



*FACULTY OF COMPUTING  
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## **Project Assignment # 1**

**Submitted by**

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## **Software Re-Engineering**

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## Bad code that needs re-engineering

```
package travelmanagementsystem;

import java.awt.BorderLayout;

import java.awt.*;

import java.awt.EventQueue;

import javax.swing.border.EmptyBorder;

import java.awt.Font;

import java.awt.Image;

import java.sql.*;

import javax.swing.*;

import java.awt.event.ActionListener;

import java.awt.event.ActionEvent;

import java.util.*;

public class ACustmr extends JFrame {

    Connection conn = null;

    PreparedStatement pst = null;

    private JPanel cPane;

    private JTextField t1,t2,t3,t4,t5,t6,t7,t8;

    JComboBox cb1,cb2;

    JRadioButton r1,r2,r3,r4,r5,r6,r7;

    Choice c1,c2,c3,ab1,ab2,ab3;

    public static void main(String[] args) {

        EventQueue.invokeLater(new Runnable() {
```

```

public void run() {
    try {
        ACustmr ac = new ACustmr("");
        ac.setVisible(true);
    } catch (Exception e) {
        e.printStackTrace();
    }
}

});
}

public ACustmr(String uname) throws SQLException {
    System.out.println(uname);
    setBounds(580, 220, 850, 550);

    cPane = new JPanel();
    setContentPane(cPane);
    cPane.setLayout(null);

    ImageIcon i1 = new
    ImageIcon(ClassLoader.getResource("travelmanagementsystem/icons/customer2.jpg"));

    Image i3 = i1.getImage().getScaledInstance(450, 500, Image.SCALE_DEFAULT);

    ImageIcon i2 = new ImageIcon(i3);

    JLabel l1 = new JLabel(i2);
    l1.setBounds(450,40,450,420);
    add(l1);

    JLabel lblName = new JLabel("NEW CUSTOMER FORM");

