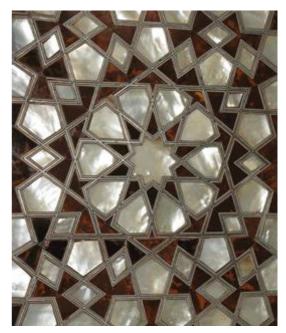A toy company recently found that toys like revolver, machine guns, fighting planes are making children violent and destroying the peace of the world. The parents also began to avoid these toys and inclined to educational toys. So they decided to manufacture educational toys. One of these is a electric touch pad on which children can put four points and the program will automatically join the points to form a closed shape. Children will try to guess the shape and when they press a button then it will automatically announce the shape. But they are struggling to determine the shape and seek your help.

Your task is simple. You are given four points, no three of them are collinear, you have to output the simple polygonal shape formed by these points in the following order:

Square
Rectangle
Rhombus
Parallelogram
Trapezium
Ordinary Quadrilateral

For example if it is possible to form a square with the four points you must output 'Square', if it is not possible to form a square but possible to form a rectangle you must output 'Rectangle' and so on.

Input

Input starts with an integer T, the number of test cases ($T \leq 50000$). Each test case contains 4 lines. Each of the lines contains two space separated integers x_i y_i ($-10000 \leq x_i, y_i \leq 10000$) which are the coordinate values of a point.

Output

For each set of input output one line in the format 'Case k: s'. Here k is the case number starting from 1 and s is the shape as described above. See sample input output for more details.

Note: If you have forgotten elementary geometry, here is the definitions to remind you:

- Square: All sides are of equal size all angles are 90°

- Rectangle: Opposite sides are of equal size and all angles are 90°

- Rhombus: All sides are of equal size but no angle is 90°

- Parallelogram: Opposite sides are of equal size but no angle is 90°

- Trapezium: Any two opposite sides are parallel but the other two is not.

- Simple Polygon: Polygon having no self intersecting edge.

Sample Input

```
6
0 0
2 0
2 2
0 2
0 0
3 0
3 2
0 2
0 0
8 4
5 0
3 4
0 0
2 0
3 2
1 2
0 0
5 0
4 3
1 3
0 0
5 0
4 3
1 4
```

Sample Output

```
Case 1: Square
Case 2: Rectangle
Case 3: Rhombus
Case 4: Parallelogram
Case 5: Trapezium
Case 6: Ordinary Quadrilateral
```