# Lesson 3. Conditions: if, then, else



## Problem «Is positive (/en/lessons/if_then_else_conditions/problems/is_positive/)»

### Statement

Given an integer, print "YES" if it's positive and print "NO" otherwise.

## Problem «Is odd (/en/lessons/if_then_else_conditions/problems/is_odd/)»

### Statement

Given an integer, print "YES" if it's odd and print "NO" otherwise.

## Problem «Is even (/en/lessons/if_then_else_conditions/problems/is_even/)»

### Statement

Given an integer, print "YES" if it's even and print "NO" otherwise.

# Problem «Ends on seven (/en/lessons/if_then_else_conditions/problems/ends_on_seven/)»

### Statement

Given an integer, print "YES" if it's last digit is 7 and print "NO" otherwise.

# Problem «Minimum of two numbers (/en/lessons/if_then_else_conditions/problems/minimum/)»

### Statement

Given two integers, print the smaller value.

# Problem «Are both odd (/en/lessons/if_then_else_conditions/problems/are_both_odd/)»

### Statement

Given two integers, print "YES" if they're both odd and print "NO" otherwise.

# Problem «At least one odd (/en/lessons/if_then_else_conditions/problems/at_least_one_odd/)»

### Statement

Given two integers, print "YES" if at least one of them is odd and print "NO" otherwise.

# Problem «Exactly one odd (/en/lessons/if_then_else_conditions/problems/exactly_one_odd/)»

### Statement

Given two integers, print "YES" if exactly one of them is odd and print "NO" otherwise.

# Problem «Sign function (/en/lessons/if_then_else_conditions/problems/signum/)»

### Statement

For the given integer X print `1` if it's positive, `-1` if it's negative, or `0` if it's equal to zero.

Try to use the cascade `if-elif-else` for it.

# Problem «Numbers in ascending order (/en/lessons/if_then_else_conditions/problems/are_3_ascending/)»

### Statement

Given three different integers, print YES if they're given in ascending order, print NO otherwise.

# Problem **«Is three digit (/en/lessons/if_then_else_conditions/problems/is_three_digit/)»**

### Statement

Given an integer, print "YES" if it's a three-digit number and print "NO" otherwise.

# Problem **«Minimum of three numbers (/en/lessons/if_then_else_conditions/problems/minimum3/)»**

### Statement

Given three integers, print the smallest value.

# Problem **«Equal numbers (/en/lessons/if_then_else_conditions/problems/num_equal/)»**

### Statement

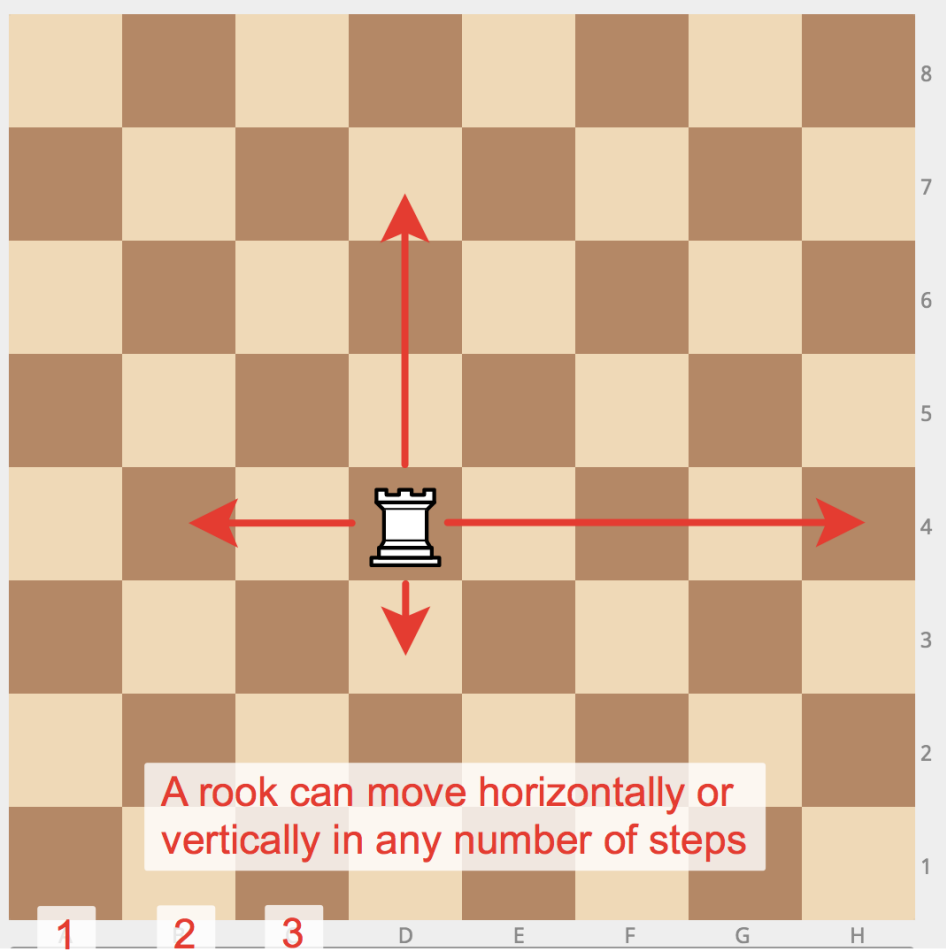
Given three integers, determine how many of them are equal to each other. The program must print one of these numbers: 3 (if all are the same), 2 (if two of them are equal to each other and the third is different) or 0 (if all numbers are different).

