Sums in a Triangle (tutorial)

This is problem SUMITR without strict source limit.

Let us consider a triangle of numbers in which a number appears in the first line, two numbers appear in the second line etc. Develop a program which will compute the largest of the sums of numbers that appear on the paths starting from the top towards the base, so that:

- on each path the next number is located on the row below, more precisely either directly below or below and one place to the right;
- the number of rows is strictly positive, but less than 100;
- all numbers are positive integers between O and 99.

Input

In the first line integer n - the number of test cases (equal to about 1000). Then n test cases follow. Each test case starts with the number of lines which is followed by their content.

Output

For each test case write the determined value in a separate line.

Example

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

Output:
5
9

Warning: large Input/Output data, be careful with certain languages