55 pts

Name1: _____

Name2: _____

Class Day / Time: _____

Due Date: _____

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 – 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.
```