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Problem Sets

**ZOJ Problem Set - 3769**

Diablo III

Information

Time Limit: 2 Seconds **Memory Limit:** 65536 KB

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Diablo III is an action role-playing video game. A few days ago, *Reaper of Souls (ROS)*, the new expansion of *Diablo III*, has been released! On hearing the news, the crazy video game nerd *Yuzhi* shouted: "I'm so excited! I'm so excited! I wanna kill the Diablo once more!"

The *ROS* introduced a lot of new features and changes. For example, there are two new attributes for players in the game: Damage and Toughness. The attribute Damage indicates the amount of damage per second you can deal and the Toughness is the total amount of raw damage you can take.

To beat the Diablo, *Yuzhi* need to select the most suitable equipments for himself. A player can carry at most 13 equipments in 13 slots: Head, Shoulder, Neck, Torso, Hand, Wrist, Waist, Legs, Feet, Shield, Weapon and 2 Fingers. By the way, there is a special type of equipment: Two-Handed. A Two-Handed equipment will occupy both Weapon and Shield slots.

Each equipment has different properties on Damage and Toughness, such as a glove labeled "30 20" means that it can increase 30 Damage and 20 Toughness for the player who equips it in the Hand slot. The total Damage and Toughness is the sum of Damage and Toughness of all equipments on the body. A player without any equipments has 0 Damage and 0 Toughness.

Yuzhi has N equipments stored in his stash. To fight against the Diablo without lose the battle, he must have at least M Toughness. In addition, he want to finish the battle as soon as possible. That means the Damage should be as much as possible. Please help *Yuzhi* to determine which equipments he should take.

Input

There are multiple test cases. The first line of input is an integer T indicates the number of test cases. For each test case:

The first line contains 2 integers N ($1 \leq N \leq 300$) and M ($0 \leq M \leq 50000$). The next N lines are the description of equipments. The i -th line contains a string S_i and two integers D_i and T_i ($1 \leq D_i, T_i \leq 50000$). S_i is the type of equipment in {"Head", "Shoulder", "Neck", "Torso", "Hand", "Wrist", "Waist", "Legs", "Feet", "Finger", "Shield", "Weapon", "Two-Handed"}. D_i and T_i are the Damage and Toughness of this equipment.

Output

For each test case, output the maximum Damage that *Yuzhi* can get, or -1 if he can not reach the required Toughness.

Sample Input

```
2
1 25
Hand 30 20
5 25
Weapon 15 5
Shield 5 15
Two-Handed 25 5
Finger 5 10
Finger 5 10
```

Sample Output

```
-1
35
```

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