CS209 Lab08
fa2014
dutta/streller

PROBLEM STATEMENT:

Gain initial experience with the programming of Graphical user interfaces (GUIs),Event handling, which is required for GUIs, and GUI components

Notes:

This lab exercise correlates with the Event-Driven Programming chapter of the textbook.
You need to understand what an event is and when an event occurs. You need to understand what is meant by "event handling".
In the Java code of a program, be sure that you know how to register an event listener object with the GUI control for which it is to await (listen for) events.
You should be able to write the code to have a listener method react/respond to an event generated by its associated GUI component.
In this exercise, we are dealing with two types of events:

1. ActionEvent: Generated by hitting the Enter key in a JTextField. So an ActionListener object must be registered with the JTextFields. The method addActionListener is used to register a listener object with each JTextField.
2. ItemEvent: Generated by selecting an item from a JComboBox (drop list). So an ItemListener object must be registered with the JComboBoxes. The method addItemListener is used to register a listener object with the JComboBox.

CODE :

Obtain the Java file, named LoanArrayEx.java. This Java class/file is to be used as the main class/file. It implements a JFrame window.

Create a NetBeans project for this assignment. Add the file from instructor to the project, and use the file as the main class/file for the project.

Add your Loan classes to the project. That is, add your Loan, ResidentialLoan, CommercialLoan, AgriculturalLoan, and UnspecifiedLoan classes to the project.

Compile and run the program. To run the initial program provided by your instructor, your Loan class must have a constructor that takes three parameters: String borrower, int idnum and String loan type. If your Loan class does not have such a constructor, add it (do not delete any of the constructors that you already have in the class, however). Also add a protected variable to the loan class for the loan type if you do not have one. After entering some loans, the JFrame window looks like the window shown below. The data displayed for each loan depends on your toString method(s).

Now you will modify and extend the program as described in the following steps.

Add components (controls) to the GUI.

Change the GridLayout to accommodate the additional GUI components that you will add in the steps below.
In the modifications described in the following steps, all JLabels should be in the left-side column of the GridLayout, and the JTextFields and JComboBoxes should be in the rightside column.

Enable user entry of loan's origination city:

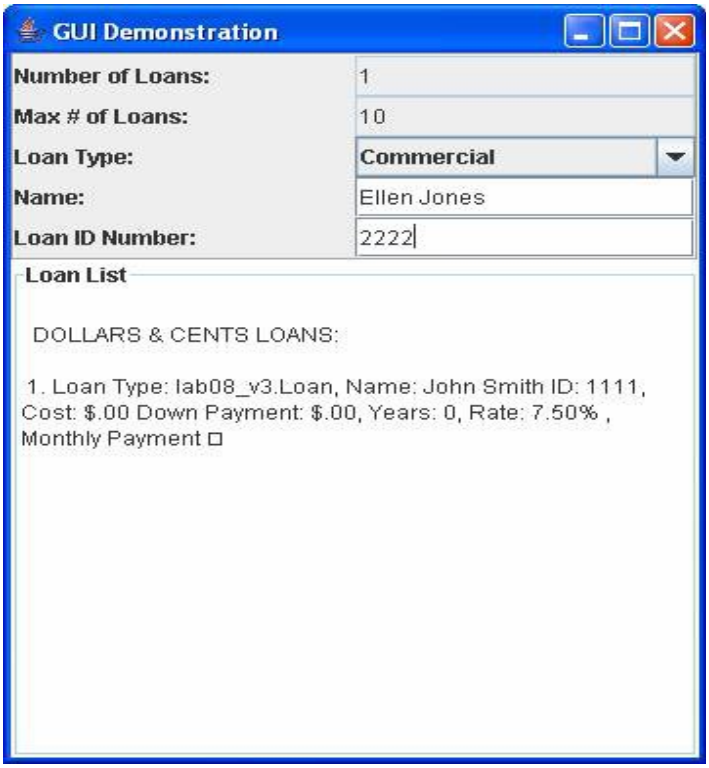
Add another JLabel to prompt for the loan's origination city.
Add another JComboBox to enable the user to select the city for the loan.
At the top of the main class, create an array of city names that includes the following: Albany, Binghamton, Buffalo, Ithaca, Latham, Peekskill, Plattsburg, Rochester, Syracuse, and Utica. This array is similar to the array of loan types, which is declared as a member variable at the top of the main class. Both are arrays of Strings. Both are member variables in the main class. You need to add an additional member variable declared at the top of the main class to hold the value selected by the user via the new JComboBox (just like for the loan type which the user selects from a JComboBox). This additional variable is declared as a member variable so as to have class scope, since it must be referenced/used in the listener class and in the methods of the main class.