# Problem «Rook move (/en/lessons/if_then_else_conditions/problems/rook_move/)»

## Statement

Chess rook moves horizontally or vertically. Given two different cells of the chessboard, determine whether a rook can go from the first cell to the second in one move.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first cell, and then the last two - for the second cell. The program should output `YES` if a rook can go from the first cell to the second in one move, or `NO` otherwise.

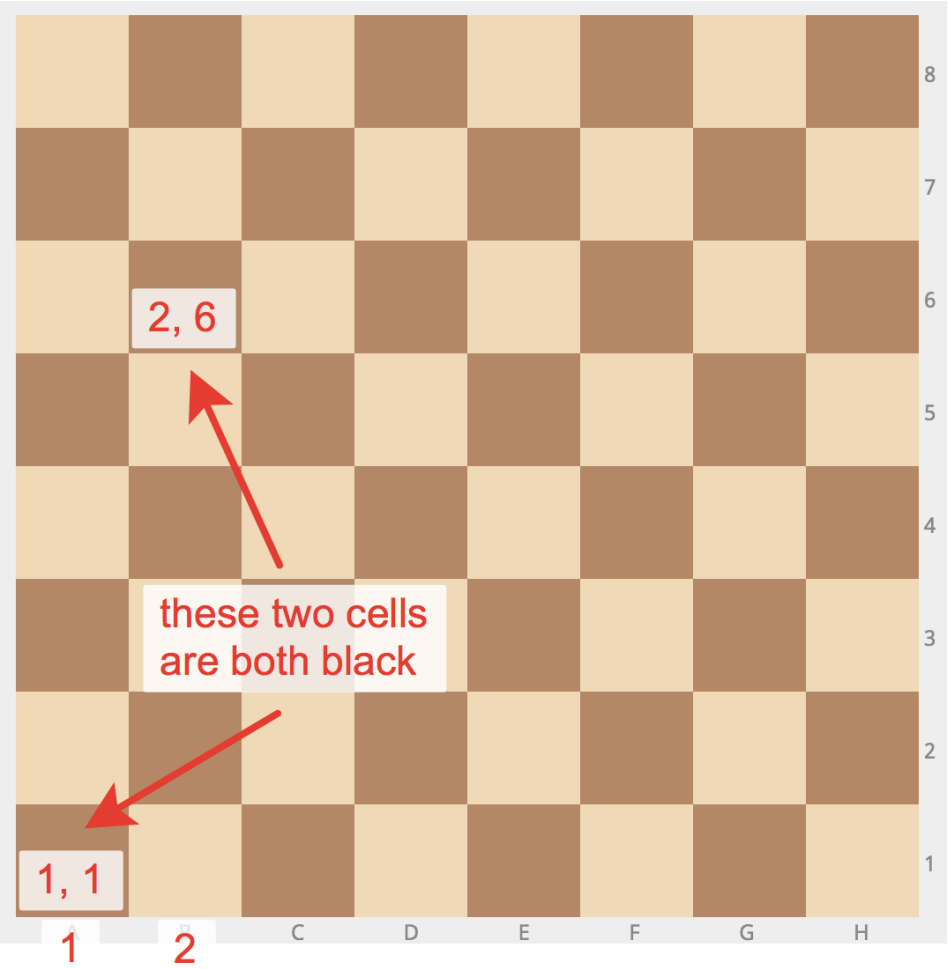


