Practical

Index Sum

You are given two sequences. The first is a sequence A of N real numbers (N > 0), the other is a sequence of indices IND of size M (all the elements of the second sequence are nonnegative integers strictly less than N). Output the sum of elements of A with indices from IND. For example, if A = [1,2,3,4,5] and IND = [0 3 3 2], you must calculate the sum A[0]+A[3]+A[3]+A[2] = 1 + 4 + 4 + 3 = 12.
The first line of input contains a positive integer N, followed by N real numbers. The third line contains a nonnegative integer M followed by M nonnegative integers strictly less than N.

Sample Input	Sample Output
5 -5 2.5 0 1 3 4 0 0 4 4	-4.0
2 1.5 2.5 3 1 1 1	7.5

The most divisor-rich number

The input consists of two positive integers a and b, such that a <= b. Among the integers in the interval [a, b], find the one that has the most number of divisors. Write a function that finds the number of divisors for a given number.

30 40	36
10 100	60

1000 2000	1680

Lucky Numbers

Let’s call a number lucky if the sum of its digits on even positions is equal to the sum of its digits on odd positions. The positions are numbered starting from 1 from the right end of the number - the last digit having position 1, the penultimate having position 2, etc. Let’s consider 15224. The sum of digits on odd positions is 4 + 2 + 1 = 7. The sum of digits on even positions is: 2 + 5 = 7. Therefore, 15224 is a lucky number. Given a natural number, determine if it’s lucky.

15224	Yes
53143277	Yes
10	No
8	No
121	Yes
212	No

Monotonicity

The input is a whole positive number N (N>1) and a sequence of N numbers. Output Ascending, if the sequence is strictly ascending, Descending, if it’s strictly descending and Neither, if it’s neither ascending, nor descending.

Input	Output
5 1 2 5 7 9	Ascending
6 1 1 2 5 7 9	Neither
4 3 2 1 -10	Descending

4 3 2 2 1	Neither
5 1 2 1 3 4	Neither
2 1 2	Ascending
2 1 1	Neither

Tree

Input the base width of the tree(number of ‘*’ in the bottom) and draw tree with symbols *. You’re guaranteed that the number is odd. You have to decide how many spaces and ‘*’ to print in first line, and print them, then how many spaces and ‘*’ to print in the second line and so on.

5	<pre> * *** *****</pre>
9	<pre> * *** ***** ******* *********</pre>