

Two Circles

Given two circles: $O1$ with the center $o1 = (x_1, y_1)$ and a radius r_1 and $O2$ with the center $o2 = (x_2, y_2)$ and radius r_2 , please compute if $O1$ is inside $O2$ or if $O2$ is inside $O1$.

Input

First $t < 1000$, the number of test cases. In each of the following t lines, 6 integers: $x_1 y_1 r_1 x_2 y_2 r_2$.
Where $0 \leq x_1, y_1, x_2, y_2 \leq 10000$ and $0 < r_1, r_2 \leq 10000$.

Output

For each test case print one character:

- I, if $O1$ is inside $O2$ (or if $O2$ is inside $O1$),
- E, if $O1$ is internally tangent to $O2$ (or if $O2$ is internally tangent to $O1$),
- O, in other cases.

Example

Input:

```
2
103 104 5 100 100 10
103 104 10 100 100 10
```

Output:

```
E
O
```