TASK	LJESNJAK	JABUKA	JAGODA	LUBENICA	TRESNJA	KRUSKA
input	standard input					
output	standard output					
time limit	1 second	1 second	3 seconds	1 second	1 second	1 second
memory limit	32 MB	32 MB	32 MB	64 MB	64 MB	64 MB
points	**30**	**50**	**70**	**100**	**120**	**130**
	500					

Not so long ago, before operating systems were as powerful as they are today, computers (which often had turbo buttons on the exterior) couldn't handle certain letters of the Croatian alphabet. Programmers agreed to use two or three-letter substitutions as in this table:

Letter	Characters
č	c=
ć	c-
dž	dz=
đ	d-
lj	lj
nj	nj
š	s=
ž	z=

For example, the word `ljes=njak` consists of six letters in the Croatian alphabet: lj, e, š, nj, a, k.

Write a program that calculates the number of letters in the given word.

INPUT

The first line contains a string of at most 100 characters. Only lowercase letters of the English alphabet and characters '–' and '=' will appear.

The string will represent a word encoded as described above.

OUTPUT

Output the number of letters in the input word.

EXAMPLES

input
`dz=ak`
output
`3`
	input
	`ljes=njak`
	output
	`6`

Mirko has R red and G green apples to share with some of his friends, so that all of them receive the same number of red apples and also the same number of green apples. Mirko does not like apples himself so he doesn't want to be left with any apples afterward.

For example, if Mirko has 4 red and 8 green apples, he can divide them in three ways:

1. One friend gets all 4 red and all 8 green apples;
2. Two friends each receive 2 red apples and 4 green apples;
3. Four friends each receive 1 red and 2 green apples.

Write a program that outputs all ways for Mirko to divide his apples. Assume Mirko has an infinite supply of friends to give apples to.

INPUT

The first line contains two positive integers R and G separated by a space ($1 \leq R, G \leq 1\,000\,000\,000$), the numbers of red and green apples.

OUTPUT

For each possible distribution, output three integers N, X and Y on one line. The number N is the number of friends that will receive apples. The numbers X and Y tell how many red and greed apples each of them will receive.

Each distribution needs to be output exactly once. You may output the distributions in any order.

EXAMPLES

input	**input**	**input**
4 8	15 12	42 105
output	**output**	**output**
1 4 8 2 2 4 4 1 2	3 5 4 1 15 12	1 42 105 3 14 35 7 6 15 21 2 5

Slavko has N rabbits that he feeds every day with various fruits and vegetables. Rabbits, however, prefer strawberries above all else. Strawberries are hard to find and expensive in the middle of winter, so Slavko only gives strawberries to part of his rabbits.

Slavko numbered the rabbits 1 through N. To help keep track of how many strawberries each of the rabbits got, Slavko decided on the following strawberry allocation procedure.

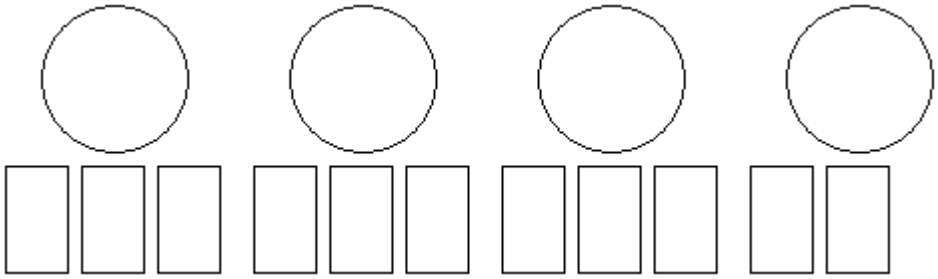
Every day Slavko purchases some number S of strawberries and chooses some rabbit A to get the first strawberry. Rabbit A+1 will get the second strawberry, rabbit A+2 the third etc.

Every rabbit is assigned an initially empty matchbox, the N matchboxes forming a single row.

