Problem C. AirCraft: Monster

Input:	standard
Output:	standard
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AirCraft, the popular aviation video game has released its new version with more monstrous challenges than ever: "AirCraft: Monster", abbreviated by its fans as ACM. In each successful mission the players will receive an exact amount of experience points (XP), attack points (AP) and defense points (DP), which will accumulate in their profiles. The Missions in ACM doesn't have a specific order: The player can choose in which order to play them. A mission only gives points the first time it is surpassed, so it is not possible to win points twice with the same mission.

ACM awards medals for certain action. The most sought medal is the "Monster Player". To win this medal, the player must accumulate EXACTLY x experience points, a attack points and d defense points. However, some users have complained, they said that it's not possible to get exactly these scores with any possible combination of successful missions.

Given the x, a and d points needed to win the Monster Player Medal and knowing the XP, AP y DP that every mission awards, is it possible to win the medal, and therefore become a Monster Player?

Input

Input begins with an integer T, the number of test cases. For each case, the first line contains 4 integers x, a, d and m ($1 \leq x, a, d \leq 10^8$ and $1 \leq m \leq 30$), the number of experience points, attack points and defense points needed to win the medal and the number of missions of the game. Then m lines come, each one describing a mission of ACM. A mission consist of a string s (s containing no white spaces), the name of the mission, and 3 integers XP, AP and DP ($1 \leq XP, AP, DP \leq 10^7$), the points that the mission awards.

Output

For each test case prints a line containing "POSSIBLE" if its possible to become a Monster Player, or "IMPOSSIBLE" if there is no way to achieve the medal.

Example

Input	Output
2	POSSIBLE
100 100 100 5	IMPOSSIBLE
MISSION1 30 10 40	
MISSION2 40 70 30	
MISSION3 40 10 20	
MISSION4 20 20 50	
MISSION5 10 50 90	
100 100 100 3	
a 10 30 10	
b 10 10 40	
c 10 60 50	