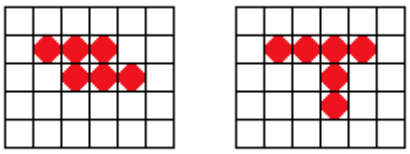
Problem B. Puzzle & Dragons

Description

Recently, Little Apple is addicted to a game called "Puzzle & Dragons" (For short, PAD). There is a puzzle with 5×6 grid in this game, each square containing a drop. There are 6 types of drops: Fire, Water, Plant, Light, Darkness and Cure (represented by F,W,P,L,D,C respectively). You can see the picture below to get a more clear image of the game.

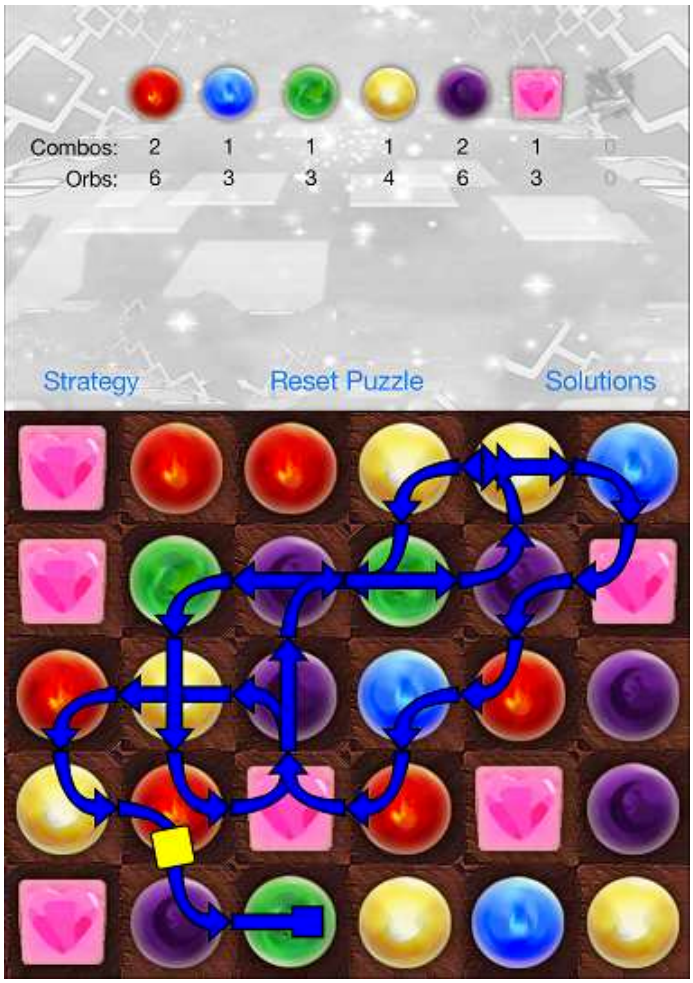


At the beginning of the game, the player can take one drop and move it through a path. The first drop on the path will move to the position of the second drop, the second drop will move to the position of the third drop, and so on. And the last drop will move to the position of the first drop. You can assume that the drops can only be moved up, down, left or right. For example, if a row of the puzzle is originally "FWPLDC", then the fire drop is taken and moved through a straight path to the right end, then this row will become "WPLDCF".



After the selection of the path, elimination begins. If there are 3 or more drops of same type connected in a row or a column (denoted by "a chain"), they will be eliminated, and the drops above them will fall down and no new drops will appear after elimination. This check and elimination will be repeated until there no longer exists chains.

If there are multiple chains eliminated after the movement, they will form "combos". It should be noticed that unlike some games with similar system, if two chains of same type are adjacent or share some common drops, they will be counted as just 1 combo. The figure below shows 2 examples of this case.



Now, it's your task to choose a path that can make most combos from all possible paths with length no longer than 9. If there is a tie, choose one that can eliminate most drops (as it will increase the damage and recovered HP). If a tie still exists, choose the path with shortest length. If still having multiple solutions, any of them would be OK.

Input

The first line of the input gives the number of test cases, T ($T \leq 100$). T test cases follow.

Each test case will contain 5 lines, each line contains 6 characters (either being F,W,P,L,D or C), representing the puzzle that you should solve.

Output

For each test case, first print a line containing "Case #x:", where x is the case number (starting from 1).

Then print three lines describing the solution:

The first line contains `Combo:`a `Length:`b, showing the number of combos you can achieve by this solution is a and the length of the path is b.

The second line contains two integers x and y, denoting that the drop in (x, y) will be taken (With the upper-left corner being $(1, 1)$ and the lower-right corner being $(5, 6)$).

The third line contains a string no longer than 9, each character being U, D, L or R, representing moving the drop up, down, left or right.

Samples

Sample Input	Sample Output
1 CFFLLW CPDPDC FLDWFD LFCFCD CDPLWL	Case #1: Combo:5 Length:9 4 3 RURURDLDD

Hints

After the move, the puzzle becomes:

$$\begin{matrix} C & F & F & L & L & W \\ C & P & D & P & C & D \\ F & L & D & F & C & D \\ L & F & F & W & W & D \\ C & D & P & L & C & L \end{matrix}$$

After first elimination(1 combo, 3 drops):

$$
\begin{array}{cccccc}
C & F & F & L & L & \\
C & P & D & P & C & \\
F & L & D & F & C & \\
L & F & F & W & W & W \\
C & D & P & L & C & L
\end{array}
$$

After second elimination(1 combo, 3 drops):

$$
\begin{array}{cccccc}
C & F & F & & & \\
C & P & D & L & L & \\
F & L & D & P & C & \\
L & F & F & F & C & \\
C & D & P & L & C & L
\end{array}
$$

After third elimination(2 combos, 6 drops):

$$
\begin{array}{cccccc}
C & & & & & \\
C & F & F & & & \\
F & P & D & L & & \\
L & L & D & P & & \\
C & D & P & L & L & L
\end{array}
$$

After forth elimination(1 combos, 3 drops):

$$
\begin{array}{cccc}
C & & & \\
C & F & F & \\
F & P & D & \\
L & L & D & L \\
C & D & P & P
\end{array}
$$