Assignment8 Design

class Sort
Public: data[] : int temp: int length: int

class BubbleSort :class Sort
Public: Bubble() :void

class QuickSort : class Sort
Public: Qsort(int a[],int low,int high) :void

class RecursiveBinarySearch
Public: Search(int b[],int left,int right,int key) : int

Design

1. Set sort class which include an int array data[], int temp which is the template number during swapping, int length is the length of the array.
2. Create a BubbleSort class as a child class of Sort.
3. BubbleSort(), I use 2 loop to build bubble sort function ,the 1st loop form 1 to the last element , the second loop is inside the 1st loop and from the i (which is the loop number of 1st loop)to the last of the element. Then use if loop and temp element to swap the 2 numbers. If a is smaller than b, do swapping or a is greater than b, continue to next loop or return.

4. Create a QuickSort class as a child class of Sort.
5. Qsort(int a[],int low,int high), in this function ,I used recursion.1st we need to set the condition of return, I chose when low is greater than high, because in the process of recursion, low will be +1 every time and high will -1 every time. Then build the while loop to sort the number. In the end, use 2 Qsort() function to sort all the element in the array.
6. Create a RecursiveBinarySearch class.
7. Search(int b[],int left,int right,int key), the principle are the same with Qsort because the recursion. We choose the middle one number every time and use recursion to return the function.
8. Main(),I use gerline and istringstream o transfer each element to a string type array , then use atoi to change the type to int, in the end use Qsort Search to get the result.

Test:

Input	expect
1 2 3 4 6 5	False 1 2 3 4 5 6
-8 -9 -3 -5 -2	False -9 -8 -5 -3 -2
2 5 6 0 3 7	True 0 2 3 5 6 7