ECOO '12 R3 P2 - Jewelry Tips

Time limit: 1.0s   **Memory limit:** 64M

There's a popular online game where the player gets an 8×8 board of coloured jewels and the goal is to form horizontal or vertical lines of 3 or more jewels of the same colour. This is done by repeatedly swapping pairs of adjacent jewels, either horizontally or vertically. A swap is only allowed if it would create at least 1 line of at least 3 jewels of the same colour. There are 7 colours: Red, Orange, Yellow, Green, Blue, Purple, and White.

Sometimes the players get stuck and have to be given a tip on what to do next. The tips fall into 3 categories: Normal, Good, and Excellent. A tip is "Normal" if acting on it would create a single line of 3 same-coloured jewels in a row. A tip is "Good" if acting on it would create a single line of 4 same-coloured jewels in a row. A tip is "Excellent" if acting on it would create either more than one line or a single line of 5. Here are some example boards. Underneath each board is the tip the game would give in that case.

```
B W P R O R Y Y        Y W P R R W G R        G B W Y P P O R
G B R B G W W O        W G G P W O W P        P P G W B Y G P
B P O O P P Y P        P G W Y O W O Y        O B O R R W P R
B W G Y G W B Y        Y B W R G W P P        R P G G O P O W
Y G B Y O B G R        W R G O Y G P G        W B Y Y B B R P
R G P O G O O W        G Y P R W B B W        G W P O W R G O
Y B B Y Y O G W        B G W O P O B W        R P Y O W P G O
P B R Y G P P B        O R R B B Y P G        R B W P G B O G
  Norm: B.DN@0,0          Good: W.RT@1,4          Excl: O.RT@7,6
```

Each tip starts with a four character coding of its type (`Norm` , `Good` , or `Excl`), then a colon and a space, then an 8 character code that gives the colour of the jewel to be swapped, the direction to swap it, and the location of the jewel before the swap. So `Good: W.RT@1,4` means "A good move is to take the white jewel at row 1, column 4 and swap it with the jewel to the right". The directions (up, down, left, and right) should be given using the two-character codes `UP` , `DN` , `LT` , and `RT` .

The colour of the jewel named in the tip must always match the colour of one of the lines that will be formed. For example, the tip in the first example could have been given as `Norm: G.UP@1,0` , but the system would never express the tip this way because the line that would be formed if the player used the tip would be Blue, not Green.

Note that in the above examples, the first tip is "Normal" because it creates a single line of 3 blue jewels and no other lines, the second is "Good" because it will create a single line of 4 white jewels and no other lines, and the third is "Excellent" because it will create two lines of 3 jewels – one green and one orange.

The game's tipping system follows a few basic rules to decide which single tip to give, out of all the possible tips on the board.

Rules for Tipping

1. Don't give a good or excellent tip if there is a normal tip available.
2. Don't give an excellent tip if there is a good tip available.

3. When choosing between two tips of the same type on different rows, always choose the one from the highest row.
4. When choosing between two tips of the same type on the same row, always choose the one from the leftmost column.
5. In a situation where there is more than one possible tip of the same type for the same jewel, give priority to `LT` tips, then `UP`, `RT` and `DN` in that order.

In the first example above, other possible tips include `Good: O.DN@4,4` and `Norm: O.RT@5,3`, but the first is prohibited by rule 1 and the second is prohibited by rule 3. In the second example, another possible tip would be `Excl: W.DN@0,5`, but this is prohibited by rule 2. And in the third example, another possible tip would be `Excl: G.LT@7,7` but this is prohibited by rule 4.

The input will contain 10 test cases. Each test case is an 8×8 game board as shown below (note that the sample input shown only has 5 test cases). None of these game boards will contain a row of 3 or more jewels of the same colour. Your task is to write a program that will output a tip for each board, according to the specifications outlined above. If there are no tips to give, the program should simply output `Game Over`.

Sample Input

```
YYBORBWG        GWOGWOGO        BOBWOPRP        OWBGYOYG        GGRBYWBB
RBPYRORY        PWOPGWRY        YORPBGOW        GGOYBGPW        RYWWOYWY
WYGBYPBO        PYBPBRRW        WWGYWWGB        WBPGRGWW        YYOBOPOP
BBRPBGPW        BOWGBBOG        RBRBWBOW        OPPWWRYP        WGBPBBYP
PWPYROBP        GWROGPWG        YWWGGRWR        YBORGOOP        RWRBYWGW
PYYRYWWR        PYPWBRRY        OGWRGBGB        WWOOWWRG        BROBOYRB
GPBYRYYG        POGRGPOO        BBPPWWOP        PPYBYPOG        OWGWPROP
PPWGOGPB        RYYOGBPW        WWPBORPB        RGOYPOWW        RWGWPGOO
```

Sample Output

```
Norm: P.RT@5,0
Excl: G.DN@4,4
Game Over
Norm: O.UP@7,2
Good: B.LT@3,4
```