Enable user entry of loan's property cost:
Add another JLabel to prompt for the loan's property cost.
Add another JTextField to enable the user to input the loan's property cost.

Enable user entry of loan's down payment:
Add another JLabel to prompt for the loan's down payment.
Add another JTextField to enable the user to input the loan's down payment.

Enable user entry of loan's number of years:
Add another JLabel to prompt for the loan's number of years.
Add another JTextField to enable the user to input the loan's number of years.

Below is a sample of the program working once the loan class constructors are modified for name, loan id, and loan type.



Wire up your new GUI components (controls) to event handlers.

Register an event listener (handler) with each of the new GUI controls so that when the user triggers an event via the use of a control, the event handler will react to the event and cause the correct action to be taken by the program. This applies to the new additional JTextFields and the new additional JComboBox.

This means that if the user hits the Enter key in any of the newly added JTextFields, this should cause the new loan to be added to the array and to have the entire updated list of loans displayed in the JTextArea, just like hitting the Enter key in one of the existing JTextFields.

You will need to modify and extend the method actionPerformed in the MyActionListener class.

You will need to modify and extend the method itemStateChanged method in the MyItemListener class.

Be sure that all the JTextFields are cleared when the user hits the Enter key to trigger creation of the new additional loan.

Modify the creation of loan instances so that an instance of the correct class is created, namely ResidentialLoan, CommercialLoan, AgriculturalLoan, or UnspecifiedLoan.

Depending on the type of loan selected by the user via the JComboBox (drop list), your program should create an instance of the correct class.

You need to modify the existing code so that the correct constructor is invoked to create an instance of the correct loan subclass, namely ResidentialLoan, CommercialLoan, AgriculturalLoan, or UnspecifiedLoan. Your program should not create any instances of the parent Loan class.

When creating the loan instance, your code must call the appropriate constructor with parameters for all the member variables including borrower, loan id number, type, property cost, down payment, and number of years. (You need to add this constructor in each class.)

Modify your loan classes.

In each of your loan classes, add a constructor that has a parameter list that includes a parameter for each of the member variables including borrower, loan id number, loan type, city, property cost, down payment, and number of years (as mentioned above).

Modify your loan classes in the most optimal way. This means, for example, that you should not add the city name as a member variable in all the loan classes, but only add it to the parent Loan class and have the other subclasses inherit this member variable.

Modify the toString method so that it returns a string that includes the type of loan along with the borrower's name, loan id number, city, property cost, loan amount, number of years, annual Interest rate, and computed monthly payment.

Modify the Titled Border and contents of the JTextArea.

Change the text of the TitledBorder of the JTextArea to read "DOLLARS & SENSE LOANS".

Eliminate the line of text "DOLLARS & SENSE LOANS:" from the text displayed within the JTextArea.

The contents of the JTextArea should just be the list of loans with all attributes displayed for each loan. For each loan, display the borrower's name, loan type, id number, city, property cost, loan amount, number of years, annual interest rate and monthly payment.

Make sure that all monetary amounts are formatted with a dollar sign and two digits to the right of the decimal point (as in previous exercises).

Compile, execute, and debug the program.

Run the program and make window captures displaying all the capabilities of your program.
See the window captures below for example program input/output displays.

Create batch file.

Create a batch file as you did for the previous assignments so that your program can be executed without the use of NetBeans.
Be sure that the batch file is within your top level NetBeans project folder.

As usual create ReadMe.pdf file.

Create a file named ReadMe.pdf
In this document, insert your name at the top, and on the next line insert the assignment number
Then enter any comments regarding the assignment and your program.
Then insert several window captures of windows showing the inputs and outputs from the execution of the program.
Insert at least two window captures of your JFrame window showing the inputs and output from the execution of the program.

