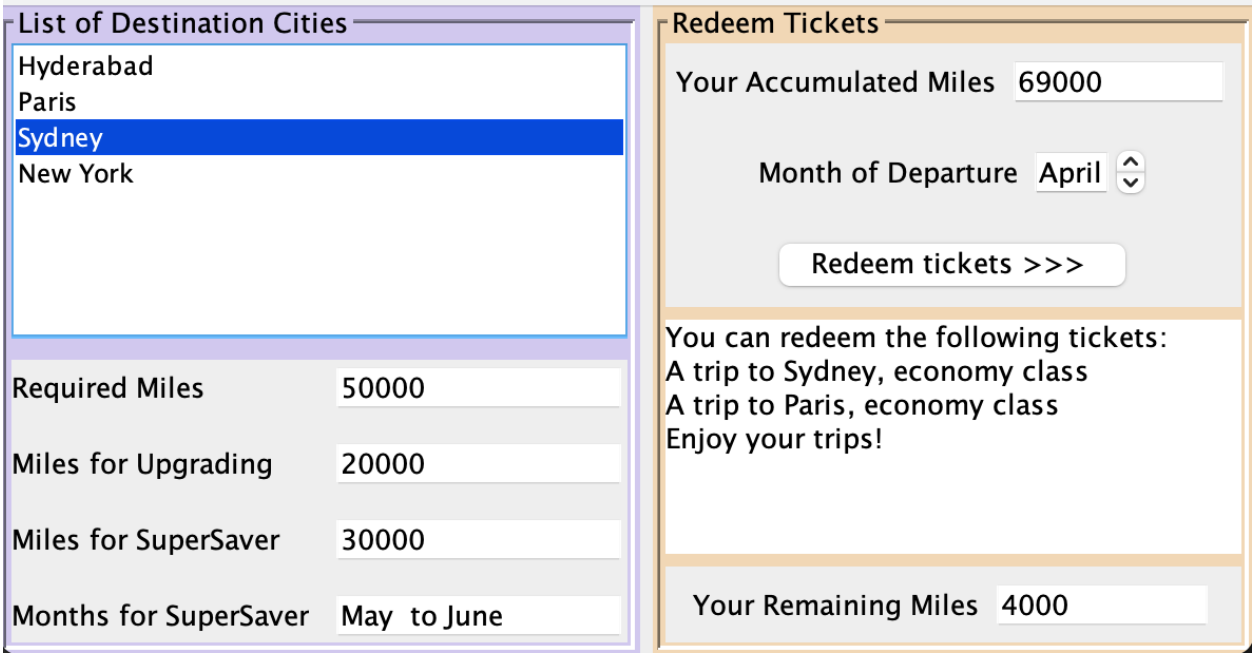
CSCI 470/502 - Assignment 3 - Spring 2023

For this assignment you will re-implement the Air Ticket Redeemer from Assignment 2 as a Java Swing Application.

The Destination class should remain the same as assignment 2. -- This reusability is brought by the power of encapsulation.

In addition, the MileRedeemer class in assignment 2 can be reused too. Many methods of MileRedeemer can be invoked directly by your GUI code, such as readDestinations() and the method that contains the redemption algorithm. Of course, the GUI application will need to supply new codes for getting input and displaying the results.

Here is what the GUI application looks like:



Two JPanels are used in the GUI shown above (They have further nested JPanels for layout purposes). Each JPanel should have a background color set. Recall the Color constructor:

```
Color(int red, int green, int blue)
```

where the arguments are in the range 0..255 and higher numbers are lighter colors. Use colors that are not too intense, and be sure that the text is legible. You need to study how to add Titled Border etc. using the tutorial here:
http://docs.oracle.com/javase/tutorial/uiswing/components/border.html

The left (west) panel contains a JList so that the user can go back and forth to look at the information of different tickets to different cities. The array of strings returned by the MileRedeemer method getCityNames() can be used to populate the JList. When a city in the JList is selected, its details (i.e., the members of its corresponding Destination object) are displayed in the corresponding JTextFields. All the related JTextFields are not editable.

The Swing application needs to implement the interface javax.swing.event.ListSelectionListener, and provide the method

```
void valueChanged(ListSelectionEvent e)
```

The right panel takes in the miles using JTextField, JSpinner. After the `"Redeem Tickets"` button is clicked, it outputs ticket details in a JTextArea, and the remaining miles in a JTextField. The components for output are not editable.

Read the File

The name of the file ("miles.txt") should be passed to the program as a command line argument.

Display of error message

If there is an error or exception, for example, when the input file is not found, or the textfield input is not a valid number, use a message dialog (the showMessageDialog()of JOptionPane) to show meaningful message. If the input file is not found, the application can exit. If the input is not valid, the application does not need to exit. The user can still input other numbers.

How to populate the month Strings for the Spinner?

The spinner's month Strings can be obtained using the following code. (Some logic is included to remove an extra, empty value.)

```
protected String[] getMonthStrings()  {
    String[] months = new java.text.DateFormatSymbols().getMonths();
    int lastIndex = months.length - 1;

    if (months[lastIndex] == null  || months[lastIndex].length() <= 0) { //last item empty
         String[] monthStrings = new String[lastIndex];
         System.arraycopy(months, 0, monthStrings, 0, lastIndex);
         return monthStrings;
    } else { //last item not empty
   return months;
    }
}
```

A question for pondering (no need to submit):

An alternative approach of providing the file name is via JFileChooser. While it is *not* required by this assignment, if you are interested, you can study how to use a JFileChooser to allow the users to select a file when running the application. It will also mean you need to rethink about the design and layout of the application and the GUI. For example, you will need to populate the contents of the destinations after the file is chosen and loaded by the user.

How to Submit the Assignment:

The submission of the source codes should be done via Blackboard as before --

Please save the different classes into different .java files, then zip up all your java files and the input file ("miles.txt"), and submit the zip file in Blackboard. (Do not submit other file format for your Java source code such as txt, word, or pdf. Penalty will apply if you submit the wrong format.)