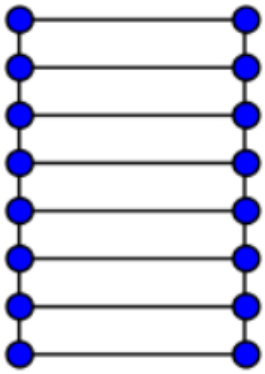
7032 Handling the explosives

War is inevitable now that the King has refused to fulfill the demands of the enemy neighbour. The King has sought Da Vinci's help in devising a strategy to not lose to the barbarous enemy neighbour. Leonardo assured him that he can produce chemical explosives (yes chemical explosives!! Leonardo has always been generations ahead of the people) which have the potential to destroy the enemy army within seconds.

The chemical explosives need to be handled with care. Leonardo has developed K different types of explosives. He has a very large number of explosives of each type so that there is no shortage during war. Most of these explosives are kept far from the city in Leonardo's lab among the mountains near the Sienne river. The King suspects an attack in a few days and he wants some explosives to be stored near the palace. Leonardo knows that storing these explosives in the city can be quite dangerous. But due to the urgent requirements put up during this war, he has to bring some of the explosives in the city.

Leonardo thinks that the dungeons is the safest place inside the city to store these explosives. There are two major pathways A and B inside the dungeons which run parallel to each other and are 1 metre apart. There are N cross pathways which intersect A and B perpendicularly. These N cross pathways are spread evenly over the lengths of A and B with the adjacent cross pathways being 1 metre apart from each other. Each cross pathway intersects with both the major pathways A and B. The point of intersection of a pathway and a cross pathway is called a *junction point*. In this way, there are $J(= 2N)$ *junction points* inside the dungeons.

See the figure below to have a clear picture of the structure of the dungeons.



The explosives made by Leonardo are made of a special inflammable material. For safety purposes, explosives of the same type have to be placed at least $\sqrt{2}$ metres apart, otherwise they will explode. Whereas, the explosives of different types need to be placed only 1 metre apart to prevent their self explosion.

Leonardo plans on putting these explosives at the junction points only. He doesn't want any of the explosives to explode on its own and thus wants to keep them at adequate distance from each other. It is not necessary to bring every type of explosive from the lab among the mountains. Leonardo will only bring those explosives which he can arrange safely. Your task is to figure out the number of ways in which it is safe to arrange $2N$ explosives on the junction points.

Input

Input contains a number of test cases. The first line of input contains an integer T. Next T lines follow, each containing two space separated integers N and K.

Output

For each test case, output in a separate line the total number of ways in which Leonardo can arrange the explosives. The answer can be very big so output it *modulo* 1000000007.

Constraints:

- $1 \leq T \leq 60000$
- $1 \leq N \leq 10^{18}$
- $2 \leq K \leq 10^{9}$

Sample Input

```
3
1 2
1 3
2 4
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Sample Output

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2
6
84
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