

Collections Assignment (Higher or Lower)

Due date: _____

Objectives

The purpose of this assignment is to assess your understanding of the following concepts:

- Arrays

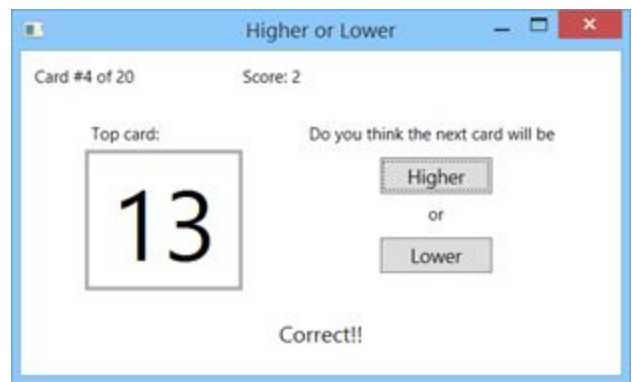
Remember, if you're spending a lot of time on something that isn't part of the assignment objectives, then get some help. Search the internet first, then ask a neighbor. If you still can't figure it out, then ask Mr. Brooks.

Assignment

This assignment is a very simple version of the “higher or lower” card game. There are 20 “cards” in the deck, with each having a different number between 1 and 20. At the start of the game (in the Window class constructor method), the program should create an array of integer values representing the deck of cards, then “shuffle” the deck to randomize the order of values in the array. The program should then display the first value in the deck.

The player then chooses whether they think the next card in the deck will have a higher or lower value than the top card.

They indicate their choice by clicking either a “higher” or “lower” button. When the user makes his choice, the program should display the next card in the deck and a message indicating whether the player was correct in his choice of higher or lower. If the player was correct, then his score goes up by one. The program should also display which card (1-20) is currently the top of the deck, as well as the player's current score. When the last card is displayed, the program should show “game over” somewhere in the window form and disable the “higher” and “lower” buttons.



Points Breakdown

- (5 points) The program window contains all of the necessary controls (text blocks and/or text boxes and the two buttons).
- (10 points) The program uses meaningful variable and method names (including control names) that use the correct naming convention (“camelCase” for variables and “PascalCase” for methods). The variables have the narrowest possible scope.
- (15 points) The program stores the card values in an array.
- (25 points) The program “shuffles” the deck of cards at the beginning of the game by randomizing the order of values in the array, such that every value is used once and only once in the array.
- (20 points) The program shows the current card in the deck as the game progresses.
- (15 points) The program increments the player's score if they are correct in guessing higher or lower and displays a message saying “correct” or “incorrect”.
- (10 points) The program displays “game over” and disables the buttons when it reaches the last card in the deck.

Additional Learning

- (1 ticket) Change the program so you can change the size of the deck and greatest card value by only changing one number in the program code.
- (1 ticket) Change the program so instead of a deck of 20 cards there is a deck of 80 cards, with each card having a different value (1-20) and color (red, blue, green, and black). When it displays the top card, it should change the foreground color to the right one for that card. The color has no bearing to whether it's higher or lower. If the next value is the same as the top card value then treat it as either both higher and lower or neither (you choose).
- (1 ticket) Change the program so the player can start a new game at the end of each game. Then add a place to display high scores. Store the high scores in an array.