MODULE 7 ASSESSMENT

```java
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import java.sql.*;
import java.io.*;

// Patient class for OOP demonstration
class Patient {
    private int id;
    private String name;
    private String serviceType;
    private String dateTime;
    private double cost;

    public Patient(int id, String name, String serviceType, String dateTime, double cost) {
        this.id = id;
        this.name = name;
        this.serviceType = serviceType;
        this.dateTime = dateTime;
        this.cost = cost;
    }

    public int getId() { return id; }
    public String getName() { return name; }
    public String getServiceType() { return serviceType; }
    public String getDateTime() { return dateTime; }
    public double getCost() { return cost; }
}

public class DentalClinicSystem extends JFrame {
    private JTextField nameField, serviceField, dateField, costField, medsField, insuranceField;
    private JTextArea outputArea;

    Connection conn;

    public DentalClinicSystem() {
        setTitle("SmileCare Dental Services");
        setSize(600, 500);
        setDefaultCloseOperation(EXIT_ON_CLOSE);
        setLayout(new BorderLayout());
```

```java
// Form Panel
JPanel formPanel = new JPanel(new GridLayout(7, 2));
formPanel.add(new JLabel("Patient Name:"));
nameField = new JTextField();
formPanel.add(nameField);

formPanel.add(new JLabel("Service Type:"));
serviceField = new JTextField();
formPanel.add(serviceField);

formPanel.add(new JLabel("Preferred Date/Time:"));
dateField = new JTextField();
formPanel.add(dateField);

formPanel.add(new JLabel("Estimated Cost:"));
costField = new JTextField();
formPanel.add(costField);

formPanel.add(new JLabel("Medications Cost:"));
medsField = new JTextField();
formPanel.add(medsField);

formPanel.add(new JLabel("Insurance Discount (%):"));
insuranceField = new JTextField();
formPanel.add(insuranceField);

JButton bookButton = new JButton("Book Appointment & Generate Bill");
formPanel.add(bookButton);

add(formPanel, BorderLayout.NORTH);

// Output Panel
outputArea = new JTextArea();
add(new JScrollPane(outputArea), BorderLayout.CENTER);

// Database connection
try {
    conn = DriverManager.getConnection("jdbc:sqlite:dental_clinic.db");
    Statement stmt = conn.createStatement();
    stmt.execute("CREATE TABLE IF NOT EXISTS appointments (id INTEGER PRIMARY
KEY AUTOINCREMENT, name TEXT, service TEXT, datetime TEXT, cost REAL, total REAL)");
} catch (Exception e) {
    JOptionPane.showMessageDialog(this, "Database Error: " + e.getMessage());
}
```

```java
// Action Listener
bookButton.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent ae) {
        try {
            String name = nameField.getText();
            String service = serviceField.getText();
            String datetime = dateField.getText();
            double baseCost = Double.parseDouble(costField.getText());
            double meds = Double.parseDouble(medsField.getText());
            double discount = Double.parseDouble(insuranceField.getText());

            double tax = 0.05 * baseCost;
            double total = baseCost + meds + tax;
            total = total - (total * discount / 100);

            // Save to DB
            PreparedStatement ps = conn.prepareStatement("INSERT INTO appointments
(name, service, datetime, cost, total) VALUES (?,?,?,?,?)");
            ps.setString(1, name);
            ps.setString(2, service);
            ps.setString(3, datetime);
            ps.setDouble(4, baseCost);
            ps.setDouble(5, total);
            ps.executeUpdate();

            // Generate Invoice

            String invoice = "--- SmileCare Dental Services Invoice ---\n";
            invoice += "Patient: " + name + "\n";
            invoice += "Service: " + service + "\n";
            invoice += "Date/Time: " + datetime + "\n";
            invoice += "Base Cost: Rs." + baseCost + "\n";
            invoice += "Medications: Rs." + meds + "\n";
            invoice += "Tax (5%): Rs." + tax + "\n";
            invoice += "Insurance Discount: " + discount + "%\n";
            invoice += "TOTAL: Rs." + total + "\n";
            invoice += "----------------------------------------\n";

            outputArea.setText(invoice);

            // Save invoice to file
            try (FileWriter fw = new FileWriter(name + "_invoice.txt")) {
                fw.write(invoice);
```

```java
                }

            } catch (Exception ex) {
                JOptionPane.showMessageDialog(DentalClinicSystem.this, "Error: " +
ex.getMessage());
            }
        }
    });
    }

    public static void main(String[] args) {
        SwingUtilities.invokeLater(() -> new DentalClinicSystem().setVisible(true));
    }
}
```