Contest Code: FEB222C **Problem Code:** PLYARSM

You are given a **convex** polygon P with N vertices. The vertices (in clockwise order) are $v_1, v_2, \ldots v_N$. The coordinates of v_i are (x_i, y_i). All vertices have integer coordinates.

A *diagonal* of P is a line segment l joining two distinct vertices v_i and v_j of P, such that l is not already an edge of P. Every diagonal of P splits it into two smaller convex polygons, both having *positive* areas.

The *evenness* of a diagonal of P is the minimum of the areas of the two parts obtained when the polygon P is cut along this diagonal.

Let S be the sum of the *evenness* of all diagonals of P.

Find the value of $2S \pmod{998244353}$.

It can be shown that for all polygons P with integer coordinates, the value $2S$ is an integer.

Input Format

- The first line of input contains an integer T, denoting the number of test cases. The description of T test cases follows.
- The first line of each test case contains an integer N, the number of vertices of the convex polygon P. This is followed by N lines describing the points of the convex polygon, in **clockwise** order.
- The i^{th} subsequent line contains two space-separated **integers**, x_i, y_i — the coordinates of v_i.

Output Format

For each test case, print a new line with a single integer, the answer as per the problem statement.

Constraints

- $1 \leq T \leq 10^5$
- $3 \leq N \leq 10^5$
- The sum of N over all test cases does not exceed 10^6
- The given polygon P is convex
- Every coordinate is an integer whose absolute value does not exceed 10^8

Subtasks

Subtask #1 (5 points): Sum of N over all test cases does not exceed 500

Subtask #2 (15 points): Sum of N over all test cases does not exceed 2000

Subtask #3 (80 points): Original constraints

Sample Input 1

```
4
4
-1 0
0 1
1 0
0 -1
4
-100000 0
0 100000
```

```
100000 0
0 -100000
3
0 0
0 1
1 0
5
-87260 82619
-59348 68595
86583 -16668
85637 -45559
-49307 -31316
```

Sample Output 1

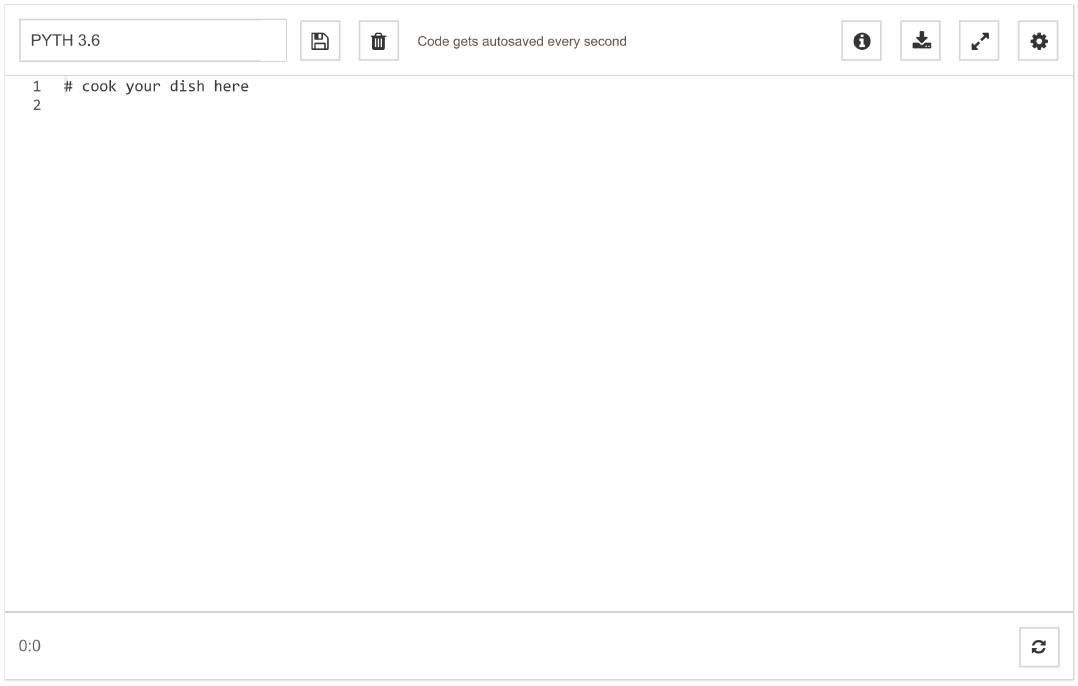
```
4
70225880
0
667956140
```

Explanation

Test case 1: The given polygon is a square with side length $\sqrt{2}$. There are only two diagonals, both are identical and split the polygon equally into two halves each with area $\frac{(\sqrt{2})^2}{2} = 1$. Thus $S = \min(1,1) + \min(1,1) = 2$. The value of $2S \pmod{998244353}$ is thus 4.

Test case 2: The given polygon is identical to the previous case, except that all coordinates are multiplied by 10^5. Therefore the given sum gets multiplied by $(10^5)^2$. Make sure you output the sum modulo 998244353. Here $2S = 4 \cdot 10^{10}$ and $4 \cdot 10^{10} \pmod{998244353} = 70225880$.

Test case 3: There are no diagonals in this polygon, and so the answer is 0.



Note: Your program will be run with no input.