Problem 1

Space Camp

6 Points

Program Name: spacecamp.cpp **Input File: spacecamp.dat**

You have made it through three grueling months at Space Camp, only to be confronted with the harsh final exam to graduate. As you don your space suit, Drill Instructor Grimley barks, "The rules are simple, maggots. You start in room 0 (west of force field 1), with force fields 0 and 1 closed. There is a single button in each room that will affect each force field in some manner. Your job is to navigate through the rooms until you reach room 4, but be sure not to open all the force fields behind you or you will be sucked out into space. Oh, and one more thing, you have one minute to complete the task."

```
              0___1___2___3___4___   <-- Force field numbers
[Outer Space] |_0_|_1_|_2_|_3_|_4_   <-- Room numbers
 Start in room 0 with Force fields 0 and 1 closed. Head east to room 4! -->
```

One minute! With your weak space legs, you realize your only hope is to rush to the next closed force field and push the button in that room, hoping it will open some force fields to allow you to proceed. You have no time to backtrack. It's not the best strategy, but maybe fate will be on your side.

Input Description

Input to this problem will consist of a (non-empty) series of up to 100 data sets. Each data set will be formatted according to the following description, and there will be **no blank lines** separating data sets.

A single data set has 3 components:

Start line - A single line, "START *V W X Y Z*", with each letter corresponding to the initial status of force fields 0-4, respectively. Each letter will either be "C", signifying the force field is initially closed, or "O", signifying the force field is initially open. Note that *V* and *W* (force fields 0 and 1) will always be "C".

Force Field Buttons - Each of the next 4 lines will contain 5 action codes showing how pressing the button in that room will affect each of the force fields. The first line will correspond to room 0, the next line for room 1, the next line for room 2, and the next line for room 3. The action codes will be in the format "*D E F G H*", corresponding to the action performed on force fields 0-4, respectively. Each action code will be one of the following:

"O" -- Open the force field. If it is already open, it remains open.
"C" -- Close the force field. If it is already closed, it remains closed.
"T" -- Toggle the force field. If it is open, close it. If it is closed, open it.
"N" -- Do nothing to the force field. If it is open, it remains open. If it is closed, it remains closed.

End line - A single line, "END".

Output Description

For each data set, there will be exactly one line of output. The line of output will be determined based on the result of your final exam. Remember your strategy:

1. Proceed to the easternmost room possible (until you reach a closed force field, which initially, will always be force field 1). If you are able to reach room 4, you have passed! Consider yourself, and your line of output, "SPACE CADET".

2. Push the button located in the room you are in, if you have not already done so. If you *have* already pushed this button, then you realize that you are not going to be able to make it, and that you are, and your line of output is, "SPACE MONKEY". If pushing the button causes all of the force fields behind (west of) you to be open, you will be sucked into space and become, as your line of output is, "SPACE GHOST". Consider force fields opening and closing to be instantaneous.

Just repeat your 2-step strategy until one of the three end conditions is met!

Sample Input

```
START C C C C C
O O O O O
O O O O O
O O O O O
O O O O O
END
START C C O O O
N N O O O
C O O O O
C O O O O
C O O O O
END
START C C O C O
N T T T T
T T T T T
T T T T T
T T T T T
END
```

Sample Output

```
SPACE GHOST
SPACE MONKEY
SPACE CADET
```