2422　Great Equipment

Once upon a time, there lived Catherine Ironfist, the Queen of Enroth. One day, she received the news of her father's death. So she sailed for Erathia to attend her father's funeral. Fearing the worst, she assembled a military fleet as her escort. On reaching the coast of Erathia, Catherine found an allied wizard's tower, devastated from battle and abandoned. There she learned that a black-hearted knight poisoned her father using a goblet of wine, and Erathia was falling to the enemies. And then, she mustered local armies, and marched to Erathia's castle, restoring lost land along the way.

During the battles, she found that the equipments for the soldiers were in urgent need. And she knew clearly that the best equipments were made by the battle dwarf's workshop in the world. The workshop's equipments were well known for the firmness and top-quality. "Cloak of the Undead King", "Armor of the Damned", "Angelic Helm" are the nonesuch ones. But unfortunately, the workshop was seated at the Erathia's castle, the territory under the enemy's control. So she sent a brave volunteer to come into the castle and asked for the workshop's help.

"It's our pleasure to help the righteous heroine." Rion, the leader of the workshop sent the message to Catherine, " We haven't enough resources to build the nonesuch equipments. So we'll try to offer the ordinary equipments as more as possible. Still, those ones are much better the equipments made by other workshops. But we have faced a difficult problem. The castle is in a state of siege. The guards prohibited the equipments to be carried away from the castle. We have to ask for the trade caravans' help. As you know, each trade caravan's capability of carrying equipments is limited. If they had carried a little more, they would be detected by the guards, which would lead them into the prison. So you have to arrange how to carry these equipments."

The workshop would offer helms, armors and boots. These three ones had different defend capabilities. Also, their weight and size were different from each other. What's more, Rion had told Catherine that if armed with those three ones together, they would form a set of equipments, which might provide much more defend capability. As far as the trade caravan was concerned, each one had its special weight limitation and size limitation. Catherine had to make the decision on how to arrange the transportation plan to provide her soldiers as more defend capabilities as possible. Could you help her to finish the plan?

Input

The input describes several test cases. The first line of input for each test case contains a single integer n, the number of trade caravans ($0 \le n \le 100$).

The following four lines describe the information of those equipments. The first line contains three integers w_1, s_1 and d_1, indicating the weight, size and defend capabilities of the helm. The integers w_2, s_2 and d_2 in the second line represent the weight, size and defend capabilities of the armor. Also, in the third line, w_3, s_3 and d_3 are the weight, size and defend capabilities of the boot. The fourth line contains four integers c_1, c_2, c_3 and d_4. Among those integers, c_1, c_2, c_3 are the number of helms, armors and boots in a set of equipments, d_4 is the capability of this set.

In the test case, following those data are n lines, describing the carrying capabilities of the trade caravans. Each line contains two integers, x_i and y_i, indicating the weight limit and size limit of a trade caravan.

The input is terminated by a description starting with $n = 0$. This description should not be processed.

Note: Because of the trade caravans' carrying capabilities, you may assume the quantities of the helms, armors and boots will not exceed 500 respectively.

Output

Your program must compute the defend capability of the best carrying plan. That is, after having performed the carrying plan, the defend capability of the equipments which have been carried away from the castle should be the largest. For each test case in the input file, print the case number and a colon, and then the defend capability of those equipments.

Print a blank line between test cases.

Sample Input

```
3
1 1 3
5 6 10
2 1 2
1 1 1 50
1 1
5 6
2 1
0
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Sample Output

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Case 1: 50
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