



# AP<sup>®</sup> Computer Science A Elevens Lab Student Guide

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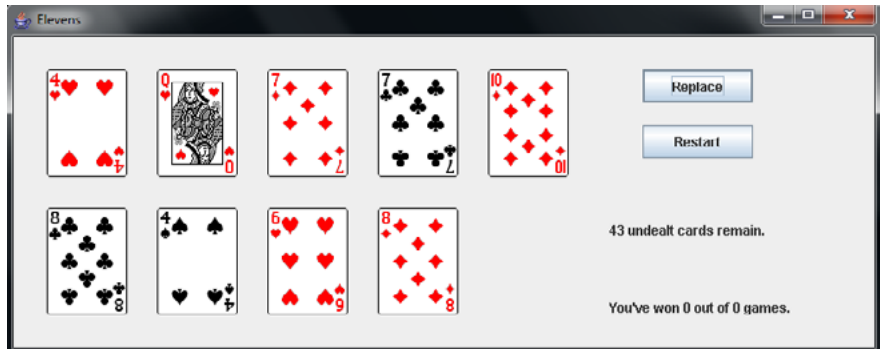


# Elevens Lab Student Guide

## Introduction

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The following activities are related to a simple solitaire game called Elevens. You will learn the rules of Elevens, and will be able to play it by using the supplied Graphical User Interface (GUI) shown at the right. You will learn about the design and the Object Oriented Principles that suggested that design. You will also implement much of the code.



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# Activity 10: ThirteensBoard (Optional)

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## Introduction:

The purpose of this activity is to create the Thirteens game using the knowledge gained from implementing the Elevens game.

## Exploration:

The rules for the Thirteens game are repeated below:

### Thirteens

A game related to Elevens, called Thirteens, uses a 10-card board. Ace, 2, ..., 10, jack, queen correspond to the point values of 1, 2, ..., 10, 11, 12. Pairs of cards whose point values add up to 13 are selected and removed. Kings are selected and removed singly. Chances of winning are claimed to be about 1 out of 2.

## Exercises:

1. Review the code in the `ElevensBoard` class. Identify the changes that would be necessary to implement the Thirteens game.
2. Copy and paste the `ElevensBoard.java` file into a new file, `ThirteensBoard.java`. Make the necessary changes to this file to implement the Thirteens game.
3. The **Activity10 Starter Code** folder also contains the `ElevensGUIRunner.java` file that is shown below. This program creates the board (an `ElevensBoard` object). Then it creates the GUI (a `CardGameGUI` object). Finally, it displays the GUI by calling its `displayGame` method. Review the code in the `ElevensGUIRunner` class as shown below. Identify the changes that would be necessary to implement the Thirteens game.

```
/**
 * This is a class that plays the GUI version of the Elevens game.
 * See accompanying documents for a description of how Elevens is played.
 */
public class ElevensGUIRunner {

    /**
     * Plays the GUI version of Elevens.
     * @param args is not used.
```

```

        */
    public static void main(String[] args) {
        Board board = new ElevensBoard();
        CardGameGUI gui = new CardGameGUI(board);
        gui.displayGame();
    }
}

```

4. Copy and paste the `ElevensGUIRunner.java` file into a new file, `ThirteensGUIRunner.java`. Make the necessary changes to this file to implement the Thirteens game.
5. Run the `ThirteensGUIRunner` program and test your new Thirteens game.