Mikkel and the Wormhole

Mikkel is trapped in a 2-dimensional alternate universe, and he is at the origin of a seemingly infinite 2-dimensional grid. The only way back to this home, in his universe, is through a wormhole. Two black holes are also present in the grid, Mikkel very well knows the fact that even light can't escape a black hole, so he wants to reach the wormhole by avoiding both the black holes. Moreover, he cannot see anything as it is pitch-black over there and has to take steps of only one unit, either in the direction of the positive X-axis or the positive Y-axis. As he cannot see anything, it is assumed that his choice of a move is entirely random, and at any given time, he can move in either of the two directions. Here the wormhole and the black holes are considered to be 1-dimensional points, contrary to the traditional belief.

Now Mikkel wonders the number of ways he can reach home safely. Mikkel just wants to find the number of ways he can reach the wormhole by avoiding both the black holes, and he doesn't make a move until he calculates it, so while calculating the number of ways all the paths from either of the black holes are to be considered valid, it is just that he has to avoid these paths.

Formally, given the coordinates of the wormhole (x,y) and the two black holes $(x_1,y_1),(x_2,y_2)$, find the number of ways of reaching the wormhole, from the origin, by avoiding both the black holes (here avoiding means avoiding any path that leads to the wormhole from the black holes), where a valid move is only 1 unit either in the direction of the positive X-axis or the positive Y-axis, at any given point of time.

Since the answer could be very large output answer modulo $10^9 + 7$.

Input Format

The first line of the input contains T, the number of Test Cases.

Each Test Case consists of single line, containing six space-separated integers x, y, x_1, y_1, x_2, y_2 Where (x, y) are the coordinates of the wormhole, (x_1, y_1) are the coordinates of the first black hole, and (x_2, y_2) are the coordinates of the second black hole.

Constraints

$1 \leq T \leq 5 \times 10^4$

$0 < x_1 < x_2 < x < 10^6$

$0 < y_1 < y_2 < y < 10^6$

Output Format

For each Test Case, print a single line containing the number of ways of reaching the wormhole safely modulo $10^9 + 7$
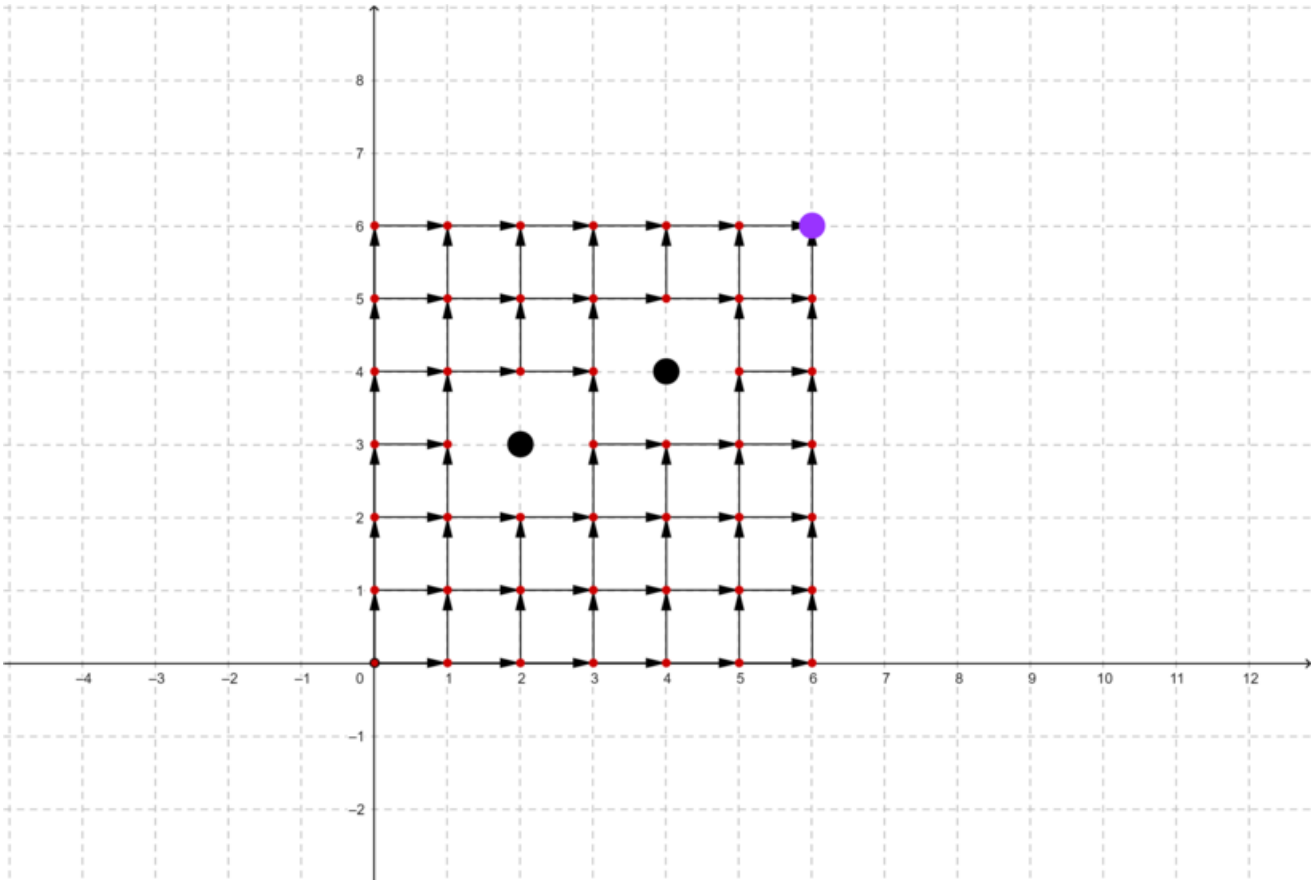
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Sample Input 0

```
3
5 5 2 2 3 4
4 5 1 2 3 3
6 6 2 3 4 4
```

Sample Output 0

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81
33
334
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Explanation 0

For the last test case, refer the following image.

Black Holes are marked by two Black colored points. Wormhole is marked by Purple colored point.

The Arrows represent the path Mikkel can take. Counting all paths along the Arrows from Origin to Wormhole avoiding Black Holes, there are 334 possible paths.

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