CS142 Introduction to Object Oriented Programming

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Lab 1: Arrays, Sorting and Searching

1. Write a program that
   - Asks the user to enter 10 integer values and store them in an array.
   - The program should search through the array to find the largest value and print it to the screen (do not sort the array first).
   - If the user enters a real number, the program should prompt the user to enter only integer values and should not continue until the user has entered 10 integer values.

2. Write a program that
   - Given an array of 20 floating point numbers sorts the array using Bubble Sort (See this week's slides)
   - Ensure that you print the contents of the array to the screen after each pass so you can clearly see what is happening in the algorithm.
   - Print out how many swaps, comparisons and passes are made.

3. How would you improve the efficiency of your solution to Question 2. Write code for a more efficient Bubble Sort.

4. Write a Java program to play the 'Guess the number game'. The program should
   - Generate 10 random numbers between 1 and 50
   - Sort the array so that it is in ascending order
   - Print the contents of the array to the screen and ask the user to choose a number from the array
   - The computer will try to guess this number using a binary search.
   - The user should reply 'higher', 'lower' or 'correct' once the program has made a guess. The game should continue until the program has guessed the number.