# Problem «Chess board - black square (/en/lessons/if_then_else_conditions/problems/chess_board_black_color/)»

## Statement

Given a square of a chessboard. Print BLACK if it's black and print WHITE otherwise.

The program receives two numbers from 1 to 8 each - the column and the row number of the square.

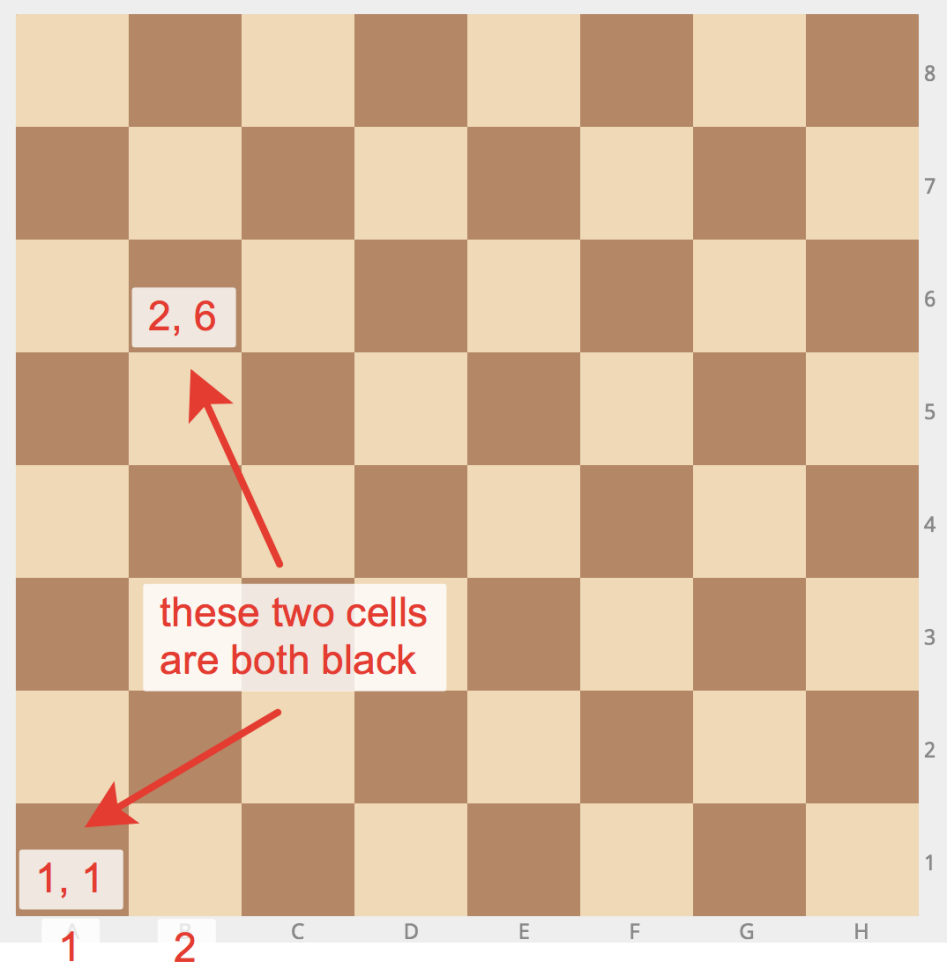


# Problem **«Chess board - same color (/en/lessons/if_then_else_conditions/problems/chess_board/)»**

## Statement

Given two cells of a chessboard. If they are painted in one color, print the word `YES`, and if in a different color - `NO`.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first cell, and then the last two - for the second cell.




