A – Coprimes

Description

For given integer N (1N104) find amount of positive numbers not greater than N that coprime with N. Let us call two positive integers (say, A and B, for example) coprime if (and only if) their greatest common divisor is 1. (i.e. A and B are coprime if gcd(A,B) = 1).

**Input**

Input file contains integer N.

**Output**

Write answer in output file.

Sample Input

9

Sample Output

6

B - Little shop of flowers

Description

**PROBLEM**

You want to arrange the window of your flower shop in a most pleasant way. You have *F* bunches of flowers, each being of a different kind, and at least as many vases ordered in a row. The vases are glued onto the shelf and are numbered consecutively 1 through *V*, where *V* is the number of vases, from left to right so that the vase 1 is the leftmost, and the vase *V* is the rightmost vase. The bunches are moveable and are uniquely identified by integers between 1 and *F*. These id-numbers have a significance: They determine the required order of appearance of the flower bunches in the row of vases so that the bunch *i* must be in a vase to the left of the vase containing bunch *j* whenever *i* < *j*. Suppose, for example, you have bunch of azaleas (id-number=1), a bunch of begonias (id-number=2) and a bunch of carnations (id-number=3). Now, all the bunches must be put into the vases keeping their id-numbers in order. The bunch of azaleas must be in a vase to the left of begonias, and the bunch of begonias must be in a vase to the left of carnations. If there are more vases than bunches of flowers then the excess will be left empty. A vase can hold only one bunch of flowers.

Each vase has a distinct characteristic (just like flowers do). Hence, putting a bunch of flowers in a vase results in a certain aesthetic value, expressed by an integer. The aesthetic values are presented in a table as shown below. Leaving a vase empty has an aesthetic value of 0.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **V A S E S** | | | | |
|  |  | **1** | **2** | **3** | **4** | **5** |
| **Bunches** | **1 (azaleas)** | 7 | 23 | -5 | -24 | 16 |
| **2 (begonias)** | 5 | 21 | -4 | 10 | 23 |
| **3 (carnations)** | -21 | 5 | -4 | -20 | 20 |

According to the table, azaleas, for example, would look great in vase 2, but they would look awful in vase 4.

To achieve the most pleasant effect you have to maximize the sum of aesthetic values for the arrangement while keeping the required ordering of the flowers. If more than one arrangement has the maximal sum value, any one of them will be acceptable. You have to produce exactly one arrangement.

**ASSUMPTIONS**

* 1 ≤ *F* ≤ 100 where *F* is the number of the bunches of flowers. The bunches are numbered 1 through *F*.
* *F* ≤ *V* ≤ 100 where *V* is the number of vases.
* -50  *Aij*  50 where *Aij* is the aesthetic value obtained by putting the flower bunch *i* into the vase *j*.

**Input**

* The first line contains two numbers: *F*, *V*.
* The following *F* lines: Each of these lines contains *V* integers, so that *Aij* is given as the *j*’th number on the (*i*+1)’st line of the input file.

**Output**

* The first line will contain the sum of aesthetic values for your arrangement.
* The second line must present the arrangement as a list of *F* numbers, so that the *k*’th number on this line identifies the vase in which the bunch *k* is put.

Sample Input

3 5

7 23 -5 -24 16

5 21 -4 10 23

-21 5 -4 -20 20

Sample Output

53

2 4 5

C - Div 3

Description

There is sequence 1, 12, 123, 1234, ..., 12345678910, ... . Given first N elements of that sequence. You must determine amount of numbers in it that are divisible by 3.

**Input**

Input contains N (1<=N<=231 - 1).

**Output**

Write answer to the output.

Sample Input

4

Sample Output

2

D - 987654321 problem

Description

For given number N you must output amount of N-digit numbers, such, that last digits of their square is equal to 987654321.

**Input**

Input contains integer number N (1<=N<=106)

**Output**

Write answer to the output.

Sample Input

8

Sample Output

0

E - Magic of David Copperfield II

Description

The well-known magician David Copperfield loves lo show the following trick: a square with N rows and N columns of different pictures appears on a TV screen, Let us number all the pictures in the following order:

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | ... | N |
| ... | ... | ... | ... |
| N\*(N-1)+1 | N\*(N-1)+2 | ... | N\*N |

Each member of the audience is asked to put a finger on the upper left picture (i.e., picture number one) and The Magic begins: the magician tells the audience to move the finger K1 times through the pictures (each move is a shift of the finger to the adjacent picture up, down, left or right provided that there is a picture to move to), then with a slight movement of his hand he removes some of the pictures with an exclamation "You are not there!", and ... it is true - your finger is not pointing to any of the pictures removed. Then again, he tells the audience to make K2 moves, and so on. At the end he removes all the pictures but one and smiling triumphantly declares, "I've caught you" (applause).   
  
Just now, David is trying to repeat this trick. Unfortunately, he had-a hard day before, and you know how hard to conjure with a headache. You have to write a program that will help David to make his trick.

**Input**

The input file contains a single integer number N (1<N<101).

**Output**

Your program should write the following lines with numbers to the output file:  
K1 X1,1 X1,2 ... X1,m1  
K2 X2,1 X2,2 ... X2,m2  
...  
Ke Xe,1 Xe,2 ... Xe,me  
where Ki is a number of moves the audience should make on the i-th turn (N<=Ki<300). All Ki, should be different (i.e. Ki<>Kj when i<>j). Xi,1 Xi,2 ... Xi,mi are the numbers of the pictures David should remove after the audience will make Ki moves (the number of the pictures removed is arbitrary, but each picture should be listed only once, and at least one picture should be removed on each turn).  
A description of the every next turn should begin with a new line. All numbers on each line should be separated by one or more spaces. After e iterations, all pictures except one should be removed.

Sample Input

3

Sample Output

3 1 3 7 9

5 2 4 6 8

F - a^b-b^a

Description

You are given natural numbers a and b. Find ab-ba.

**Input**

Input contains numbers a and b (1≤a,b≤100).

**Output**

Write answer to output.

Sample Input

2 3

Sample Output

-1

G – Spreadsheets

Description

In the popular spreadsheets systems (for example, in Excel) the following numeration of columns is used. The first column has number A, the second — number B, etc. till column 26 that is marked by Z. Then there are two-letter numbers: column 27 has number AA, 28 — AB, column 52 is marked by AZ. After ZZ there follow three-letter numbers, etc.

The rows are marked by integer numbers starting with 1. The cell name is the concatenation of the column and the row numbers. For example, BC23 is the name for the cell that is in column 55, row 23.

Sometimes another numeration system is used: RXCY, where X and Y are integer numbers, showing the column and the row numbers respectfully. For instance, R23C55 is the cell from the previous example.

Your task is to write a program that reads the given sequence of cell coordinates and produce each item written according to the rules of another numeration system.

Input

The first line of the input contains integer number *n* (1 ≤ *n* ≤ 105), the number of coordinates in the test. Then there follow *n* lines, each of them contains coordinates. All the coordinates are correct, there are no cells with the column and/or the row numbers larger than 106 .

Output

Write *n* lines, each line should contain a cell coordinates in the other numeration system.

Sample Input

Input

2  
R23C55  
BC23

Output

BC23  
R23C55

H - A polyline

Done!!!!!