Greetings From Globussoft

- Given below are 5 Programming questions, you have to solve any 3 out of 5 questions.

- These 5 questions you can attempt in any technology like C/C++, java, .Net, PHP

- To solve these 3 questions you've max. 3 hours.

- While Solving these questions you are not allowed to use any Search Engine like Google, Yahoo, Bing ...

All the best for your test

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QUESTION - 1

Yanu is a great fan of Harry Potter.So on the day of the movie release, Yanu rushes to the movie theatre to watch the movie. On the release of the 6th movie, on reaching the theatre she found a long queue for tickets already.As the distirbution was about to start, the ticket counter did not have any change to start with. There are N+M people in queue,where N have Rs 10.00 and M have Rs 5.00. The ticket costs Rs 5.00.

Now Yanu is math geek too , now she wonders What is the probability that the theatre can always provide change.

Input

Each line contain N and M , seperated by a space , End of Input is marked by 0 0 which should not be processed. Both N and M fits in integer range.

Output

For each input , output the respective probability upto 6 decimal digits.

Example

```
Input:
1 0
0 1
41 41
0 0

Output:
0.000000
1.000000
0.023810
```

QUESTION – 2

Given integer **n**, print length of **n!** (which is factorial of **n**).

Input

The first line of the standard input contains one integer **t** (t<10001) which is the number of test cases.

In each of the next **t** lines there is number **n** (0<=n<=5*10^9).

Output

For each test, print the length of **n!** (which is factorial of **n**).

Example

```
Input:
3
1
10
100
Output:
1
7
158
```

QUESTION – 3

Given an array A having n elements, let X be the maximum sum of any contiguous sequence in the array. How many contiguous sequences in A sum up to X ?

Input

The first line contains T the number of test cases. There follow 2T lines, 2 for each test case. The first line contains the n, the number of elements in the array. The second line contains n space seperated integers Ai.

Output

Output T lines, one for each test case. On each line, output two space seperated integers; the maximum sequence sum, and the number of sequences which obtain this maximum sum.

Example

Sample Input :
2
3
-1 -1 -1
4
2 0 -2 2

Sample Output :
-1 3
2 4

QUESTION – 4

Starting at the top left corner of an N*M grid and facing towards the right, you keep walking one square at a time in the direction you are facing. If you reach the boundary of the grid or if the next square you are about to visit has already been visited, you turn right. You stop when all the squares in the grid have been visited. What direction will you be facing when you stop ?

For example : Consider the case with N = 3,M = 3. The path followed will be (0,0) -> (0,1) -> (0,2) -> (1,2) -> (2,2) -> (2,1) -> (2,0) -> (1,0) -> (1,1). At this point, all squares have been visited, and you are facing right.

Input

The first line contains T the number of test cases. Each of the next T lines contain two integers N and M, denoting the number of rows and columns respectively.

Output

Output T lines, one for each test case, containing the required direction you will be facing at the end. Output L for left, R for right, U for up, and D for down.

Eample

Sample Input :
4
1 1
2 2
3 1
3 3

Sample Output :
R
L
D
R

QUESTION – 5

On the way to dinner, the CCC competitors are lining up for their delicious curly fries. The N ($1 \leq N \leq 100$) competitors have lined up single-file to enter the cafeteria.

Doctor V, who runs the CCC, realized at the last minute that programmers simply hate standing in line next to programmers who use a different language. Thankfully, only two languages are allowed at the CCC: Gnold and Helpfile. Furthermore, the competitors have decided that they will only enter the cafeteria if they are in a group of at least K ($1 \leq K \leq 6$) competitors.

Doctor V decided to iterate the following scheme:

- He will find a group of K or more competitors who use the same language standing next to each other in line and send them to dinner.
- The remaining competitors will close the gap, potentially putting similar-language competitors together.

So Doctor V recorded the sequence of competitors for you. Can all the competitors dine? If so, what is the minimum number of groups of competitors to be sent to dinner?

Input

The first line contains two integers N and K.
The second line contains N characters that are the sequence of competitors in line (H represents Helpfile, G represents Gnold)

Output

Output, on one line, the single number that is the minimum number of groups that are formed for dinner. If not all programmers can dine, output -1.

Sample Input

```
7 2
GHHGHHG
```

Sample Output

```
3
```