# Problem **«Distance to closest point (/en/lessons/if_then_else_conditions/problems/distance_to_closest/)»**

**Statement**

Given the coordinates of the three points A, B, and C on a line. Print a distance from the point A to closest point to it.

---

# Problem «Digits in ascending order (/en/lessons/if_then_else_conditions/problems/are_digits_ascending/)»

### Statement

Given a three-digit integer, print YES if its digits go in ascending order, print NO otherwise.

---

# Problem «Four-digit palindrome (/en/lessons/if_then_else_conditions/problems/four_digit_palindrome/)»

### Statement

A palindrome is a number which reads the same when read forward as it it does when read backward. Given a four-digit integer, print "YES" if it's a palindrome and print "NO" otherwise.

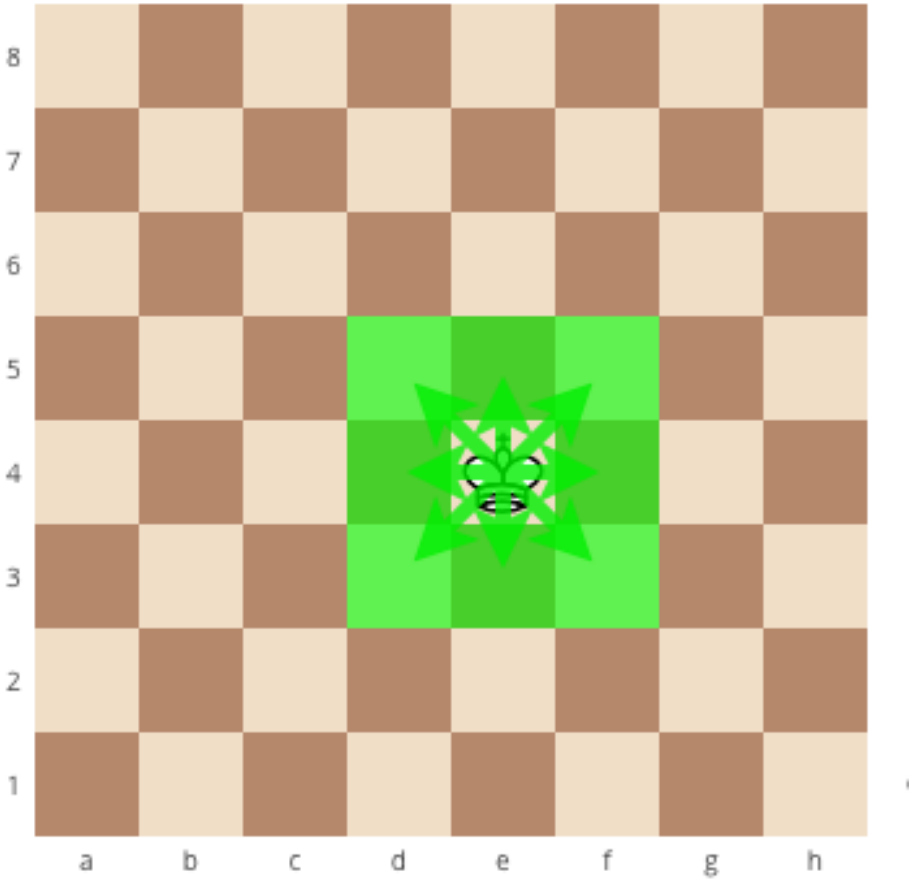
---

# Problem «King move (/en/lessons/if_then_else_conditions/problems/king_move/)»

### Statement

Chess king moves horizontally, vertically or diagonally to any adjacent cell. Given two different cells of the chessboard, determine whether a king can go from the first cell to the second in one move.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first cell, and then the last two - for the second cell. The program should output `YES` if a king can go from the first cell to the second in one move, or `NO` otherwise.

