

Problem A. Fix the Fences

Input file: **standard input**
 Output file: **standard output**
 Time limit: **2 seconds**
 Memory limit: **64 megabytes**

Farmer Ronaldo wants to fix the fences of his farm, but as he is going through some financial trouble he first wants to know how much it would cost him. He needs your help to calculate the cost.

He has fences scattered all over the farm, any existing fence can be used or if needed new fence can be bought to barricade the whole farm. It is considered fixed when the whole farm is barricaded (surrounded) with fences.

Replacing an existing fence costs r and buying a new one costs c . You will be given a 2d grid of dimension $n * m$, displaying the farm with the position of the fences, 'X' indicates a fence and '*' indicates other stuff.

Your task is to figure out the minimum cost needed for Farmer Ronaldo to fix the fences.

Input

The first line of input consists of 4 integers, $n(1 \leq n \leq 100)$ height of the farm, $m(1 \leq m \leq 100)$ width of the farm, $c(0 \leq c \leq 10^3)$ cost of buying a new fence and $r(0 \leq r \leq 10^3)$ cost of replacing a fence. Following that a 2d grid of size $n * m$ will display the farm.

Output

Print the minimum cost needed to fix the fences.

Examples

standard input	standard output
3 3 1 1 XXX X*X XXX	0
4 4 3 2 XXXX *XX* *XX* XXXX	8

Note

In the first case, the farm is already surrounded by fences, nothing needs to be done, the cost is 0.

In the second case, 4 of the border position doesn't have any fences, those needs to be fixed. And in addition we have 4 extra fences out of place inside the farm. As replacement cost $r=2$ is less than buying cost $c=3$, those 4 extra fences are replaced to minimize the cost.

Problem B. Yoeh's Parking

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 64 megabytes

Today is Saturday and Saturdays are Yoeh's shopping day. Every Saturday Yoeh goes to the same straight street, which includes all Yoeh's favorites shopping malls. To optimize his time and money, Yoeh parks in the best spot in the street based on shopping malls he wants to visit every time because if he keeps changing parking he has to pay for the new spots also waste some time. Therefore he needs to walk between shopping malls while carrying bags. To be physically ready for this walking he needs to workout during the week so he wants to know how many meters he needs to walk overall if he parks in the best spot based on the shopping malls he wants to visit this week. Your task is to write a program to calculate minimum distance Yoeh has to walk based on shopping malls' position. The street is straight and shopping malls are specific based on their distance from beginning of the street. By the way Yoeh is strong enough to carry all the bags at once.

Input

First line of input gives the test cases number $1 \leq t \leq 100$. Each test case consists of two lines. First line gives the number of shopping malls Yoeh wants to visit $1 \leq n \leq 20$ and second line gives each shopping mall's distance from beginning of the street $0 \leq x_i \leq 99$.

Output

Output is an integer, which presents the minimum distance Yoeh needs to walk by considering optimal parking.

Example

standard input	standard output
2	152
4	70
24 13 89 37	
6	
7 30 41 14 39 42	

Note

As in first example Yoeh parks in position 13 and walks all the way to 89, then he does his shopping respectively in shops 89, 37, 24 and finally 13 and goes to his car directly.

Problem C. Job Interview

Input file: **standard input**
 Output file: **standard output**
 Time limit: **2 seconds**
 Memory limit: **64 megabytes**

In ABC company, the Human Resource Division wants to recruit smart people to be working in ABC company. Therefore, they decided to conduct a small test.

The test is as follows: the person gets a piece of squared paper with a 4×4 square painted on it. Some of the square's cells are painted black and others are painted white. Your task is to repaint at most one cell the other color so that the picture has a 2×2 square, completely consisting of cells of the same color. If the initial picture already has such a square, the person should just say so and the test will be completed.

Your task is to write a program that determines whether it is possible to pass the test. You cannot pass the test if either repainting any cell or no action doesn't result in a 2×2 square, consisting of cells of the same color.

Input

Four lines contain four characters each: the j -th character of the i -th line equals "." if the cell in the i -th row and the j -th column of the square is painted white, and "@" if the cell is black.

Output

Print "YES"(without the quotes), if the test can be passed and "NO"(without the quotes) otherwise.

Examples

standard input	standard output
<pre> @ @ @ @ .@ . . @ @ @ @ </pre>	YES
<pre> @ @ @ @ @ @ @ @ </pre>	NO

Note

In the first test sample it is enough to repaint the first cell in the second row. After such repainting the required 2×2 square is on the intersection of the 1-st and 2-nd row with the 1-st and 2-nd column.

Problem D. FizzBuzz

Input file: **standard input**
Output file: **standard output**
Time limit: **2 seconds**
Memory limit: **64 megabytes**

The FizzBuzz question is a question that is used to filter out programmers who can't code. It was made because the original author was baffled by the fact that most of the programmer he hired can't actually program. These programmers (or not?), don't just struggle on big problems, or even small problems, they struggle with tiny problems. The numbers or such people are surprisingly very high, some say as much as 199 out of 200. They may be a bit exaggerating, but still, it shows the magnitude of the problem.

The original question sounds like this: Create a program that print 1 to 100. But if the number is divisible by 3, print "Fizz". If the number is divisible by 5, print "Buzz". If the number is divisible by both 3 and 5, print "FizzBuzz".

The observation was made at the year 2007, nearly ten years ago. You, as the more modern generation of programmer must prove that the programmers, as a species have matured away from the FizzBuzz problem. Solve the FizzBuzz problem, but instead of from 1 to 100, you are given two integer, a and b , representing the upper and lower limit (inclusive).

Solve this problem and put down this issue once and for all!

Input

You are given two integer a and b ($1 \leq a \leq b \leq 10^4$)

Output

Print each integer in increasing order from a to b , each in its own line. However, if the integer is divisible by 3, print "Fizz" instead. If the integer is divisible by 5, print "Buzz" instead. If the integer is divisible by both 3 and 5, print "FizzBuzz".

Example

standard input	standard output
9 16	Fizz Buzz 11 Fizz 13 14 FizzBuzz 16

Note

In the first example, the number is from 9 to 16. The number 9 and 12 is divisible by 3, so they are replaced with "Fizz". The number 10 is divisible by 5, so it is replaced with "Buzz". The number 15 is divisible by both 3 and 5, so it is replaced with "FizzBuzz".