

Find K Pairs with Smallest Sums

Try to solve the Find K Pairs with Smallest Sums problem.

We'll cover the following ^

- Statement
- Examples
- Understand the problem
- Figure it out!
- Try it yourself

Statement

Given two lists, and an integer k , find k pairs of numbers with the smallest sum so that in each pair, each list contributes one number to the pair.

Constraints:

- Input lists should be sorted in ascending order.
- If the value of k exceeds the total number of valid pairs that may be formed, return all the pairs.

Examples

Sample example 1

Pairs to find

$k = 3$

Input lists

L1 [2, 8, 9]

L2 [1, 3, 6]

Output pairs

[2, 1], [2, 3], [2, 6]

As $k = 3$, the three pairs with the smallest sums from the given input lists are shown above.

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Understand the problem

Let's take a moment to make sure you've correctly understood the problem. The quiz below helps you check if you're solving the correct problem:



Find K Pairs with Smallest Sums

1

What is the output if the following lists and value of k is given as input?

list 1 = [1, 11, 20, 35, 300]

list 2 = [1, 2, 300]

k = 5

A) pairs = [[1, 1], [1, 2], [1, 300], [11, 1], [11, 2]]

B) pairs = [[1, 1], [1, 2], [11, 1], [11, 2], [11, 300]]

C) pairs = [[1, 1], [1, 2], [11, 1], [11, 2], [20, 2]]

D) pairs = [[1, 1], [1, 2], [11, 1], [11, 2], [20, 1]]

Submit Answer



Question 1 of 3
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Reset Quiz ↺

Figure it out!

We have a game for you to play. Rearrange the logical building blocks to develop a clearer understanding of how to solve this problem.

Drag and drop the cards to rearrange them in the correct sequence.

Initialize a heap to store the sum of pairs and their respective indexes.

Initially, we start making pairs by pairing only the first element of the second list with each element of the first list. We push the pairs onto a min-heap, sorted by the sum of each pair.



Use another loop to pop the smallest pair from the min-heap, noting the sum of the pair and the list indexes of each element, and add the pair to a result list.

To make new pairs, we move forward in the second list and pair the next element in it with each element of the first list, pushing each pair on the min-heap.

We keep pushing and popping pairs from the min-heap until we have collected the required k smallest pairs in the result list.

Reset

Show Solution

Submit

Try it yourself

Implement your solution in the following coding playground:



```
1 import java.util.*;
2
3 class FindKPairs {
4     public static List<List<Integer>> kSmallestPairs(int[] list1, int[] list2, int target) {
5         // Your code will replace this placeholder return statement
6
7         return new ArrayList<>();
8     }
9 }
```

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Test Cases

Results

Case 1

Case 2

Case 3

Input #1

[1,2,300]

Input #2

[1,11,20,35,300]

Input #3



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Solution: Kth Smallest...

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Solution: Find K Pairs ...

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