

55 pts

Name1: Amirarsalan ValipourName2: Ali EshghiClass Day / Time: MW - 7:30 pmDue Date: 9 / 24 / 2019

Lab #5: Binary Search

In this lab, you will perform the tasks bellow. DO NOT USE GLOBAL CONSTANTS!

1. Create a header file that contains the following.
 - All necessary pre-processor directives
 - The prototype for a function that sorts an array using an insertion sort.
 - The prototype for a function that searches an array using a sequential search and returns the appropriate index in the array.
 - The prototype for a function that searches an array using a binary search and returns the appropriate index in the array.
 - The prototype for a function that outputs an array.
2. Create your source files as follows:
 - Create a source file that contains the code for the search functions.
 - Create a source file that contains the code for the sort function.
 - Create a source file that contains the code for the output function.
3. Create a file that contains the main function which should perform the following tasks in order.
 - Call the output function.
 - Allow the user to input a key
 - Call the function that performs a sequential search 4 times.
Output the index # that represents where the item was found.
 - Call the function that performs the insertion sort.
 - Call the output function.
 - Call the function that performs the binary search 4 times.
Output the index # that represents where the item was found.

Use the following Array:

```
int intArray[8] = {4, 1, 7, 12, 8, 13, 9, 21};
```

Turn in as a single PDF file (IN THIS ORDER)

- 1 – The first page of this lab (fill in the information on the top right)
- 2 – Program output (cut and pasted into a text file within eclipse)
- 3 – Header file
- 4 – Main.cpp
- 5 – Search functions source file, sort function source file and output source file

Screen Input/Output

Index #0: 4
Index #1: 1
Index #2: 7
Index #3: 12
Index #4: 8
Index #5: 13
Index #6: 9
Index #7: 21

Enter an integer to search for: 9
The integer 9 was found in index #6.

Enter an integer to search for: 6
6 was not found!

Enter an integer to search for: 21
The integer 21 was found in index #7.

Enter an integer to search for: 4
The integer 4 was found in index #0.

Performing Insertion Sort!

Index #0: 1
Index #1: 4
Index #2: 7
Index #3: 8
Index #4: 9
Index #5: 12
Index #6: 13
Index #7: 21

Enter an integer to search for: 12
The integer 12 was found in index #5.

Enter an integer to search for: 21
The integer 1 was found in index #7.

Enter an integer to search for: 2
2 was not Found!

Enter an integer to search for: 1
The integer 1 was found in index #0.