**Codebase Documentation :** ArrayFunctions.java

The class ArrayFunctions contains around 33 functions related to array functionalities. There are 10 different types of sorting algorithms implemented each as a separate method and some other major array functions which are widely used such as reversing the array, sum of array, rotate the array by k, etc.

Following are the sorting functions from the code base:

**bubbleSort()**

**insertionSort()**

**heapSort()**

**mergeSort()**

**selectionSort()**

**quickSort()**

**countSort()**

**oddEvenSort()**

**bucketSort()**

**combSort()**

Other functions being:

**getMin()**: Get the minimum element of an array.

Input: { 10009, 118, 4457,16, 3305, 30004 }

Expected Output:16

getMax(): Get the maximum element of an array.

Input: { 1000, 11, 445,1, 330, 3000 }

Expected Output: 3000

search(): Get index of the target element from the array.

Input: {21, 32, 43, 104, 4055 } , k=104

Expected Output: 3

sum(): Get summation of all elements in the array.

Input:{15, 12, 13, 10}

Expected Output: 50

binarySearch(): Get index of the target element from the array.

Input: {2, 3, 4, 10, 40 } , k=50

Expected Output: -1

leftRotatebyOne(): Get the array that’s rotated left direction by one time.

Input: {16,178,22, 45,4,7,80,9}

Expected Output: {178,22, 45,4,7,80,9,16}

reverseArray(): Get the reversed array.

Input: {2,3,4,7,6,8}

Expected Output: {8,6,7,4,3,2}

gcd(): Find GCD of two elements.

Input: a=98, b=56

Expected Output: 14

leftRotatebyK(): Get the array that’s rotated left direction by k times.

Input: {1,2,3,4,5,6,7}, k=2

Expected Output: {3,4,5,6,7,1,2}

countOccurrences(): Get the number of occurrences of a given element in the array.

Input: {1, 1, 2, 2, 2, 2, 3}, target=2

Expected Output: 4

chkPair(): Check whether there exists a pair in the array such that their summation is given target.

Input: {0, -1, 2, -3, 1}, target= -2

Expected Output: true

findMean(): find the mean of the array.

Input: { 1, 3, 4, 2, 7, 5, 8, 6 }

Expected Output: 4.5

findMedian(): find median of an array.

Input: { 1, 3, 4, 2, 7, 5, 8, 6 }

Expected Output: 4.5

sumArrays(): find array whose elements are sum of corresponding elements of array A & B

Input:{1, 1, 2, 2, 2, 2, 3}, {3, 4, 2, 7, 5, 8, 6 }

Expected Output:{4,5,4,9,7,10,9}

diffArrays(): find array whose elements are sum of corresponding elements of array A & B

Input: {1, 1, 2, 2, 2, 2}, {3, 4, 2, 7, 5, 8}

Expected Output:{-2, -3, 0, -5, -3, -6}

mulArrays(): find array whose elements are sum of corresponding elements of array A & B

Input: {1, 1, 2, 2, 2, 2, 3}, {3, 4, 2, 7, 5, 8, 6 }

Expected Output:{3,4,4,14,10,16,18}

concatArrays(): find array whose elements are sum of corresponding elements of array A & B

Input: {1, 1, 2, 2, 2, 2, 3}, {3, 4, 2, 7, 5, 8, 6 }

Expected Output:{1,1,2, 2, 2, 2, 3,3, 4, 2, 7, 5, 8, 6}

findMaxCount(): Find the element with max occurrences in the array. In case of multiple such elements return the largest element

Input: {1, 5, 2, 1, 3, 2, 1}

Expected Output: 1

findMinCount(): Find the element with min occurrences in the array. In case of multiple such elements return the smallest element

Input: {1, 5, 2, 5, 3, 2, 1}

Expected Output: 3

findKthlargest(): Find the element which is Kth largest in the array.

Input: {7, 10, 4, 3, 20, 15}, k=3

Expected Output: 10

findKthsmallest(): Find the element which is Kth smallest in the array.

Input: {7, 10, 4, 3, 20, 15}, k=3

Expected Output: 7

getUnion(): Find all elements that belong to either of the array A, B.(where both arrays have distinct elements)

Input: { 1, 2, 5, 6, 7, 3 }, { 2, 4, 5, 6, 8, 9}

Expected Output: {1,2,3,4,5,6,7,8,9}

getIntersection(): Find elements that belong to both arrays A & B.(where both arrays have distinct elements)

Input: { 1, 2, 5, 6, 7, 3 }, { 2, 4, 5, 6, 8, 9}

Expected Output: {2, 5, 6}