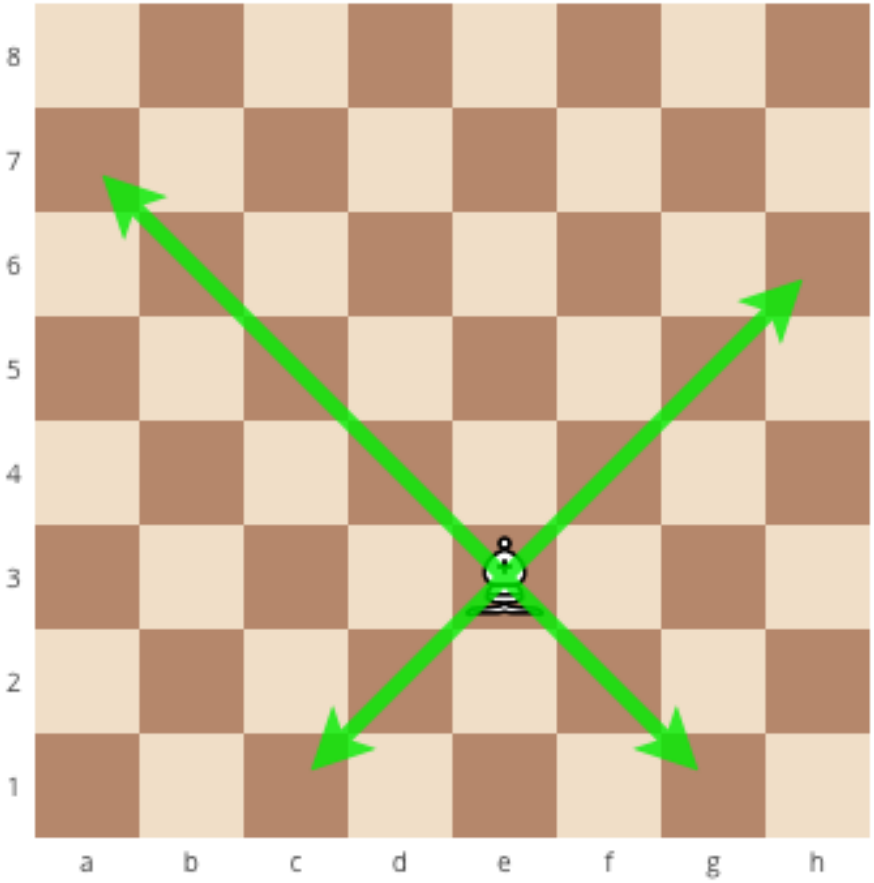



# Problem **«Bishop moves (/en/lessons/if_then_else_conditions/problems/bishop_move/)»**

**Statement**

In chess, the bishop moves diagonally, any number of squares. Given two different squares of the chessboard, determine whether a bishop can go from the first to the second in one move.

The program receives as input four numbers from 1 to 8, specifying the column and row numbers of the starting square and the column and row numbers of the ending square. The program should output `YES` if a Bishop can go from the first square to the second in one move, or `NO` otherwise.

