

Questions of ITP course at Shahid-Beheshti-University

Part 2

by Farbod Fooladi

to be perpendicular

Write a program that, by receiving the coordinates of two line segments, determines their orthogonality.

Entrance

In the first two lines, the coordinates of the points of the first line are written, and in the next two lines, the coordinates of the points of the second line are written.

$$-10 \leq x, y \leq 10$$

It is guaranteed that all points do not lie on a line segment.

Output

In one line of the standard output, if the two line segments are orthogonal, print Yes and otherwise, No.

Table

Ali and his friend are in a space like a table. Ali has lost his friend and wants to know if he is in the same row or column of the table. Write a program to help Ali find his friend.

Entrance

In one line, four natural numbers x_1 , y_1 , x_2 and y_2 are written, which respectively show Ali's row and column and his friend's row and column.

$$1 \leq x_1, y_1, x_2, y_2 \leq 50$$

It is guaranteed that Ali and his friend are not on the same point.

Output

In one line of the standard output, if the two columns are in the same column, print the Horizontal statement, if they are in the same row, the Vertical statement, and otherwise, print the Can't see statement.

which day?

Hossein is dating Hamid the other day, but he doesn't know how many days this date is. Write a program that, by receiving n and the current day, calculates what day Hossein should visit Hamid.

Entrance

In one line, d and n values are written. d indicates the current day. For example, Monday is represented by 3.

$$1 \leq n \leq 1000$$

Output

In one line of the standard output and in the following format, print the meeting day of Hussain and Hamid.

Saturday

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Bank Melli Iran!

To determine the overweight status of adults, the Body Mass Index or BMI system is used, which is calculated from the following formula:

$$\text{BMI} = \text{weight}(\text{Kilograms}) / (\text{height}(\text{Meters}) * \text{height}(\text{Meters}))$$

According to the result of this relationship, there are four different states for a person:

BMI < 18.5 BMI < 18.5 BMI < 18.5: Underweight

18.5 ≤ BMI < 25 18.5 ≤ BMI < 25 18.5 ≤ BMI < 25: Normal

25 ≤ BMI < 30 25 ≤ BMI < 30 25 ≤ BMI < 30: Overweight

30 ≤ BMI 30 ≤ BMI 30 ≤ BMI: Obese

Entrance

In one line, the person's weight in kilograms and height in meters are entered respectively. These values are decimal and within the normal range for humans.

Output

In the first line of the standard output, print the BMI with two decimal places and in the next line the person's condition.

Interference of circles

Write a program that calculates the number of intersection points by receiving the coordinates of the center and radius of two circles.

If needed, you can use C or C++ math libraries.

Entrance

In the first line, three numbers x_1 , y_1 and r_1 are written, which show the coordinates of the center and the radius of the first circle, respectively. In the second line, three numbers x_2 , y_2 and r_2 are written, which show the coordinates of the center and the radius of the second circle, respectively.

$$-10 \leq x_1, y_1, x_2, y_2 \leq 10$$

$$1 \leq r_1, r_2 \leq 10000$$

guarantees that the radius of two circles is different.

Output

On one line of standard output, print the number of intersection points of the two circles.

Jordan (credited)

Write a program that, by receiving the coordinates of the vertices of an arbitrary quadrilateral, finds its position and a certain point relative to each other.

Note: Virtually use C or C++ math libraries.

The coordinate numbers are decimal and the quadrilateral is convex.

Entrance

In the first line, eight decimal numbers $x_1, y_1, x_2, y_2, x_3, y_3, x_4$ and y_4 are written, which show the coordinates of the quadrilateral vertices.

In the next line, two numbers x and y are written, which show the coordinates of the fifth point.

$$-50 \leq x_1, y_1, x_2, y_2, x_3, y_3, x_4, y_4, x, y \leq 50$$

guarantees that the fifth point is not located on a quadrilateral.

Output

In one line of standard output, print Yes if the point is inside the quadrilateral, and No otherwise.