

# Linear and Binary Search

**Objective:** After completion of this lab, you will be able to

- write binary search algorithm in C++.

## Lab Exercise

Assume that you have an array of numbers sorted in ascending order.

- (a) Write a function called **LinearSearch()** which searches the function linearly and determines if a particular element is in the array. The function returns true if the element is in the array, otherwise it returns false. Call the **LinearSearch()** function from the main.
- (b) Write a function called **IterBinarySearch()** which **iteratively** performs a binary search and determines if a particular element is in the array. The function returns true if the element is in the array, otherwise it returns false. Call the **IterBinarySearch()** function from the main.
- (c) Write a function called **RecursiveBinarySearch()** which **recursively** performs a binary search and determines if a particular element is in the array. The function returns true if the element is in the array, otherwise it returns false. Call the **RecursiveBinarySearch()** function from the main.

## Grading

I will download your code on my computer and execute it. If your code does not compile, you may lose more than 50% of your points (based on my discretion). If your code compiles, but still produces incorrect results you may still lose more than 30% of your points (based on my discretion).

Your code should have the following characteristics for you to get full points on the assignment

1. Compile without error.
2. Produce correct output.
3. Good programming structure.
4. Comments. (Title, Abstract, Author, ID, and Date are mandatory.)
5. Meaningful and related variable names.

## What to turn in?

Submit your source programs and **'HomeworkSubmission\_yourlastname.pdf'** as a single zipped file **'Lab4\_yourfullname'** on iLearn.

**If you do not submit the above mentioned documents in the format specified your assignment will not be graded.**

## **Homework Submission\_yourlastname.pdf**

For each homework problem, you are expected to submit screenshots of the results obtained from running your code. You should also explain what each screenshot means and why the result on the screenshot is correct.

This link explains how to take screenshots in Mac and Windows.  
<http://www.take-a-screenshot.org/>