```

```
lblName.setFont(new Font("Yu Mincho", Font.PLAIN, 20));
```

```
lblName.setBounds(118, 11, 260, 53);
```

```
cPane.add(lblName);
```

```
JLabel l3 = new JLabel("Username :");
```

```
l3.setBounds(35, 70, 200, 14);
```

```
cPane.add(l3);
```

```
t7 = new JTextField();
```

```
t7.setBounds(271, 70, 150, 20);
```

```
cPane.add(t7);
```

```
t7.setColumns(10);
```

```
JLabel l2 = new JLabel("Identity Card ");
```

```
l2.setBounds(35, 150, 200, 14);
```

```
cPane.add(l2);
```

```
t1 = new JTextField();
```

```
t1.setBounds(271, 150, 150, 20);
```

```
cPane.add(t1);
```

```
t1.setColumns(10);
```

```
JLabel lblGen = new JLabel("City :");
```

```
lblGen.setBounds(35, 200, 200, 14);
```

```
cPane.add(lblGen);
```

```
r1 = new JRadioButton("Delhi");
```

```
r1.setFont(new Font("Raleway", Font.BOLD, 14));
```

```
r1.setBackground(Color.WHITE);
```

```
r1.setBounds(170, 200, 80, 12);
```

```
add(r1);
```

```
r2 = new JRadioButton("Mumbai");
```

```
r2.setFont(new Font("Raleway", Font.BOLD, 14));
```

```
r2.setBackground(Color.WHITE);
```

```
r2.setBounds(265, 200, 100, 12);
```

```
add(r2);
```

```
r3 = new JRadioButton("Hyderabad");
```

```
r3.setFont(new Font("Raleway", Font.BOLD, 14));
```

```
r3.setBackground(Color.WHITE);
```

```
r3.setBounds(360, 200, 120, 12);
```

```
add(r3);
```

```
r4 = new JRadioButton("Bangalore");
```

```
r4.setFont(new Font("Raleway", Font.BOLD, 14));
```

```
r4.setBackground(Color.WHITE);
```

```
r4.setBounds(170, 235, 120, 12);
```

```
add(r4);
```

```
r5 = new JRadioButton("Chennai");  
r5.setFont(new Font("Raleway", Font.BOLD, 14));  
r5.setBackground(Color.WHITE);  
r5.setBounds(270, 235, 120, 12);  
add(r5);  
  
r6 = new JRadioButton("Kashmir");  
r6.setFont(new Font("Raleway", Font.BOLD, 14));  
r6.setBackground(Color.WHITE);  
r6.setBounds(380, 235, 120, 12);  
add(r6);
```

```
JLabel lblC = new JLabel("Country :");  
lblC.setBounds(35, 270, 200, 14);  
cPane.add(lblC);
```

```
t3 = new JTextField();  
t3.setBounds(271, 270, 150, 20);  
cPane.add(t3);  
t3.setColumns(10);
```

```
JLabel lblRNumber = new JLabel("Postal Address :");  
lblRNumber.setBounds(35, 310, 200, 14);  
cPane.add(lblRNumber);
```

```
t5 = new JTextField();  
t5.setBounds(271, 310, 150, 20);  
cPane.add(t5);  
t5.setColumns(10);
```

```
JLabel lblCheckInStatus = new JLabel("Mobile Number :");  
lblCheckInStatus.setBounds(35, 350, 200, 14);  
cPane.add(lblCheckInStatus);
```

```
t6 = new JTextField();  
t6.setBounds(271, 350, 150, 20);  
cPane.add(t6);  
t6.setColumns(10);
```

```
JLabel lblDeposit = new JLabel("Email :");  
lblDeposit.setBounds(35, 390, 200, 14);  
cPane.add(lblDeposit);
```

```
t8 = new JTextField();  
t8.setBounds(271, 390, 150, 20);  
cPane.add(t8);  
t8.setColumns(10);
```

```
try{
```

```
Conn c = new Conn();
```

```
ResultSet rs = c.s.executeQuery("select * from account where uname = '"+uname+"'");
```

```
while(rs.next()){  
    t7.setText(rs.getString("uname"));  
    t2.setText(rs.getString("email"));  
}  
}catch(Exception e){ }  
  
JButton bN = new JButton("Register");  
  
bN.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        Conn c = new Conn();  
  
        String rad = null;  
  
        if(r1.isSelected()){  
            rad = "Delhi";  
        }  
  
        if(r2.isSelected()){  
            rad = "Mumbai";  
        }  
  
        if(r3.isSelected())  
        {  
            rad="Hyderabad";  
        }  
  
        if(r4.isSelected())  
        {  
            rad="Banglore";  
        }  
  
        if(r5.isSelected())
```



```
{
rad="Chennai";
}

if(r6.isSelected())
    {
        rad="Kashmir";
    }

else{
rad="Other";
}


String s9 = t7.getText();
String s2 = t1.getText();
String s4 = rad;
String s5 = t3.getText();
String s7 = t5.getText();
String s8 = t6.getText();
String s10 = t8.getText();

if(username.equals("")){
JOptionPane.showMessageDialog(null, "Username is Manadotory ");
}

else if(identity.equals("")){
JOptionPane.showMessageDialog(null, "CNIC is Manadotory ");
}

else if(userCity.equals("")){
```

```
OptionPane.showMessageDialog(null, "Gender is Manadotory ");
}
else if(userCountry.equals("")){
OptionPane.showMessageDialog(null, "Country is Manadotory ");
}
else if(userAddress.equals("")){
OptionPane.showMessageDialog(null, "Postal Address is Manadotory ");
}
else if(phoneNumber.equals("")){
OptionPane.showMessageDialog(null, "Mobile Number is Manadotory ");
}
else if(userEmail.equals("")){
OptionPane.showMessageDialog(null, "Email is Manadotory ");
}

else
try{ String q1 = "insert into customer
values('"+s9+"','"+s2+"','"+s4+"','"+s5+"','"+s7+"','"+s8+"','"+s10+"')";
c.s.executeUpdate(q1);

OptionPane.showMessageDialog(null, "Successful");
setVisible(false);
}catch(SQLException e1){
System.out.println(e1.getMessage());
}
catch(NumberFormatException s){
```

```
JOptionPane.showMessageDialog(null, "Please enter a valid Number");  
  
}  
  
});  
  
bN.setBounds(100, 430, 120, 30);  
  
bN.setBackground(Color.BLACK);  
  
bN.setForeground(Color.WHITE);  
  
cPane.add(bN);
```

```
JButton ex = new JButton("Back");  
  
ex.addActionListener(new ActionListener() {  
  
    public void actionPerformed(ActionEvent e) {  
  
        setVisible(false);  
  
    }  
  
});
```

```
ex.addActionListener(new ActionListener() {  
  
    public void actionPerformed(ActionEvent e) {  
  
        setVisible(false);  
  
    }  
  
});
```

```
ex.setBounds(260, 430, 120, 30);  
  
ex.setBackground(Color.BLACK);  
  
ex.setForeground(Color.WHITE);  
  
cPane.add(ex);  
  
getContentPane().setBackground(Color.WHITE);
```

```
}  
  
}
```