The first window capture should be captured when you have entered data on the 3r taxpayer; it should show the data in the JTextFields and selected items in the JComboBoxes.
The second window capture should show the updated list of taxpayers in the JTextArea that is the result of hitting the Enter key in one of the JTextFields for this new 3rd taxpayer.

Be sure the ReadMe file is within your top level project folder.

Zip the project folder and all its contents.

Change the name the zip file so that its name consists of your name along with the assignment number, as follows: " LastName_ Lab_08_cs209.zip".
Do not use spaces in the name of the file, use underscores or hyphens instead.

Deliverables:

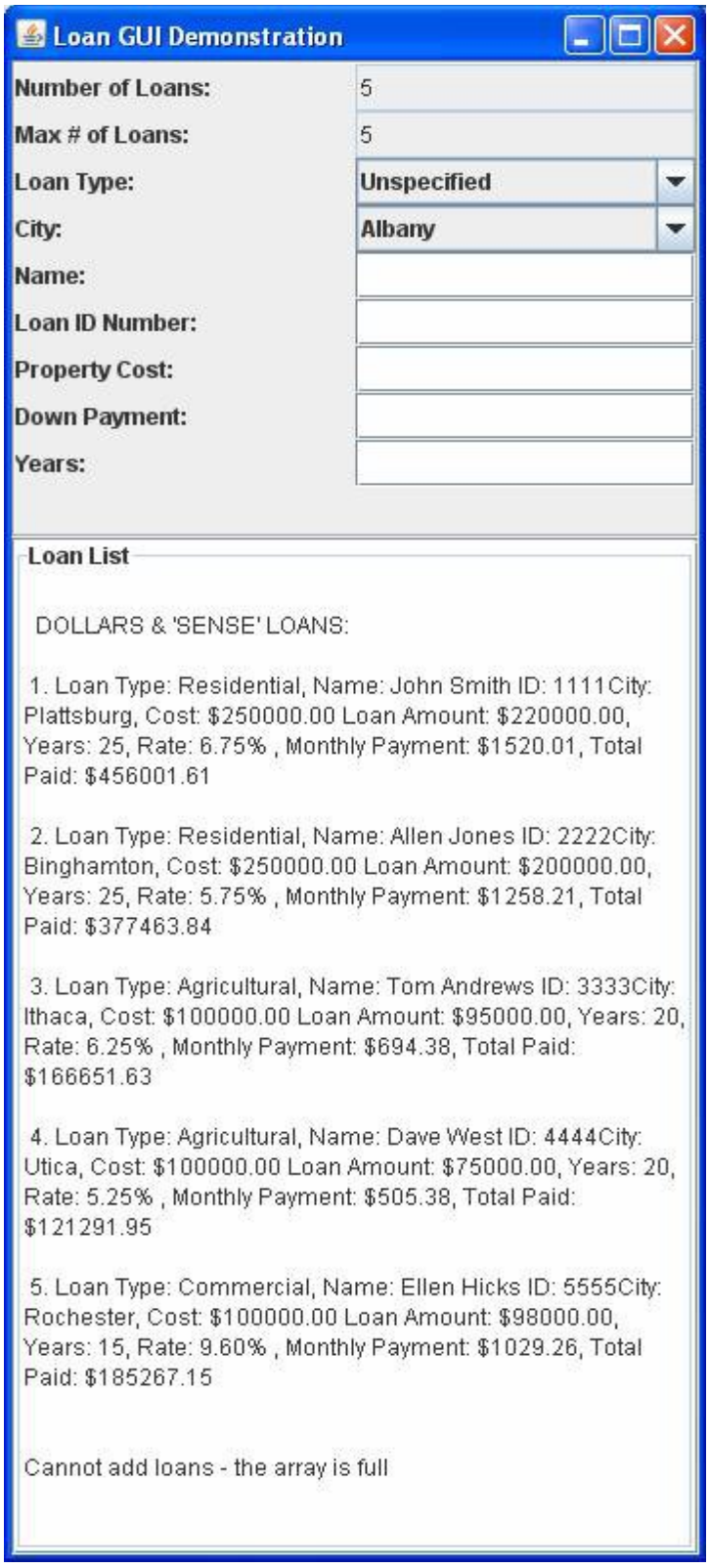
Send to streller@ecc.edu an email this the exact subject

