Problem A. Time Limit

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

In CCPC contests, you will get "Time Limit Exceeded" when your program tried to run during too much time. Setting suitable time limit for problems is vital to a contest.

Mr. Bread is preparing problems for a coming contest with his friends. For each problem, there will be a "Main Correct Solution" denotes the standard solution program written by the author. There will also be several "Correct Solutions" denote solution programs intended to pass.

Assume there are n programs in total, labeled by $1, 2, \ldots, n$. The 1-th program denotes the "Main Correct Solution" while others are "Correct Solutions". The i-th program runs in a_i seconds.

According to the rules in Mr. Bread's mind, the time limit x should meet all the rules below:

- The constraint can't be too tight, which means $x \geq 3a_1$.
- All the "Correct Solutions" should pass, which means $x \geq a_i + 1$ for all $i \in [2, n]$.
- x should be the smallest even integer meeting the rules described above.

Please write a program to find the time limit x.

Input

The first line of the input contains an integer $T(1 \leq T \leq 10)$, denoting the number of test cases.

In each test case, there is one integer $n(2 \leq n \leq 10)$ in the first line, denoting the number of programs.

In the second line, there are n integers $a_1, a_2, ..., a_n(1 \leq a_i \leq 10)$.

Output

For each test case, print a single line containing an integer, denoting the value of x.

Example

standard input	standard output
2 2 1 3 2 1 4	4 6

Problem B. Visual Cube

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 mebibytes

Little Q likes solving math problems very much. Unluckily, however, he does not have a good spatial ability. Every time he meets a 3D geometry problem, he will struggle to draw a picture.

Now he meets a 3D geometry problem again. This time, he doesn't want to struggle anymore. As a result, he turns to you for help.

Given a rectangular parallelepiped with length a, width b, and height c, please write a program to display it.

Input

The first line contains an integer T ($1 \leq T \leq 50$), the number of test cases. For each test case:

The only line contains three integers a, b, c ($1 \leq a, b, c \leq 20$), denoting the dimensions of the rectangular parallelepiped.

Output

For each test case, print several lines to display the rectangular parallelepiped. See the sample output for details.

Example

standard input	standard output
2 1 1 1 6 2 4	..+-+ ././| +-+.+ |.|/. +-+.. ....+-+-+-+-+-+-+ .../././././././| ..+-+-+-+-+-+-+.+ ./././././././|/| +-+-+-+-+-+-+-+.+.+ |.|.|.|.|.|./|/| +-+-+-+-+-+-+-+.+.+ |.|.|.|.|.|./|/| +-+-+-+-+-+-+-+.+.+ |.|.|.|.|.|./|/. +-+-+-+-+-+-+-+.+.. |.|.|.|.|.|./... +-+-+-+-+-+-+-+....

Problem C. Catering

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Mr. Bread owns a catering company and business is booming. The company is planning to open some new restaurants. There are n possible locations to open restaurant, the i-th location will hire a_i staff, and will need b_i staff when things are busy.

The company wants to choose as many as possible locations to open new restaurants. The only constrait is that every new restaurant should have enough staff in busy. Fortunately, there will be at most one restaurant in busy each day, so a plan is valid if $\sum a_i \geq \max(b_i)$.

Please write a program to determine how many locations can be choosen.

Input

The first line of the input contains an integer $T(1 \leq T \leq 10000)$, denoting the number of test cases.

In each test case, there is one integer $n(1 \leq n \leq 100000)$ in the first line, denoting the number of possible locations.

For the next n lines, each line contains two integers $a_i, b_i(1 \leq a_i, b_i \leq 10^9)$, describing each location.

It is guaranteed that $\sum n \leq 10^6$.

Output

For each test case, print a single line containing an integer, denoting the maximum number of choosen locations.

Example

standard input	standard output
2 2 3 4 2 5 2 3 4 2 6	2 0

Problem D. Math Expression

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Given a sequence of integers $a_1, a_2, \ldots, a_n$. You should insert exactly one operation between a_i and a_{i+1} for all $i \in [1, n-1]$. The only operations you can choose to insert are "+" and "×", so there are 2^{n-1} ways in total.

Your task is to count how many possible ways of insertion that the value of the final math expression is a multiple of integer k.

For example, assume the sequence is $2, 1, 2$ and $k = 2$, there are 4 possible ways of insertion:

- $2 + 1 + 2 = 5$, is not a multiple of 2.
- $2 + 1 \times 2 = 4$, is a multiple of 2.
- $2 \times 1 + 2 = 4$, is a multiple of 2.
- $2 \times 1 \times 2 = 4$, is a multiple of 2.

Input

There are two integers n, k $(3 \leq n \leq 36, 2 \leq k \leq 10^9)$ in the first line.

In the second line, there are n integers $a_1, a_2, \ldots, a_n$ $(1 \leq a_i \leq 10^9)$, denoting the sequence.

Output

Print a single line containing an integer, denoting the number of possible ways of insertion.

Example

standard input	standard output
3 2 2 1 2	3