

You see a group of children playing a seeming interesting game.

“Hi kids, what are you playing?” You asked.

“We have a judge. Other kids belong to team Star or team Moon. There are n kids in team Star and m kids in team Moon. Guess who is the judge then we’ll tell you what game we’re playing.”

“Ok! Any tips?”

“You can ask questions about whether someone belongs to some team. You can’t ask whether someone is judge. Team Star will always tell the truth, while team Moon will always lie, but the judge is naughty: he will tell the truth for the 1st, 3rd, 5th... time you ask him, and lie for the 2nd, 4th, 6th... time.”

“Restrictions?”

“You cannot ask a person about himself. For example, you can’t ask me: ‘Are you Star?’ And you can ask a person at most two questions, and these two questions can’t be about the same person. For example, if you asked me whether Tom belongs to team Star, you cannot ask me whether Tom belongs to team Moon, because you’re asking me about Tom twice.”

“Ok! Then I’ll tell you every one’s role, not only who is judge.”

Interaction Protocol

Your program should read from standard input, and write to standard output. After printing each line to the standard output, you should flush the output, by calling `fflush(stdout)` or `cout << flush` in C/C++, `flush(output)` in Pascal and `System.out.flush()` in Java. Please read general instructions for interactive problems for more information.

First, read the number of test cases T ($1 \leq T \leq 100$). For each test case, read two integers n and m in the first line ($2 \leq n + m \leq 500$).

Then issue one or more ‘Ask’ command, followed by an ‘Answer’ command.

Command	Description
Ask $C_1 C_2 T$	Ask child C_1 : Does C_2 belong to team T ? $1 \leq C_1, C_2 \leq n + m + 1$, and C_1 should not be equal to C_2 . $T = 0$ means Team Star, $T = 1$ means Team Moon. Returns ‘1’ if the answer is ‘Yes’, ‘0’ otherwise. You cannot ask a child about the same child twice.
Answer $R_1 R_2 \dots R_{n+m+1}$	Tell the children each child’s role. ‘0’ means Team Star, ‘1’ means Team Moon, ‘2’ means judge. This command does not return anything.

If your program violated any of these rules (bad format, invalid arguments etc), the server will exit immediately, and you will receive Protocol Violation (PV).

Protocol Limit

For each test case, you can ask a person at most two questions, otherwise you’ll get Protocol Limit Exceeded (PLE).

Sample Interaction

```
1
1 1
    Ask 1 2 0
0
    Ask 2 1 0
1
    Ask 3 1 1
0
    Answer 2 1 0
```