

SPRING 2007
CSC 120.02 Introduction to Computer Science
Assignment 6
Due: April 17, 2007
Algorithms
(20 points)

Part I: Searching (10 points)

1. Make sure that Java SE JDK 6 from <http://java.sun.com> is installed. If not, install it.
2. Download BinarySearch.zip from ANGEL.
3. Unzip BinarySearch.zip into BlueJ's examples directory.
4. Open the BinarySearch project in BlueJ.
5. Open the editor window for the ListOfIntegers class.
6. Implement binary search as a method in the ListOfIntegers class **so that it never calls itself**. (You would have to **modify** the pseudocode on p. 300 of your textbook to achieve that.)
7. Test and debug your implementation of the binary search algorithm. You may use the input files provided.
8. From ANGEL, email me the text of your ListOfIntegers.java either by copying it and pasting the text into the body of the email message and emailing as **plain text**, or by making a copy of the file, changing the copy's extension to .txt and emailing the renamed copy as an attachment. It should contain, among other things, the text of your BinarySearch method. 10 points will be awarded for having submitted a correct code.

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Part II: Searching (10 points)

1. Open your version of the BinarySearch project from Part I in BlueJ.
2. Choose Project→Save As... and save it under a new name, BinarySearchToo.
3. Open the editor window for the BinarySearch class and rename the class to BinarySearchToo.
4. Inside the main method, replace the statement invoking BinarySearch with

```
        itemFound = myList.BinarySearch(item,0,listLength-2);
```
5. Open the editor window for the ListOfIntegers class.
6. Modify the BinarySearch method of the ListOfIntegers class so that it **invokes itself recursively**. The method's first line should now be similar to

```
        public boolean BinarySearch(int item, int left, int right)
```
7. Compile, test and debug BinarySearchToo, your implementation of the recursive binary search algorithm.
8. From ANGEL, email me the text of your resulting ListOfIntegers.java either by copying it and pasting the text into the body of the email message and emailing **as plain text**, or by making a copy of the file, changing the copy's extension to .txt and emailing the renamed copy as an attachment. It should contain, among other things, the text of your recursive BinarySearch method. 10 points will be awarded for having submitted a correct code.