K. BULLETHELL

On your adventure to the Scarlet Devil Mansion, you encounter Patchouli Knowledge, who will try to stop you from advancing further.

To prevent damage to the mansion, Patchouli embedded the mansion with a space manipulation spell that temporarily removes the walls, turning the floor into an infinitely large 2D plane.

Then, she instantly casts a water manipulation spell, causing you to freeze and slide across the floor along the vector (x_t, y_t) at v units per second.

Finally, she casts q wood manipulation spells, the i-th spell can be represented by three points O_i, A_i, B_i, a start time l_i and an end time r_i.

During the i-th spell, she summons an infinitely long tree branch with a thickness of 10^{-100} along the ray O_iA_i. Then she swings it in a clockwise direction until the branch reaches the ray O_iB_i, at which point she will start swinging it in a counterclockwise direction until it reaches the ray O_iA_i. She starts swinging it back and forth at time l_i and ends this process at time r_i. After the attack, the tree branch disappears completely.

You will be hit by the i-th spell at time k if $l_i \le k \le r_i$ and your position at time k is in the swinging range of the i-th spell (it doesn't matter where the branch is currently because she swings it at light speed!). See the figures below for a visual explanation.

You will faint if you get hit by at least one spell for T consecutive seconds.

Assuming that your position was (x_0, y_0) when you were frozen, please determine if you survive Patchouli's spells.

INPUT

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 100$). The description of the test cases follows.

The first line of each test case contains 6 integers x_0, y_0, x_t, y_t, v, T ($|x_t| + |y_t| > 0$, $1 \le v, T \le 10^9$), which are the coordinates of the starting position, the movement vector, the speed at which you slide across the floor and the required time it takes for you to faint.

The next line contains one integer q ($1 \le q \le 2 \times 10^5$), the number of wood manipulation spells that Patchouli uses.

The i-th of the following q lines contains 8 integers x_{Oi}, y_{Oi}, x_{Ai}, y_{Ai}, x_{Bi}, y_{Bi}, l_i, r_i ($0 \le l_i < r_i \le 10^9$): the coordinates of O_i, A_i, B_i and the start and end time of the i-th spell. It is guaranteed that O_i, A_i, B_i are not collinear.
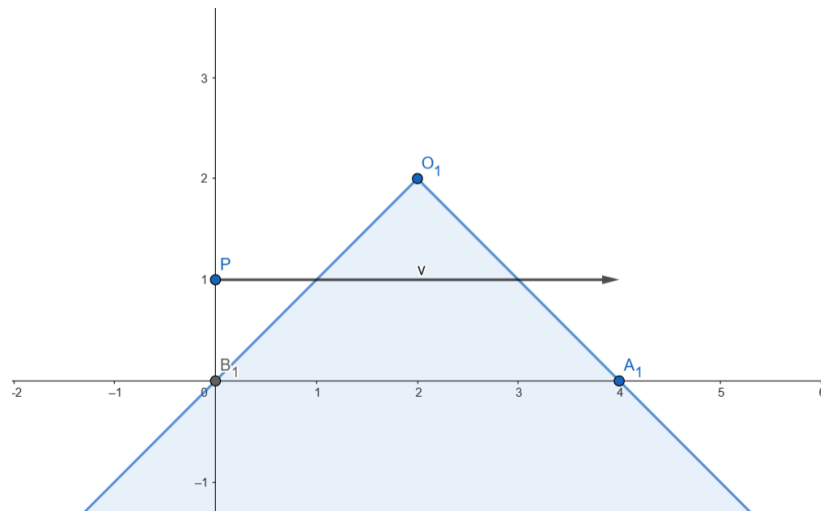
It is guaranteed that all coordinates (x, y) given in test cases satisfy $|x|, |y| \le 10^9$ and the sum of all q does not exceed 2×10^5.
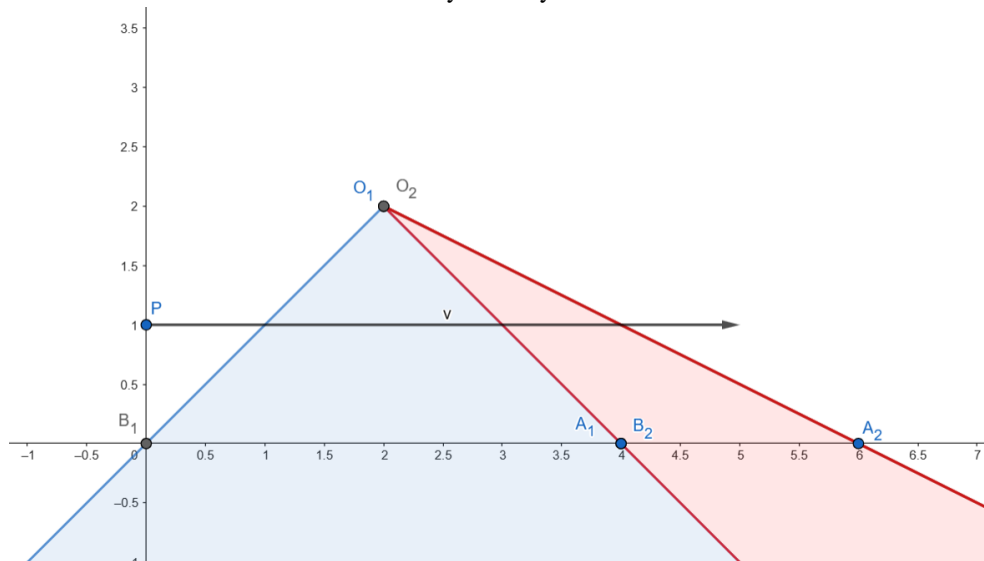
OUTPUT

For each test case, output "GIT GUD" if you survive, and "FAINTED" otherwise.

Sample Input	Sample Output
3	FAINTED
0 1 1 0 1 2	GIT GUD
1	FAINTED
2 2 4 0 0 0 1 10	
0 1 1 0 1 3	
1	
2 2 4 0 0 0 1 10	
0 1 1 0 1 3	
2	
2 2 4 0 0 0 1 10	
2 2 6 0 4 0 1 10	

First and second test case. You're hit by the only attack between second 1 and second 3.

Third test case. The first attack hit you between second 1 and 3, and the second attack hit you from second 3 to second 4.