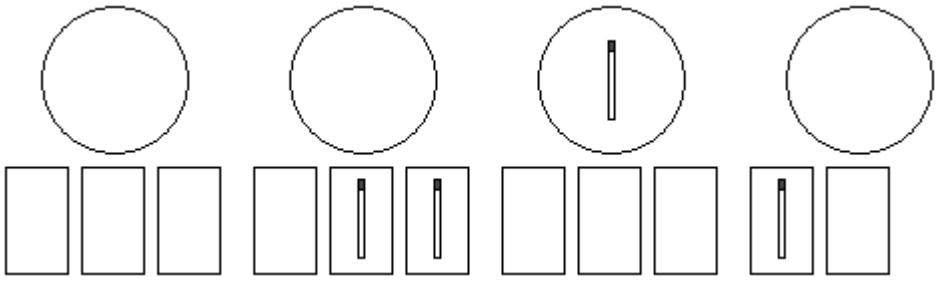
Let K be the largest integer such that $K \cdot K \leq N$. Every group of K matchboxes (starting with the first) will also have a cup next to them. We say that K consecutive matchboxes with their cup form a **block**.

After giving the rabbits their strawberries, Slavko will put a single match into the matchbox of every rabbit that got a strawberry, **unless** he would be putting a match into **all matchboxes in a block**. Instead of putting matches into all matchboxes in a block, he will put a single match in the appropriate cup.

The total number of strawberries received by a rabbit can be calculated as the number of matches in its matchbox plus the number of matches in its cup.



For example, assume that there are 11 rabbits, that is N=11. The number three is the largest integer which, when squared, gives a result of at most 11, so K=3. There will be four blocks, the last of them incomplete with only two matchboxes. If Slavko buys 6 strawberries and gives the first of them to rabbit 5, the state in the cups and matchboxes will be:



Write a program that simulates the above procedure, knowing the number of rabbits N, the number of days M and the numbers S and A for each of the M days.

For every day, output the **total number of matches in all matchboxes and cups** that Slavko added matches to on that day.

INPUT

The first line contains the integers N and M separated by a space ($1 \leq N, M \leq 100000$), the number of rabbits and days.

Each of the following M lines contains two integers S and A separated by a space. These numbers mean that Slavko purchased S strawberries that day and that rabbit A will receive the first one ($1 \leq A \leq N$, $1 \leq A+S-1 \leq N$).

OUTPUT

Output M numbers, each on a separate line. The k-th line should contain the total number of matches in all matchboxes and cups that Slavko used on day k.

EXAMPLES

input	**input**
11 3 6 5 3 1 11 1	16 3 2 2 12 3 6 11
output	**output**
4 1 6	2 7 3

In the first example, there are 11 rabbits and matchboxes, and four blocks, as shown in the image on the previous page.

1. On the first day, Slavko gives strawberries to rabbits 5 through 10, putting matches into matchboxes 5, 6 and 10, and one into the third cup. Before this there were no other matches in the matchboxes and cups he used, so the output is four.
2. On the second day, Slavko gives strawberries to rabbits 1 through 3, putting just one match into the first cup.
3. On the third day, Slavko gives strawberries to all his rabbits, putting one match into every cup. After putting the four matches into cups, there is a total of six matches in the cups he used, so the output is six.

Children in school are having fun instead of listening to the teacher. With their iPhone devices the children throw watermelons at each other on the Facebook social site.

The game started when Goran threw one watermelon at each of his friends during the first class that day. During subsequent classes, all children (including Goran) behaved like this:

- If they had been hit by an odd number of watermelons during the previous class, they threw exactly one watermelon at each of their friends;
- If they had been hit by an even number of watermelons (including zero), then they hit each of their friends with two watermelons.

The children are numbered 1 through N, Goran obviously being number 1. The friend relationships between the children are also known.

Write a program that will calculate the total number of watermelons thrown after H classes.

INPUT

The first line contains two integers N and H ($1 \leq N \leq 20$, $1 \leq H \leq 1\,000\,000\,000$), the number of kids and classes.

Each of the following N lines contains a string of N characters '0' or '1'. The character (A, B) in this matrix is '1' if children A and B are friends.

No child will be their own friend. The input matrix will be symmetric.

OUTPUT

Output the number of watermelons after H classes.

SCORING

In test cases worth 50% of points, H will be at most 1000.