cs209_ Lab_08

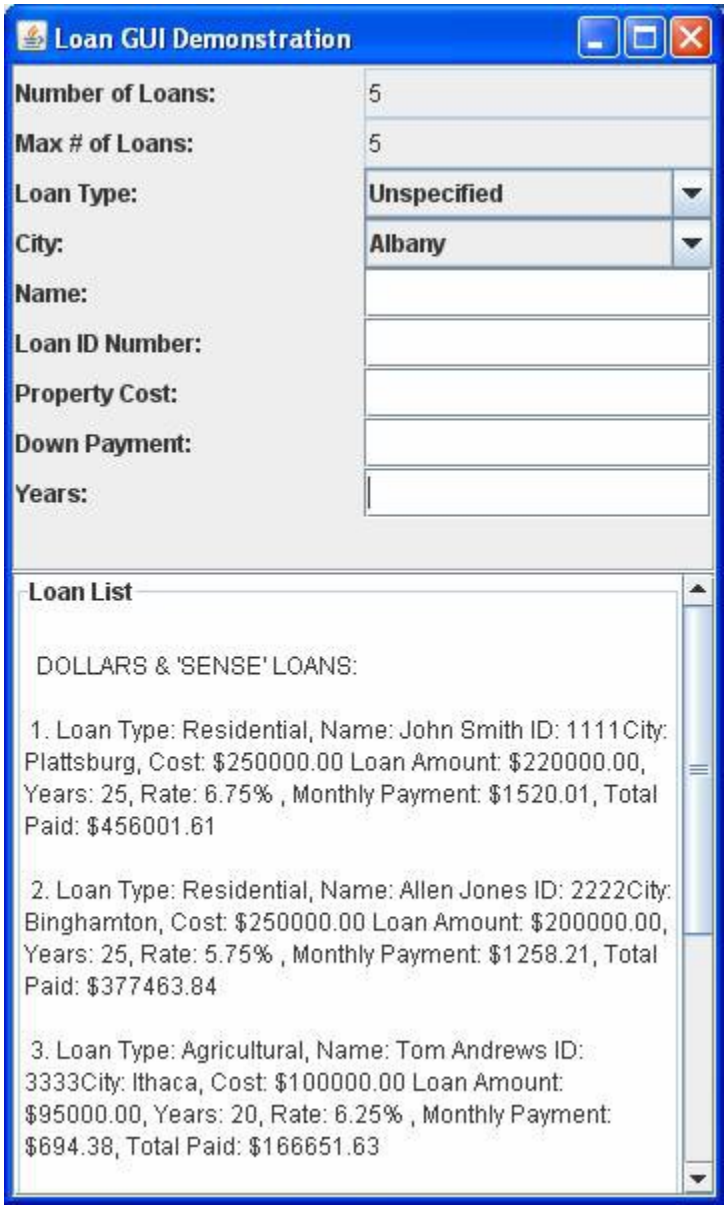
In this email attached the above named zip file

