

4325 Tornado

Professor Jonathan is a well-known Canadian physicist and meteorologist. People who know him well call him “Wind Chaser”. It is not only because of his outstanding tornado research which is the most influential in the academic community, but also because of his courageous act in collecting real data of tornados. Actually he has been leading his team chasing tornado by cars equipped with advanced instruments hundreds of times.

In summer, tornado often occurs in the place where Professor Jonathan lives. After several years of research, Wind Chaser found many formation rules and moving patterns of tornados. In the satellite image, a tornado is a circle with radius of several meters to several kilometers. And its center moves between two locations in a straight line, back and forth at a fixed speed. After observing a tornado’s movement, Wind Chaser will pick a highway, which is also a straight line, and chase the tornado along the highway at the maximum speed of his car.

The smallest distance between the Wind Chaser and the center of the tornado during the whole wind chasing process, is called “observation distance”. Observation distance is critical for the research activity. If it is too short, Wind Chaser may get killed; and if it is too far, Wind Chaser can’t observe the tornado well. After many times of risk on lives and upset miss, Wind Chaser turns to you, one of his most brilliant students, for help. The only thing he wants to know is the forthcoming wind chasing will be dangerous, successful or just a miss.

Input

Input contains multiple test cases. Each test case consists of three lines which are in the following format.

$$\begin{array}{cccccc} x_{w1} & y_{w1} & x_{w2} & y_{w2} & v_w & \\ x_{t1} & y_{t1} & x_{t2} & y_{t2} & v_t & \\ d_l & d_u & & & & \end{array}$$

In the first line, (x_{w1}, y_{w1}) means the start position of Wind Chaser; (x_{w2}, y_{w2}) is another position in the highway which Wind Chaser will definitely pass through; and v_w is the speed of the car. Wind chaser will drive to the end of the world along that infinite long highway.

In the second line, (x_{t1}, y_{t1}) is the start position of tornado; (x_{t2}, y_{t2}) is the turn-around position and v_t is the tornado’s speed. In other words, the tornado’s center moves back and forth between (x_{t1}, y_{t1}) and (x_{t2}, y_{t2}) at speed v_t .

The third line shows that if the observation distance is smaller than d_l , it will be very dangerous; and if the observation distance is larger than d_u , it will be a miss; otherwise it will lead to a perfect observation.

All numbers in the input are floating numbers.

$$\begin{array}{l} -2000000000 \leq x_{w1}, y_{w1}, x_{w2}, y_{w2}, x_{t1}, y_{t1}, x_{t2}, y_{t2} \leq 2000000000 \\ 1 \leq v_w, v_t \leq 20000 \\ 0 \leq d_l, d_u \leq 2000000 \end{array}$$

Note:

1. It’s guaranteed that the observation distance won’t be very close to d_l or d_u during the whole wind chasing process. There will be at least 10^{-5} of difference.
2. Wind Chaser and the tornado start to move at the same time from their start position.

Output

For each test case output one line contains one word 'Dangerous', 'Perfect' or 'Miss' which describes the prediction of the observation.

Sample Input

```
0 0 1 0 2
10 -5 12 7 4
1.3 2.7
0 0 1 0 2
10 -5 12 7 1
0.3 0.4
```

Sample Output

```
Dangerous
Perfect
```