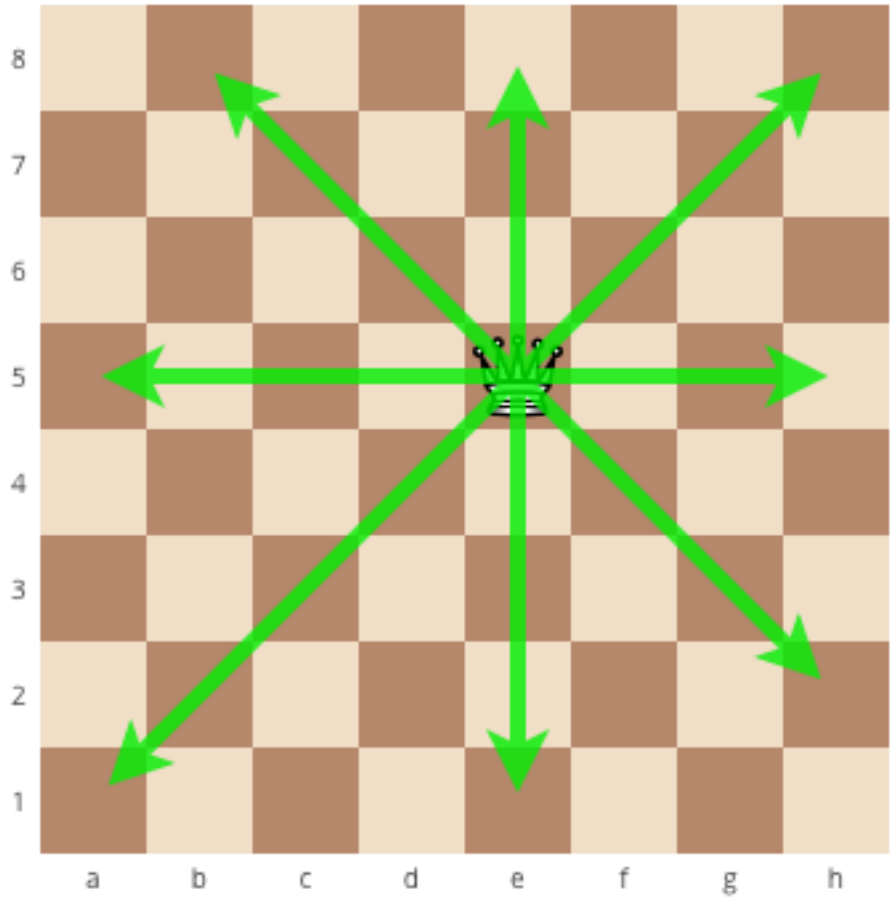



# Problem **«Queen move (/en/lessons/if_then_else_conditions/problems/queen_move/)»**

### Statement

Chess queen moves horizontally, vertically or diagonally to any number of cells. Given two different cells of the chessboard, determine whether a queen can go from the first cell to the second in one move.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first cell, and then the last two - for the second cell. The program should output `YES` if a queen can go from the first cell to the second in one move, or `NO` otherwise.




---

# Problem **«Index of outlier (/en/lessons/if_then_else_conditions/problems/index_of_outlier/)»**

### Statement

Given three integers: two are equal to each other and the third one is different. Print the index number of this different one - 1, 2 or 3.

