Practice Arena

Practice problems aimed to improve your coding skills.

- PRACTICE-02_SCAN-PRINT
- PRACTICE-03_TYPES
- LAB-PRAC-02_SCAN-PRINT
- LAB-PRAC-01
- PRACTICE-04_COND
- BONUS-PRAC-02
- LAB-PRAC-03_TYPES
- PRACTICE-05_COND-LOOPS
- LAB-PRAC-04_COND
- LAB-PRAC-05_CONDLOOPS
- PRACTICE-07_LOOPS-ARR
- LAB-PRAC-06_LOOPS
- LAB-PRAC-07_LOOPS-ARR
- LABEXAM-PRAC-01_MIDSEM
- PRACTICE-09_PTR-MAT
- LAB-PRAC-08_ARR-STR
- PRACTICE-10_MAT-FUN
- LAB-PRAC-09_PTR-MAT
- LAB-PRAC-10_MAT-FUN
  - Stack
  - The Prutor Editor
  - Finding your identity
  - Queue
  - The Prutor Editor Part II
  - Only Ones
  - Graphs
  - How Mr C actually does Math
  - The Hidden Positives and Negatives
  - How Prutor Manages Memory
  - Message in the Matrix
  - The Hidden Key
- PRACTICE-11_FUN-PTR
- LAB-PRAC-11_FUN-PTR
- LAB-PRAC-12_FUN-STRUC
- LABEXAM-PRAC-02_ENDSEM
- LAB-PRAC-13_STRUC-NUM
- LAB-PRAC-14_SORT-MISC

The Hidden Key

LAB-PRAC-10_MAT-FUN

The Hidden Key [20 marks]

Problem Statement
In the first line of the input you will be given a strictly positive integer n denoting the length of the messages. In the next two lines you will be given two messages as list of n integers separated by a single space. The first message will be the original (plain) message and the next will be the encrypted message.

The encrypted message was obtained by taking a secret key which is itself a message of length k (we do not know k) and adding it to the message. However, since the message length may be longer than the length of the key, the key is repeated as many times as required.

For example, if the plain message is [1 2 3 4 5 6 7 8] (i.e. n = 8) and the key is [1 2 3] (i.e. k = 3) then we first repeat the key enough to obtain a list of 8 elements as [1 2 3 1 2 3 1 2] (notice that we omitted the last 3 since we do not need it - we already have 8 integers). The encrypted message is now obtained by adding the repeated key message to the original message to obtain the encrypted message as [2 4 6 5 7 9 8 10]

In your output, you have to first give the length k of the secret key and then output the secret key. If more than one secret key is possible, output the secret key of the smallest length possible.

Caution

1. Secret keys may be of any non-negative length
2. As the example below indicates, the integers in the messages as well as in the keys, may be negative or even zero.
3. Be careful about extra/missing lines and extra/missing spaces in your output.

EXAMPLE:
INPUT
2
31 43
31 43

OUTPUT:
1
0

Explanation The plain and encrypted message are the same. The shortest key that makes this possible is the unit length key 0.

Grading Scheme:
Total marks: **[20 Points]**

There will be partial grading in this question. There are two lines in your output. Printing each line

correctly, in the correct order, carries 50% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

Start Solving! (/editor/practice/6208)