Absolute

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 32768/32768 K (Java/Others)
Total Submission(s): 0 Accepted Submission(s): 0

Problem Description

Winter is here at the North and the White Walkers are close. There's a young Night Watch standing on the Wall.
The young Night Watch has created a method to keep his body warm. Every time he generate a random rational number x in range $[l_i, r_i]$ independently and uniformly, then he walks x meters to east.
Now he has n ranges $[l_1, r_1], [l_2, r_2] \dots [l_n, r_n]$, He wants to know the expected distance to origin. If answer is a fraction $\frac{p}{q}$, output an integer $0 \le s < 998244353$ so that $p \equiv sq \ (mod\ 998244353)$.

Input

An integer n in the first line. $1 \le n \le 15$
The following n lines, each contain two integers l_i, r_i. $(-10^6 \le l_i \le r_i \le 10^6)$

Output

Output the expected distance to origin in a line, modulo 998244353.

Sample Input

```
2
-2 3
-2 1
```

Sample Output

```
199648872
```

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