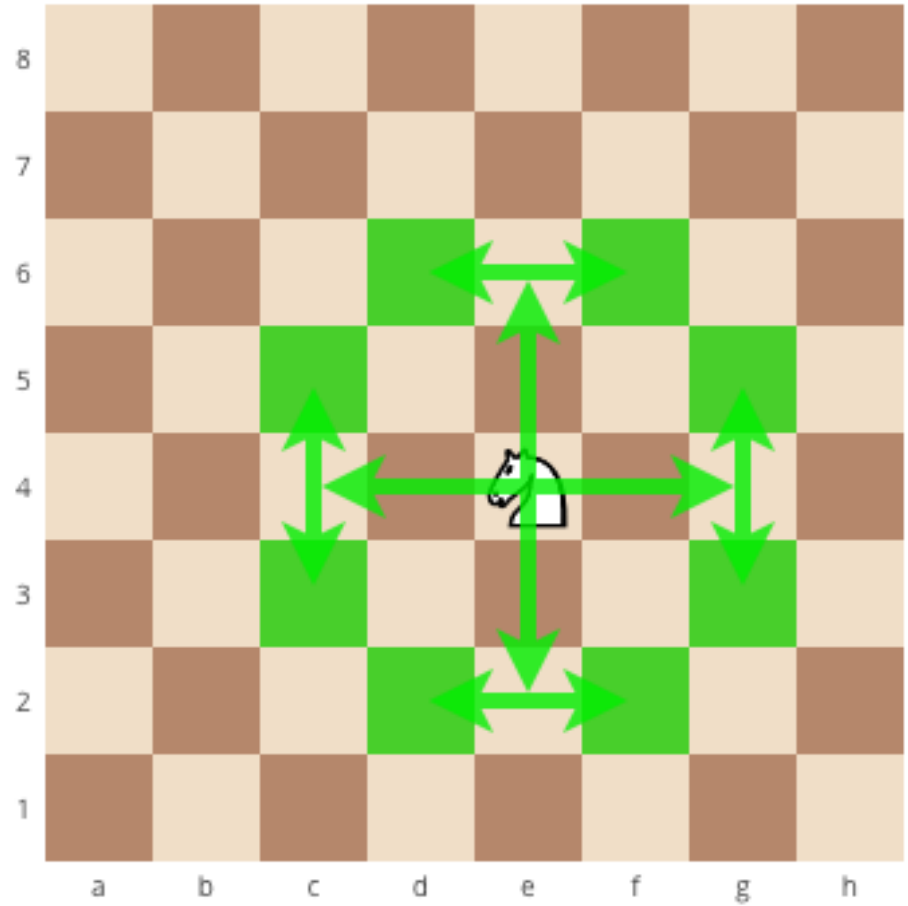
---

# Problem **«Knight move (/en/lessons/if_then_else_conditions/problems/knight_move/)»**

### Statement

Chess knight moves like the letter L. It can move two cells horizontally and one cell vertically, or two cells vertically and one cells horizontally. Given two different cells of the chessboard, determine whether a knight can go from the first cell to the second in one move.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first cell, and then the last two - for the second cell. The program should output `YES` if a knight can go from the first cell to the second in one move, or `NO` otherwise.




# Problem **«Chocolate bar (/en/lessons/if_then_else_conditions/problems/chocolate/)»**

### Statement

Chocolate bar has the form of a rectangle divided into $n \times m$ portions. Chocolate bar can be split into two rectangular parts by breaking it along a selected straight line on its pattern. Determine whether it is possible to split it so that one of the parts will have exactly k squares.

The program reads three integers: n, m, and k. It should print `YES` or `NO`.

# Problem **«Leap year (/en/lessons/if_then_else_conditions/problems/leap_year/)»**

### Statement

Given the year number. You need to check if this year is a leap year. If it is, print `LEAP`, otherwise print `COMMON`.

The rules in Gregorian calendar are as follows:

- a year is a leap year if its number is exactly divisible by 4 and is not exactly divisible by 100
- a year is always a leap year if its number is exactly divisible by 400

**Warning.** The words `LEAP` and `COMMON` should be printed all caps.

# Problem **«Days in month (/en/lessons/if_then_else_conditions/problems/days_in_month/)»**

### Statement

Given a month - an integer from 1 (January) to 12 (December), print the number of days in it in the year 2017 (or any other non-leap year).

# Problem **«Next day (/en/lessons/if_then_else_conditions/problems/next_day/)»**

### Statement

Given the month (an integer from 1 to 12) and the day in it (an integer from 1 to 31) in the year 2017 (or in any other common year), print the month and the day of the next day to it. The first test corresponds to March 30 and March 31. The second test corresponds to March 31 and April 1.

---

## Problem **«Linear equation (/en/lessons/if_then_else_conditions/problems/linear_equation/)»**

### Statement

Write a program that solves a linear equation $ax = b$ in integers. Given two integers $a$ and $b$ ($a$ may be zero), print a single integer root if it exists and print "no solution" or "many solutions" otherwise.

---

## Problem **«Vertices of rectangle (/en/lessons/if_then_else_conditions/problems/vertices_of_rectangle/)»**

### Statement

Given integer coordinates of three vertices of a rectangle whose sides are parallel to the coordinate axes, find the coordinates of the fourth vertex of the rectangle. In the first test the three given vertices are (1, 4), (1, 6), (7, 4). The fourth vertex is thus (7, 6).

---

## Problem **«Sort three numbers (/en/lessons/if_then_else_conditions/problems/sort_three_numbers/)»**

### Statement

Given three integers, print them in ascending order.

---

# Problem **«White pawn move (/en/lessons/if_then_else_conditions/problems/pawn_move/)»**

## Statement

A white chess pawn moves up vertically one square at a time. An exception is a pawn on a row #2: it can move either one or two squares up. In addition, a white chess pawn captures diagonally up one square to the left or right. A white chess pawn can never occur on a row #1.

The program receives the input of four numbers from 1 to 8, each specifying the column and row number, first two - for the first square, and then the last two - for the second square. The program should print `YES` if a white pawn can possibly move from the first square to the second square in one move in some game - either by move or by capture. The program should print `NO` otherwise. The first four tests correspond to the green arrows on the picture below.