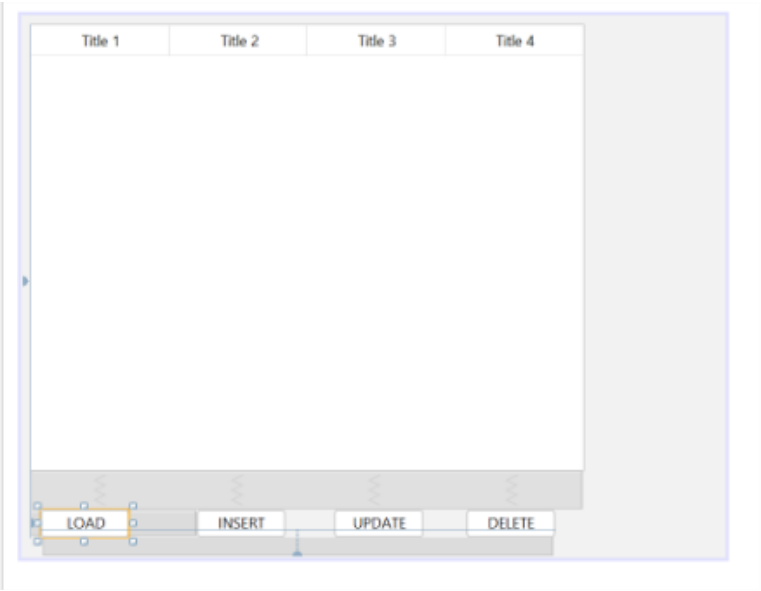
```
public class Product extends AbstrackProduk {

    public Product(int kode, String nama, int harga, int stok) {
        super(kode, nama, harga, stok);
    }
```

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.S
EVERE, null, ex);
   } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.S
EVERE, null, ex);
   } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.S
EVERE, null, ex);
   } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(Kasir2.class.getName()).log(java.util.logging.Level.S
EVERE, 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

}
```

- Analisa
  Kasir2 adalah aplikasi kasir sederhana berbasis Java dengan tampilan tabel yang memungkinkan pengguna untuk melihat, menambah, mengedit, dan menghapus data produk langsung dari database. Pengguna dapat memuat data produk ke tabel dengan tombol LOAD, menambah produk baru dengan tombol INSERT, mengubah data produk dengan tombol UPDATE, serta menghapus produk yang dipilih dengan tombol DELETE. Semua fitur ini dijalankan melalui antarmuka grafis yang mudah digunakan dan terhubung langsung ke database menggunakan JDBC, sehingga setiap perubahan data akan langsung tersimpan dan diperbarui di database.

B. FORM UPDATE

/*
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/ 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.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.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

}
```

- ANALISA
  Kode tersebut adalah bagian dari aplikasi kasir berbasis Java yang menyediakan form untuk mengubah data produk di database. Pengguna cukup memasukkan kode lama produk, lalu mengisi data baru seperti kode, nama, harga, dan stok. Setelah tombol "Update" ditekan, program akan memperbarui data produk di database berdasarkan kode lama yang dimasukkan, dan menampilkan pesan berhasil atau gagal sesuai hasilnya. Validasi juga dilakukan agar harga dan stok harus berupa angka. Dengan form ini, proses update data produk menjadi mudah dan interaktif melalui tampilan grafis.

C. Form 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
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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.B
ASELINE)
                .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.B
ASELINE)
            .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.Le
vel.SEVERE, null, ex);
    } catch (InstantiationException ex) {

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

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

java.util.logging.Logger.getLogger(FormInput.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 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

}
```

- ANALISA
  FormInput merupakan kelas Java Swing yang berfungsi sebagai antarmuka grafis untuk memasukkan data produk ke dalam basis data. Kelas ini mewarisi JFrame dan menampilkan empat kolom input berupa kode, nama, harga, dan stok produk, yang memungkinkan pengguna memasukkan detail produk dengan mudah. Ketika tombol “Tambah” ditekan, aplikasi akan membaca nilai dari tiap kolom, mengonversinya menjadi tipe data yang sesuai, lalu menggunakan PreparedStatement untuk menyisipkan data ke tabel products. Seluruh operasi database dijalankan dalam blok try-with-resources yang dikelola oleh kelas DatabaseConnection, sehingga koneksi selalu tertutup dengan benar setelah eksekusi.

D. Data base

```
/*
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*/
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;
    }
    }

}
```

- ANALISA
  FormDatabaseConnection merupakan kelas utilitas yang mengelola koneksi ke database MySQL dengan nama db_toko di localhost. Kelas ini menyediakan dua metode statis utama: DatabaseConnection() yang memeriksa apakah objek connection belum dibuat atau sudah ditutup, lalu memuat driver JDBC (com.mysql.cj.jdbc.Driver) dan melakukan koneksi menggunakan URL, username, dan password yang telah didefinisikan; serta closeConnection() yang menutup koneksi jika masih terbuka, memastikan resource dilepaskan dengan benar. Selain itu terdapat metode helper getConnection() yang juga memuat driver dan langsung mengembalikan koneksi baru, meski hard-coded username dan password-nya berbeda, sehingga berpotensi membingungkan dan menimbulkan duplikasi logika koneksi. Penggunaan pola singleton pada DatabaseConnection() membantu menghindari pembuatan banyak koneksi sekaligus, sementara blok try-catch yang komprehensif menangani ClassNotFoundException untuk driver dan SQLException untuk operasi koneksi. Namun, kode ini dapat ditingkatkan dengan menyelaraskan kredensial di kedua metode, mengeluarkan konfigurasi ke file terpisah, serta menambahkan logging atau melempar exception ke lapisan pemanggil agar penanganan error lebih fleksibel.

E. Products

```
/*
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* 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
    }
}
```

- Analisa
  DatabaseConnection.getConnection() dipanggil untuk memperoleh koneksi sebelum menyimpan data produk melalui PreparedStatement ke tabel product, di mana nilai kode, nama, harga, dan stok diisi menggunakan getter warisan dari AbstrackProduk. Implementasi simpanKeDatabase() sudah benar memanfaatkan executeUpdate() untuk mengeksekusi perintah INSERT dan menangani SQLException untuk memberi umpan balik kesalahan. Namun, terdapat dua metode gettock() dan getStock() yang belum diimplementasikan dan menyebabkan UnsupportedOperationException, sehingga memecah alur jika

dipanggil; seharusnya hanya perlu satu metode getter untuk stok produk dengan penamaan konsisten. Selain itu, perlu dipastikan tabel di database memiliki kolom stock (bukan stok) agar sesuai dengan query SQL, serta menambahkan validasi data sebelum penyimpanan untuk mencegah nilai negatif atau duplikasi.

- Output