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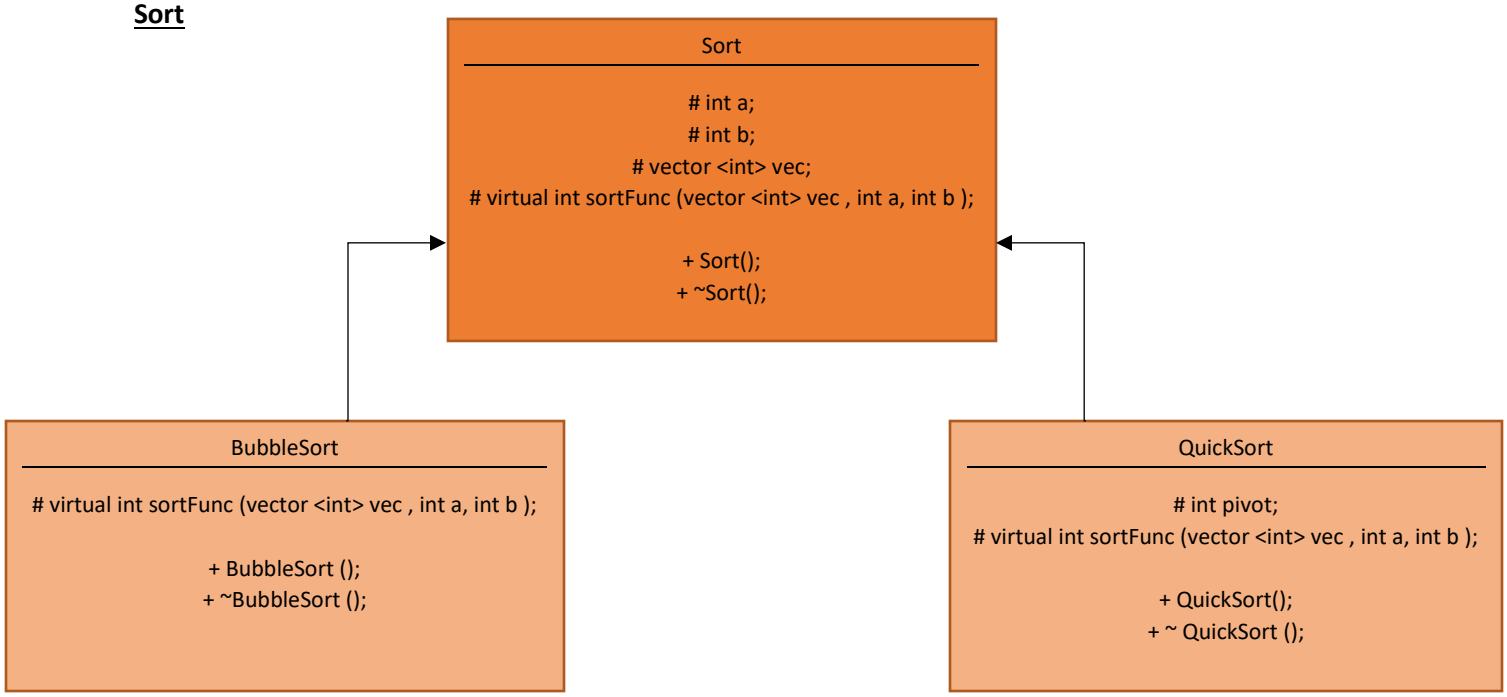
## Class Diagram

**Sort**




### Sort

**int a** : One of the integers given from the array of integers produced by the getline() function.

**int b** : Another integer from the getline() array.

**vector <int> vec :** The int array retrieved from the getline() function.

**virtual int sortFunc (vector <int> vec , int a, int b ) :** A virtual function that gets re-written for each of the different sorting functions derived from the base sorting class.

### BubbleSort

**int sortFunc (vector <int> vec , int a, int b ) :** This function sorts the given vector using the 'Bubble Sort' method. Where it iterates through the array checking two integers at a time and switching their order according to which number is bigger.

### QuickSort

**int pivot :** This integer is the "pivot point". The array gets reordered so that all elements with values less than the pivot come before the pivot, while all elements with values greater than the pivot come after it (equal values can go either way). After this partitioning, the pivot is in its final position.

**int sortFunc (vector <int> vec , int a, int b ) :** This function sorts the given vector using the 'Quick Sort' method. Where it iterates through the array checking two integers at a time and switching their order according to which number is bigger.

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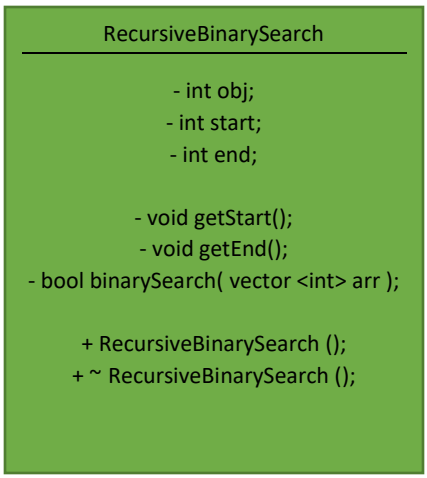
**RecursiveBinarySearch**




**int obj :** Equals to 1. This is what the search function is looking for.

**int start :** The first integer in the array.

**int end :** The last integer in the array.

**void getStart() :** Gets the first value from the array.

**void getEnd() :** Gets the last value from the array.

**bool binarySearch (vector <int> arr) :** Returns true if the value '1' is found in the array, and returns false if no '1' is found.

## Test Cases

| Test Case ID | Input | Expected Output | Actual Output | Pass or Fail | Comments |
|---|---|---|---|---|---|
| 01 | "1 3 5 4 -5 100 7777 2014" | "true -5 1 3 4 5 100 2014 7777" | " " | | To test whether it takes an input of values correctly (including spaces) and returns the expected output. |
| 02 | "0 3 5 4 -5 100 7777 2014" | "false -5 0 3 4 5 100 2014 7777" | "" | | To test whether it takes this particular set of numbers, including negatives and multiple digits, and successfully returns expected values. |
| 03 | "1 2 1 3 55 6 9 20" | "true 1 1 2 3 6 9 20 55" | "" | | To test whether it takes an input of values correctly (including doubles of the same number) and returns the expected output. |