National Olympiad in Computing
First Round

Please note that you must submit your answers and program listings as printouts. Diskettes are not accepted.

Question 1: Tables

Author: Michael Kyritsis

Task

Take a positive whole number (N) as input and print the times table (multiplication table) up to N.

Input

A positive whole number (N).

Output

There will be N rows of output.
In the first row show the values of 1x1 1x2 1x3… 1xN
In the second show 2x1 2x2 2x3… 2xN
In the last row show Nx1 Nx2 Nx3… NxN
Don't worry about printing in neat columns, just put 1 space between numbers on the same row.

Example

Input

```
5
```

Output

```
1 2 3 4 5
2 4 6 8 10
3 6 9 12 15
4 8 12 16 20
5 10 15 20 25
```

Test Data

Test your program with the following data

a. 9	b. 13

Question 2: Two Keys

Author: Michael Kyritsis

Description

Imagine an alphabet that has been designed for a keyboard with only 2 keys: left and right. The keyboard sends the following signals:

Event	Signal
Left key pressed	L
Left key released	M
Right key pressed	R
Right key released	S

Certain patterns of key presses or releases create meaning – in this case, letters of the alphabet.

Signal	Letter
LM	A
RS	N
LRSM	C
LRMS	E
RLSM	L
RLMS	T

Task:

Recognize the letters from the signals, and print the message.

Input

A string of letters, representing the signal.

Output

The resulting message.

Example

Input

```
RLMSLRMSRSRLMS
```

Output

```
TENT
```

Test Data

Test your program with the following data

a.	RLMSLMRLSMLRMSRSRLMS
b.	LRSMLMRLMSRLMSRLSMLRMS

Question 3: OE-Primes

Author: Carl Hultquist

Description

An oddsy-even number is one in which the sum of all the odd digits is equal to that of the even digits (e.g.: 112 is oddsy-even since 1+1=2, 1254 is oddsy-even because 1+5=2+4, but 12342 is not oddsy-even since 1+3 is not equal to 2+4+2).
A prime number is a number that is only divisible by 1 and itself (eg: 3 is prime, but 6 is not since 6 is divisible by 2 and 3 as well as 1 and 6).
An oddsy-even prime number is a number, which is oddsy-even and also prime.

Task

You are required to find all the oddsy-even primes between two given integers A and B inclusive.

Input

Two numbers A and B between 0 and 1000000, A <= B.

Output

Your program should print out all the oddsy-even prime numbers between A and B inclusive. If there are no oddsy-even primes in this range, your program should print "No number found".

Example 1

Input

```
Enter value for A: 1
Enter value for B: 200
```

Output

```
No numbers found
```

Example 2

Input

```
Enter value for A:  121212
Enter value for B: 123456
```

Output

```
121633 is an oddsy-even prime number.
121853 is an oddsy-even prime number.
122069 is an oddsy-even prime number.
122609 is an oddsy-even prime number.
```

Test Data

Test your program with the following data:

a.	A = 6789 B = 10000	b.	A = 28000 B = 35000

Question 4: Digits

Author: Cobus Combrink

Task

Given a string of digits 0-9. Group the adjacent digits to form numbers, in such a way that their sum will equal a certain given total T. A digit may only belong to one number.

Input:

A string of digits 0-9 followed by a second line containing the number T.

Output

A string of groups. Output the groups as they appear in the original string, separated by commas.

Example

Input

```
String: 2415043
Total -T: 289
```

Output

```
Solution: 241, 5, 0, 43
```

Test Data

Test your program with the following data

a.	2237450 104	b.	1848935 38

Question 5: Fractions

Author: RainerHoft

Description

For this problem, we will number the fractions strictly between zero and one as follows:

1	1/2
2	1/3
3	2/3
4	1/4
5	3/4
6	1/5
7	2/5

8	3/5
9	4/5
10	1/6
11	5/6
12	1/7
13	2/7
14	3/7

And so on. The "halves" first, then the "thirds," the "fourths," and so on. Each fraction appears only in its simplest form, e.g. 0.5 will appear as 1/2 and not as 2/4, 3/6 or any equivalent form. The largest denominator will be 99.

Task

Your job is to add two fractions given by their positions in this list, giving as your answer the position of their sum. If the sum does not appear on the list (i.e. The sum is greater than 1 or the denominator of the sum is greater than 99) then your program should output a 0.

Input

Two integers f and s, representing the positions of two fractions in this list.

Output

One integer, representing the position, in this list, of the sum of the two fractions. *0 if the sum is not in the list.*

Example

Input

```
Enter first number (f): 2
Enter second number(s): 13
```

Output

```
Position of sum is: 135
```

Test Data

Test your program with the following data:

a.	f = 18; s = 19	b.	f = 42; s = 55

[co/Qppr1eng2000]