EXAMPLES

input	**input**	**input**
4 1 0110 1001 1001 0110 **output** 2	4 2 0110 1001 1001 0110 **output** 14	5 3 01000 10110 01000 01001 00010 **output** 26

In the second example, Goran throws two watermelons during the first class. During the second class, children 1 and 4 each throw two watermelons at 2 and 3 each, while 2 and 3 throw one watermelon at 1 and 4. A total of 12 watermelons is thrown during the second class.

Lana lives in a small but merry village. There is a row of cherry trees next to the main street. Lana numbered the trees with consecutive integers starting with 1.

After much studying, Lana noticed that the number of the tree uniquely determines the amount of cherries the tree gives.

For one tree, consider **consecutive groups** of digits in the tree's number. For each group of digits, multiply the digit by the square of the length of the group. Adding these numbers for all groups gives the total number of cherries the tree gives.

For example, in tree number 77744007, the groups are 777, 44, 00 and 7. The amount of cherries will be $7 \cdot 3^2 + 4 \cdot 2^2 + 0 \cdot 2^2 + 7 \cdot 1^2 = 86$ units.

The time has come to pick the cherry trees and the villagers have agreed to pick all trees numbered A through B (inclusive). Write a program that will calculate the total amount of cherries picked.

INPUT

Input consists of two integers A and B ($1 \leq A \leq B \leq 10^{15}$), the first and last trees to be picked.

OUTPUT

Output a single integer, how many units of cherries will be picked.

EXAMPLES

input	**input**	**input**
1 9	100 111	7774407 7774407
output	**output**	**output**
45	68	86

Aladdin has become bored of life at the palace. He has a steady job, his wife Jasmine, kids are on the way and life is becoming monotonous. Prompted by all this, he has decided to have one more adventure before settling down.

He has decided to find the Golden Pear, an extremely valuable legendary artifact that no one has been able to find.

The desert Aladdin is searching is can be modeled as an N×N grid of cells. Rows and columns are numbered 1 through N top to bottom and left to right. Some of the cells in the desert contain wizards that help Aladdin's quest in an unusual way.

Aladdin starts his quest in the top left corner of the desert on a **Monday** facing right. His movement involves repeating these steps:

1. If the current cell contains a wizard that is awake, then Aladdin turns 90 degrees left or right, depending on what the wizard says.
2. If moving forward would take Aladdin out of desert, he turns 180 degrees.
3. Aladdin moves forward one cell and it takes him **exactly one day**.

For each wizard we know his location and his activity schedule for each day of the week. The schedule is a string of exactly seven letters 'L', 'R' or 'S', each character telling us what the wizard does on one day of the week (starting with Monday). The letter 'L' means that Aladdin will be told to turn left, 'R' that Aladdin will be told to turn right, while 'S' means the wizard sleeps that day.

An old prophecy says that after K changes in direction (in steps 1 and/or 2) Aladdin will find the Pear. Write a program that calculates how many days the search will last, according to the ancient prophecy.

INPUT

The first line contains two integers N and K ($2 \leq N \leq 200$, $1 \leq K \leq 1\,000\,000\,000$), the size of the desert and the number of direction changes in the prophecy.

The second line contains an integer M ($0 \leq M \leq 10000$), the number of wizards.

Each of the following M lines contains two integers R and C ($1 \leq R, C \leq N$), and a string of seven letters 'L', 'R' or 'S'. The numbers represent the row and column where the wizard is located, while the string is his schedule.

No two wizards will share the same cell, nor will there be a wizard in cell (1, 1).

OUTPUT

Output the length of the search in days.

SCORING

In test cases worth 50% of points, K will be at most 1000.

EXAMPLES

input	**input**	**output**
3 1 0 **output** 2	5 2 2 1 3 RRSRRRR 1 5 RRRRLRR **output** 4	5 5 3 1 3 SSRSSSS 3 3 SSSLSSS 4 3 SSRSSLS **output** 10

In the first example, Aladdin moves twice, reaching the edge of the desert. He then turns 180 degrees and finds the Pear.

In the second example, Aladdin reaches the first wizard on the third day, but the wizard is sleeping so Aladdin continues in the same direction. After two more days he reaches the other wizard who tells him to turn left. Aladdin does so, reaches the edge of the desert, turns back and finds the pair.