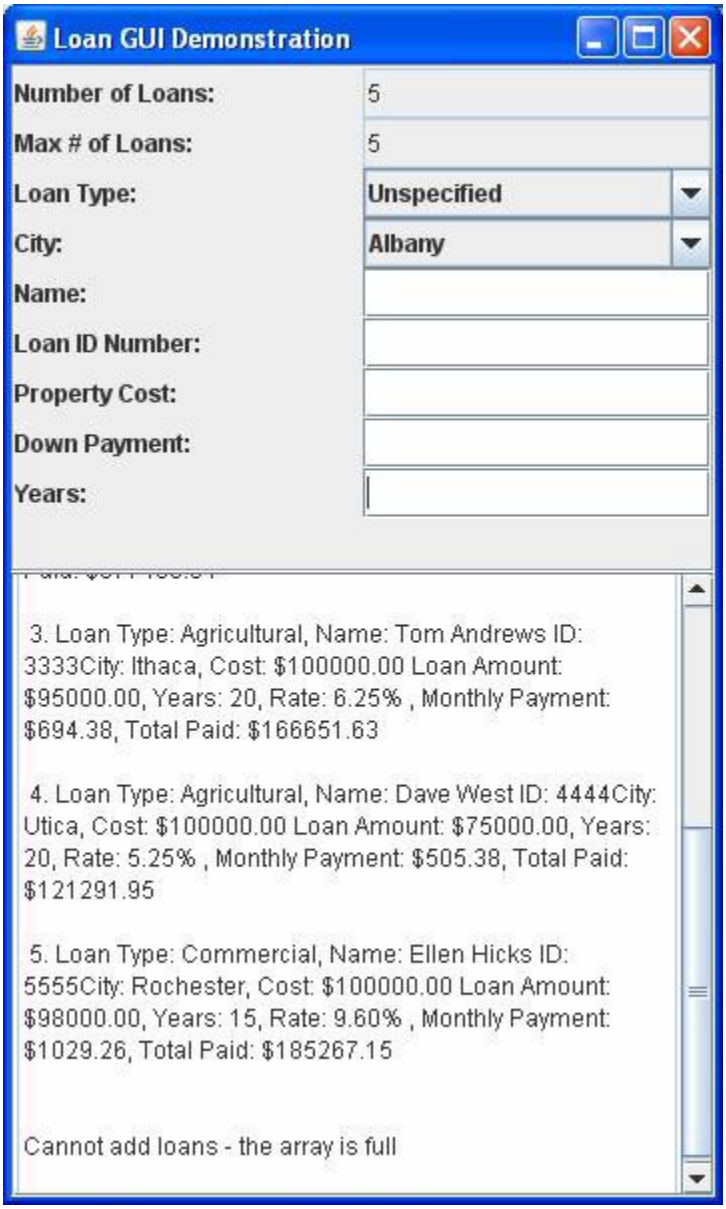
LastName_ Lab_08_cs209.zip

Due Date : 5:00pm 2 April 2014


Loan GUI Demonstration
Number of Loans:
5
Max # of Loans:
5
Loan Type:
Unspecified
City:
Albany
Name:
Loan ID Number:
Property Cost:
Down Payment:
Years:
Loan List
DOLLARS & 'SENSE' LOANS:
1. Loan Type: Residential, Name: John Smith ID: 1111City: Plattsburg, Cost: $250000.00 Loan Amount: $220000.00, Years: 25, Rate: 6.75% , Monthly Payment: $1520.01, Total Paid: $456001.61
2. Loan Type: Residential, Name: Allen Jones ID: 2222City: Binghamton, Cost: $250000.00 Loan Amount: $200000.00, Years: 25, Rate: 5.75% , Monthly Payment: $1258.21, Total Paid: $377463.84
3. Loan Type: Agricultural, Name: Tom Andrews ID: 3333City: Ithaca, Cost: $100000.00 Loan Amount: $95000.00, Years: 20, Rate: 6.25% , Monthly Payment: $694.38, Total Paid: $166651.63
4. Loan Type: Agricultural, Name: Dave West ID: 4444City: Utica, Cost: $100000.00 Loan Amount: $75000.00, Years: 20, Rate: 5.25% , Monthly Payment: $505.38, Total Paid: $121291.95
5. Loan Type: Commercial, Name: Ellen Hicks ID: 5555City: Rochester, Cost: $100000.00 Loan Amount: $98000.00, Years: 15, Rate: 9.60% , Monthly Payment: $1029.26, Total Paid: $185267.15
Cannot add loans - the array is full

Extra Credit Version of Program with JScrollPane:




Loan GUI Demonstration
Number of Loans:
5
Max # of Loans:
5
Loan Type:
Unspecified
City:
Albany
Name:
Loan ID Number:
Property Cost:
Down Payment:
Years:
3. Loan Type: Agricultural, Name: Tom Andrews ID: 3333City: Ithaca, Cost: $100000.00 Loan Amount: $95000.00, Years: 20, Rate: 6.25% , Monthly Payment: $694.38, Total Paid: $166651.63
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Cannot add loans - the array is full