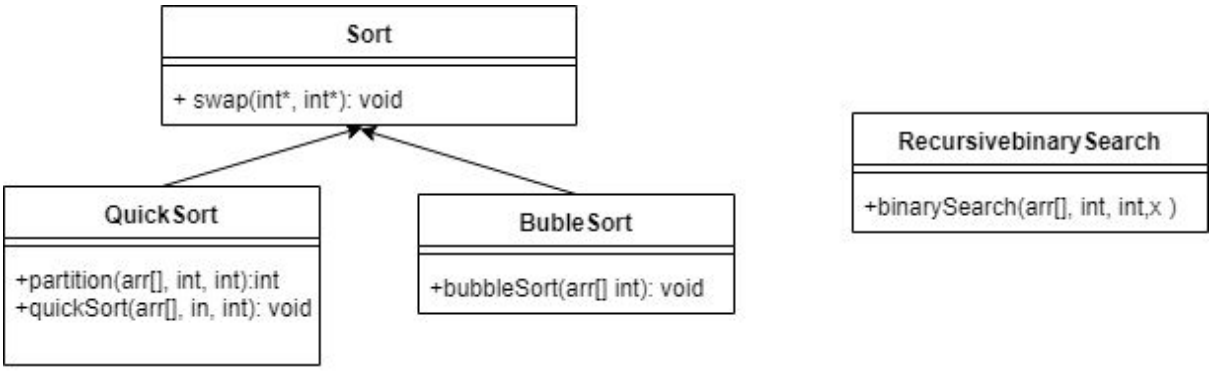
# Prac 8

## UML




## Description

### In Sort class:

swap(int* x, int*y) : swap two values of two inputs;

### In Bubble Sort class:

Void bubblesort(int arr[], int array Length): take two inputs in, give out sorted array using bubble sort.

## In quicksort class:

Int partition(int arr[], int low, int high): take three inputs, it is the first step of quicksort: partition. Basically, leave all the number which are smaller than the pivot to left side, and leave all the number which are greater than pivot to right side.

Void quicksort(arr[], int low, int high): take three inputs, it is the second step of quicksort. Recursively call itself until all the elements are sorted.

In recursivelybinarySearch class:
Int binarySearch(int arr[], int l, int r, int x): take four inputs. Using binary search to find the position of x is.

## Main

Call all the functions, print out whether 1 is in the input or not. Then print out sorted array using quicksort.

# Tests

Input: 1 345  765865  324 52 7 65 2
Expected output: True 1 2 7 52 65 324 345 765865

Input: 1 1 1 1 1 1 1 1 1 1 1 1 1
Expected output: True 1 1 1 1 1 1 1 1 1 1 1 1 1

Input; 0 0 0 0 0 0 0 0 0 0
Expected output: False 0 0 0 0 0 0 0 0 0 0

Input: -5 -2 -4 -1 0 -3 2
Expected output: False -5 -4 -3 -2 -1 0 2

Input: 123 321 12345 54321 1
Expected output: true 1 123 321 12345 54321

Input: 3 93 54872 82173 4
Expected output: false 3 4 95 54872 82173