Java-2022. ДЗ №1

26 Dec 2022, 00:49:38

start: 9 Oct 2022, 16:32:37 finish: 23 Oct 2022, 16:32:37

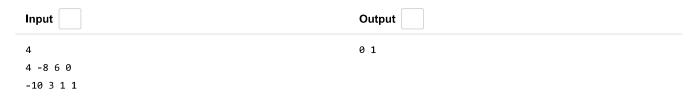
duration: 14d.

start: 23 Sep 2022, 10:55:00

A. Maximal sum

	All compilers	Oracle Java 7	Oracle Java 8	
Time limit	0.1 seconds	1 second	1 second	
Memory limit	10Mb	256Mb	256Mb	
Input	standard input or input.txt			
Output	standard output or output.txt			

Given two arrays of integers with the same length, A [0..n-1] and B [0..n-1]. It is necessary to find the first pair of indices i_0 and j_0 , $i_0 \le j_0$, such that $A[i_0] + B[j_0] = \max\{A[i] + B[j]$, where $0 \le i \le n$, $0 \le j \le n$, $i \le j$.



Language	Oracle Java 8	
Type here	Send file	

```
1 import java.util.Scanner;
 public class Main {
   public static void main(String[] args) {
                      int array_size;
Scanner scan = new Scanner(System.in);
array_size = scan.nextInt();
int[] first_array = new int[array_size];
for (int i = 0; i < array_size; i++) {
    first_array[i] = scan.nextInt();
}</pre>
 5
10
                       int[] second_array = new int[array_size];
for (int i = 0; i < array_size; i++) {
    second_array[i] = scan.nextInt();</pre>
12
13
14
15
16
17
                      int max = Integer.MIN_VALUE;
int[] max_position_1 = new int[array_size];
int current_max = 0;
for (int i = 0; i < array_size; i++) {
    if (first_array[i] > max) {
        max = first_array[i];
        current_max = i;
    }
19
20
21
22
23
24
25
                               max_position_1[i] = current_max;
26
27
28
29
                      30
31
32
33
                              if (current_max > max) {
   max = current_max;
                                       first_pos = max_position_1[i];
second_pos = i;
34
35
36
37
                       Śystem.out.print(first_pos + " " + second_pos);
38
```

Submit

B. Area of N-gon

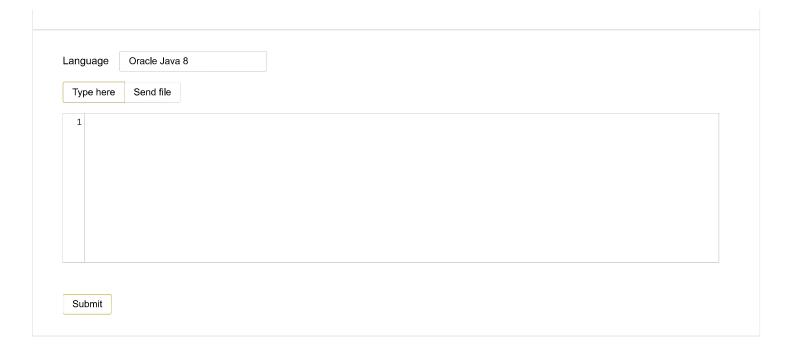
	All compilers	Oracle Java 7	Oracle Java 8	
Time limit	0.005 seconds	0.1 seconds	0.1 seconds	
Memory limit	500Kb	256Mb 256Mb		
Input	standard input or input.txt			
Output	standard output or output.txt			

Calculate the area of a convex n-gon given by the coordinates of its vertices. First, the number of vertices is entered, then the integer coordinates of all the vertices are sequentially entered in a clockwise order.

n < 1000, coordinates < 10000.

Note. To calculate the area of the n-gon, one can calculate the sum of the oriented areas of the trapezium under each side of the polygon.

Input	Output
3	1.5
1 0	
0 1	
2 2	

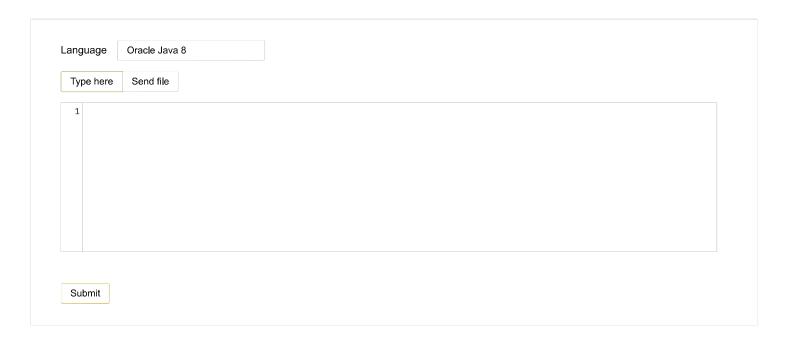


C. Required sum

Compiler	Time limit	Memory limit	Input	Output	
All compilers	0.1 seconds	2Mb	standard input or input.txt		
Oracle Java 7	1 second	256Mb			
Python 3.7.3	0.5 seconds	18Mb		standard output or output.txt	
python3.6+numpy+pandas	0.5 seconds	256Mb			
Python 2.7	0.5 seconds	18Mb			
Python 3.6	0.5 seconds	18Mb			
Oracle Java 8	1 second	256Mb			

Two strictly increasing arrays of integers A [0..n) and B [0..m) and the number k are given. Find the number of such pairs of indices (i, j) such that A [i] + B [j] = k. O (n + m) operation time is required. n, $m \le 100,000$. Note. Traverse array B from end to top.

Input	Output
4	3
-5 0 3 18	
5	
-10 -2 4 7 12	
7	



D. Counting

Compiler	Time limit	Memory limit	Input	Output	
All compilers	0.15 seconds	20Mb	standard input or input.txt		
Oracle Java 7	1 second	20Mb			
Python 3.7.3	0.5 seconds	64Mb			
Python 2.7	0.5 seconds	20Mb		standard output or output.txt	
Python 3.6	0.5 seconds	20Mb			
Oracle Java 8	1 second	20Mb			

 $N \ people \ are \ lined \ up \ in \ a \ circle, \ numbered \ from \ 1 \ to \ N. \ We \ will \ exclude \ each \ kth \ until \ only \ one \ person \ survives.$

For example, if N = 10, k = 3, then first the 3rd, then the 6th, then the 9th, then the 2nd, then the 7th, then the 1st, then the 8th, then - 5th, and then 10th. Thus, the 4th survives.

It is necessary to determine the number of the survivor.

 $N, k \le 10,000.$

Input	Output
10 3	4

Language	Oracle Java 8		
Type here	Send file		

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