Cyclic Quadruples

You need to count the number of quadruples of integers (X_1, X_2, X_3, X_4), such that $L_i \le X_i \le R_i$ for `i = 1, 2, 3, 4` and $X_1 \ne X_2$, $X_2 \ne X_3$, $X_3 \ne X_4$, $X_4 \ne X_1$.

The answer could be quite large.
Hence you should output it modulo $(10^9 + 7)$.
That is, you need to find the remainder of the answer by $(10^9 + 7)$.

Input Format
The first line of the input contains an integer T denoting the number of test cases. The description of T test cases follows. The only line of each test case contains 8 space-separated integers $L_1, R_1, L_2, R_2, L_3, R_3, L_4, R_4$, in order.

Output Format
For each test case, output a single line containing the number of required quadruples modulo $(10^9 + 7)$.

Constraints
$1 \le T \le 1000$
$1 \le L_i \le R_i \le 10^9$

Sample Input

```
5
1 4 1 3 1 2 4 4
1 3 1 2 1 3 3 4
1 3 3 4 2 4 1 4
1 1 2 4 2 3 3 4
3 3 1 2 2 3 1 2
```

Sample Output

```
8
10
23
6
5
```

Explanation
Example case 1. All quadruples in this case are

```
1 2 1 4
1 3 1 4
1 3 2 4
2 1 2 4
2 3 1 4
2 3 2 4
3 1 2 4
3 2 1 4
```

Example case 2. All quadruples in this case are

```
1 2 1 3
1 2 1 4
1 2 3 4
2 1 2 3
2 1 2 4
2 1 3 4
3 1 2 4
3 1 3 4
3 2 1 4
3 2 3 4
```

Example case 3. All quadruples in this case are

```
1 3 2 3
1 3 2 4
1 3 4 2
1 3 4 3
1 4 2 3
1 4 2 4
1 4 3 2
1 4 3 4
2 3 2 1
2 3 2 3
2 3 2 4
2 3 4 1
2 3 4 3
2 4 2 1
2 4 2 3
2 4 2 4
2 4 3 1
2 4 3 4
3 4 2 1
3 4 2 4
3 4 3 1
3 4 3 2
3 4 3 4
```

Example case 4. All quadruples in this case are

```
1 2 3 4
1 3 2 3
1 3 2 4
1 4 2 3
1 4 2 4
1 4 3 4
```

Example case 5. All quadruples in this case are

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