

Collections, File I/O and KeyInteractors

Due Date: 11:59 PM, October 9, 2019

Objectives

When you complete this assignment you will be able to:

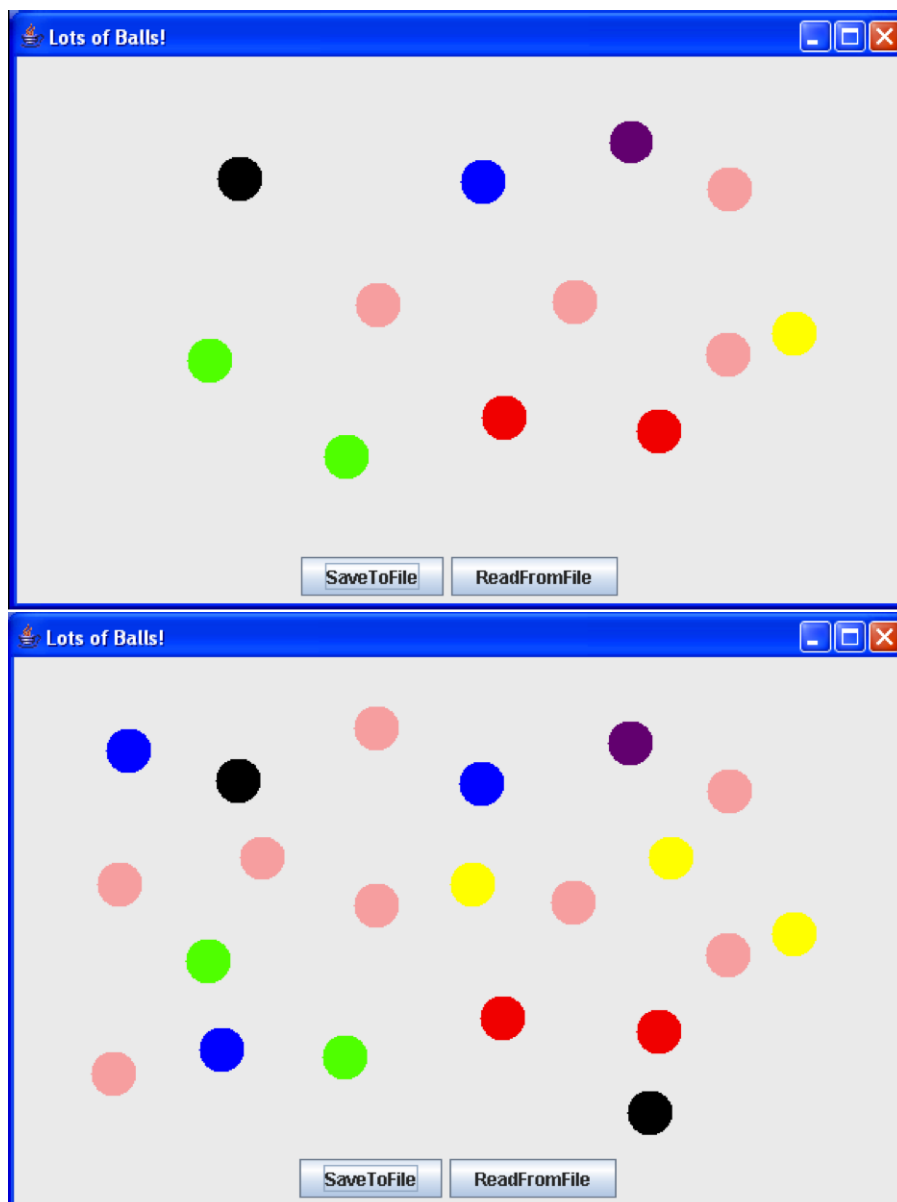
- Access similar objects with a Collection class.
- Use an Iterator to perform an operation on all elements in a Collection class.
- Use the pseudo-random number generator in the Java API
- Use dialog boxes to select files.
- Read objects from and Save objects to a file.
- Use a KeyInteractor to accept keyboard input

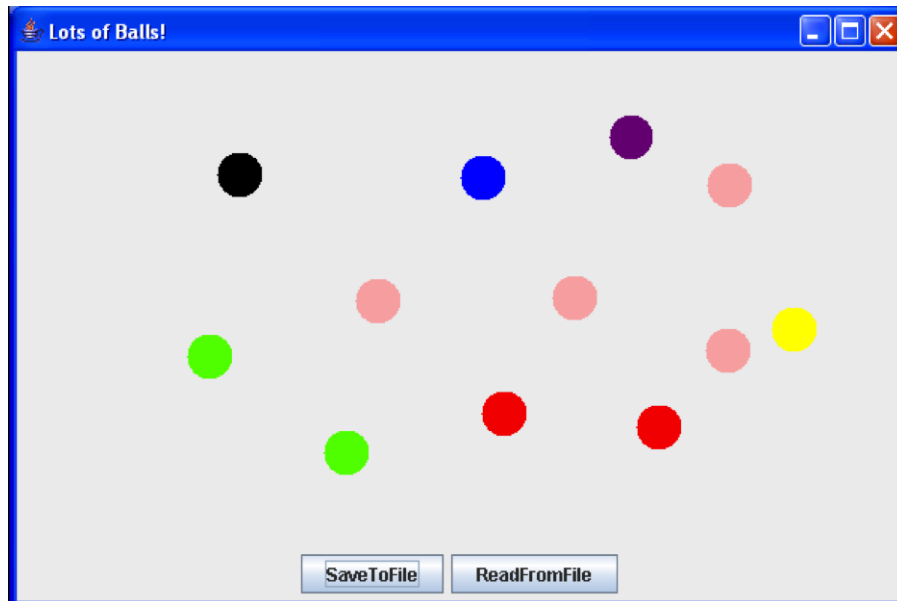
Assignment

In this assignment, you will write a program which extends the classes in the supplemental files available with this assignment document on the Moodle site for this course. The supplemental code consists of a white panel upon which a circle is drawn wherever the user clicks with the mouse. Currently a drawn circle is replaced when the user clicks on another area and the circles are all drawn with a default color. Your first task is to store all of the created circles in an ArrayList container (in java.util) and redraw all of the created circles when a new circle is added to the panel.(Hint: This is where the Iterator would be most useful.) Next, modify the code so that each circle is drawn with a custom color using red, green and blue values obtained by using the pseudo-random number generator available in the Java API.

Finally, you will add the ability to write the balls to a file and to read a file of balls and restore the screen to the state when the file was written. It will require you to add two buttons Save to File and Read from File. Each of these buttons will ask you for a file name using JFileChooser. When testing your program you should add some balls and then Save to File, then you should add some more balls. When you now Read from File, the balls you added after saving to the file should disappear and only the balls that were stored in the file should appear. The program should allow you to enter the file name each time instead of remembering it from one time to the next. The first diagram below shows an initial configuration which is saved to a file. The next diagram shows

the window after more balls have been added. The final diagram shows the window after the file that was saved is read. You should also add KeyInteractors for the “S” key and the “O” key which should save and open files respectively.





Specific requirements for your program are as follows:

1. Each new ball should appear centered on the mouse click location.
2. Use Java's Collection class `ArrayList` to store the collection of balls.
3. Allow the user to specify file names with the open and save dialog boxes from the `JFileChooser` class.

Grading

This lab assignment is worth 10 points when completed correctly. You are free to get whatever help you need in lab class to complete the assignment correctly, short of having someone else do it for you or stealing someone else's work. If you are unable to turn the work in during the lab class, you must complete it and submit it by 11:59PM on the due date.