### **We need to re-engineer the above code because of the following reasons:**

1. Invalid naming conventions (Variable names, class name, object name).
2. Comments are not used. So that we cannot understand for what purpose any specific variable is created.
3. Unused declarations. Variables are initialized but not used in the program output.
4. Validation if else are not in a proper format, we can make it in one if statement and else statement.
5. If else statement problem. Even that just if statement is also working but it is not a good programming approach.
6. There should be drop down menu instead of radio button and if else. So the code will become simple and understandable.
7. Duplicate code for database connection and for Exit perform button. It is better to make the database connection as global. So that in the same class it will be accessible.

## Refactoring the above code:

```
package travelmanagementsystem;

import java.awt.BorderLayout;

import java.awt.*;

import java.awt.EventQueue;

import javax.swing.border.EmptyBorder;

import java.awt.Font;

import java.awt.Image;

import java.sql.*;

import javax.swing.*;

import java.awt.event.ActionListener;

import java.awt.event.ActionEvent;

import java.util.*;

public class AddCustomer extends JFrame {

    Connection connect = null;

    PreparedStatement getQuery = null;

    private JPanel groupComponent;

    private JTextField emailFromDatabase;

    private JTextField
identityField,countryField,addressField,PhoneNumberField,UsernameField,storeEmailDatabase;
```

