

Problem PRIORITIES: Priorities

So far James had some good shootings, had some martini's, rescued the world and got the girl in every mission. But nowadays even the MI6 has to save money, so the time for a mission is limited and the agents can't always fulfill all planned tasks. James gets offered some missions and has to decide if he wants to take them or reject them. He wants you to judge if he could fulfill all mission tasks. If not, you should give hints if he just can't make all secondary goals (having some martini's or having a good shooting), or if one of the primary goals may fail (rescuing the world or getting the girl). He has made a plan with tasks for every mission and tells you how long a task takes, when it must be finished, and for what goal it is necessary.

Input

The input starts with the number of test cases (at most 20). Each test case starts with the number of mission tasks (at most 100 000). Every task is described in one line consisting of the time d it takes to fulfill this task, the due time t for fulfilling this task ($0 < d, t \leq 1\,000\,000$) and a string s describing for which goals this task is important. s contains between 1 and 4 letters (g, m, s or w), meaning this task is necessary for getting the (g)irl, getting some (m)artini's, having a good (s)hooting or rescuing the (w)orld. To fulfill one goal, James has to fulfill all tasks marked with the corresponding letter.

Warning: The input is large, make sure you use a fast input routine.

Output

For every test case output one line:

- CINEMATIC If James can fulfill all tasks.
- GIRL+WORLD If James can fulfill the tasks needed to get the girl and the tasks needed to rescue the world, but has to give up some secondary goals.
- GIRL If James can fulfill the tasks to get the girl, but not the tasks to rescue the world.
- WORLD If James can fulfill the tasks to rescue the world, but not the tasks to get the girl.
- HMM If James can fulfill either all tasks to rescue the world or all tasks to get the girl.
- NOTHING If James cannot fulfill all tasks to rescue the world nor all tasks to get the girl. (He may still get some martini's.)

Sample Input 1

```
2
4
1 25 m
10 10 gw
10 20 gm
10 30 sw
3
10 10 gw
10 20 gm
10 20 sw
```

Sample Output 1

```
GIRL+WORLD
HMM
```