//These variables are created for user to enter data and store in database

```
Conn dbconnection = new Conn();
```

```
public static void main(String[] args) {
```

```
EventQueue.invokeLater(new Runnable() {
```

```
public void run() {
```

```
try {
```

```
AddCustomer newCustomer = new AddCustomer("");
```

```
newCustomer.setVisible(true);
```

```
} catch (Exception e) {
```

```
e.printStackTrace();
```

```
}
```

```
}
```

```
});
```

```
}
```

```
public AddCustomer(String username) throws SQLException {
```

```
System.out.println(username);
```

```
setBounds(580, 220, 850, 550);
```

```
groupComponent = new JPanel();
```

```
setContentPane(groupComponent);
```

```
groupComponent.setLayout(null);
```

```
ImageIcon getImgPath = new  
ImageIcon(ClassLoader.getResource("travelmanagementsystem/ico  
ns/customerradiobtn2.jpg"));  
  
Image setImg = getImgPath.getImage().getScaledInstance(450,  
500,Image.SCALE_DEFAULT);  
  
ImageIcon imgObject = new ImageIcon(setImg);  
  
JLabel displayImg = new JLabel(imgObject);  
  
displayImg.setBounds(450,40,450,420);  
  
add(displayImg);  
  
JLabel customerForm = new JLabel("NEW CUSTOMER FORM");  
  
customerForm.setFont(new Font("Yu Mincho", Font.PLAIN, 20));  
  
customerForm.setBounds(118, 11, 260, 53);  
  
groupComponent.add(customerForm);  
  
  
JLabel askUsername = new JLabel("Username :");  
  
askUsername.setBounds(35, 70, 200, 14);  
  
groupComponent.add(askUsername);  
  
  
UsernameField = new JTextField();  
  
UsernameField.setBounds(271, 70, 150, 20);  
  
groupComponent.add(UsernameField);  
  
UsernameField.setColumns(10);
```

```
JLabel UserIndentity= new JLabel("Identity Card :");
```

```
UserIndentity.setBounds(35, 150, 200, 14);
```

```
groupComponent.add(UserIndentity);
```

```
identityField = new JTextField();
```

```
identityField.setBounds(271, 150, 150, 20);
```

```
groupComponent.add(identityField);
```

```
identityField.setColumns(10);
```

```
JLabel userCity = new JLabel("City :");
```

```
userCity.setBounds(35, 200, 200, 14);
```

```
groupComponent.add(userCity);
```

```
String[] optionsToChoose = {"Delhi", "Mumbai", "Hyderabad",  
"Bangalore", "Chennai", "Kashmir", "None of the listed"};
```

```
JComboBox<String> jComboBox = new JComboBox<>(optionsToChoose);
```

```
jComboBox.setBounds(80, 50, 140, 20);
```

```
add(jComboBox);
```

```
JLabel userCountry = new JLabel("Country :");
```

```
userCountry.setBounds(35, 270, 200, 14);
```

```
groupComponent.add(userCountry);
```

```
countryField = new JTextField();
```



```
countryField.setBounds(271, 270, 150, 20);
```

```
groupComponent.add(countryField);
```

```
countryField.setColumns(10);
```

```
JLabel useraddress = new JLabel("Postal Address :");
```

```
useraddress.setBounds(35, 310, 200, 14);
```

```
groupComponent.add(useraddress);
```

```
addressField = new JTextField();
```

```
addressField.setBounds(271, 310, 150, 20);
```

```
groupComponent.add(addressField);
```

```
addressField.setColumns(10);
```

```
JLabel userMobileNo = new JLabel("Mobile Number :");
```

```
userMobileNo.setBounds(35, 350, 200, 14);
```

```
groupComponent.add(userMobileNo);
```

```
PhoneNumberField = new JTextField();
```

```
PhoneNumberField.setBounds(271, 350, 150, 20);
```

```
groupComponent.add(PhoneNumberField);
```

```
PhoneNumberField.setColumns(10);
```

```
JLabel userEmail = new JLabel("Email :");
userEmail.setBounds(35, 390, 200, 14);
groupComponent.add(userEmail);

storeEmailDatabase = new JTextField();
storeEmailDatabase.setBounds(271, 390, 150, 20);
groupComponent.add(storeEmailDatabase);
storeEmailDatabase.setColumns(10);

try{

ResultSet accountHolder = dbconnection.s.executeQuery("select * from
account where username = '"+username+"'");

//The system verifying the user from database
while(accountHolder.next()){

UsernameField.setText(accountHolder.getString("username"));
emailFromDatabase.setText(accountHolder.getString("email"));

}

}catch(Exception e){ }

JButton registerBtn = new JButton("Register");
registerBtn.addActionListener(new ActionListener() {
public void actionPerformed(ActionEvent e) {

String enteredCity =jComboBox.getItemAt(jComboBox.getSelectedIndex());
```

```

String username = UsernameField.getText();
String identity = identityField.getText();
String userCity = enteredCity;
String userCountry = countryField.getText();
String userAddress = addressField.getText();
String phoneNumber = PhoneNumberField.getText();
String userEmail = storeEmailDatabase.getText();

if(username.equals("")
&&identity.equals("")&&userCity.equals("")&&userCountry.equals("")&&u
serAddress.equals("")&&phoneNumber.equals("")&&userEmail.equals("")){
JOptionPane.showMessageDialog(null,
"Username,Identity,Gender,Country,Postal Address Mobile Number and
Email is Manadotory ");
}
else
try{ String storeData = "insert into customer
values('"+username+"','"+identity+"','"+userCity+"','"+userCountry+"','"+us
erAddress+"','"+phoneNumber+"','"+userEmail+"')";

dbconnection.s.executeUpdate(storeData);

JOptionPane.showMessageDialog(null, "Successful");
setVisible(false);

}catch(SQLException sqlError){
System.out.println(sqlError.getMessage());
}

```

```
}  
catch(NumberFormatException Error){  
JOptionPane.showMessageDialog(null, "Please enter a valid Number");  
}  
}  
});  
  
registerBtn.setBounds(100, 430, 120, 30);  
registerBtn.setBackground(Color.BLACK);  
registerBtn.setForeground(Color.WHITE);  
groupComponent.add(registerBtn);
```

```
JButton exitBtn = new JButton("Back");  
exitBtn.addActionListener(new ActionListener() {  
public void actionPerformed(ActionEvent e) {  
setVisible(false);  
}  
});  
  
exitBtn.setBounds(260, 430, 120, 30);  
exitBtn.setBackground(Color.BLACK);  
exitBtn.setForeground(Color.WHITE);  
groupComponent.add(exitBtn);  
getContentPane().setBackground(Color.WHITE);
```

}

}