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Practice problems aimed to improve your coding skills.

-  PRACTICE-02_SCAN-PRINT
-  PRACTICE-03_TYPES
-  LAB-PRAC-02_SCAN-PRINT
-  LAB-PRAC-01
-  PRACTICE-04_COND
-  BONUS-PRAC-02
-  LAB-PRAC-03_TYPES
-  PRACTICE-05_COND-LOOPS
-  LAB-PRAC-04_COND
 -  Trouble with Triangles
 -  Ms- Mathematica
 -  Pollution Problem
 -  In or Out
 -  Rick-s Number
 -  Its Tax Time
 -  The Toppers
 -  Isotonic Regression
 -  Super Leap Years
 -  Make Room for Rectangles
 -  Quadratic Quandry Revisited
 -  Grade Grab
-  LAB-PRAC-05_CONDLOOPS
-  PRACTICE-07_LOOPS-ARR
-  LAB-PRAC-06_LOOPS
-  LAB-PRAC-07_LOOPS-ARR
-  LABEXAM-PRAC-01_MIDSEM
-  PRACTICE-09_PTR-MAT
-  LAB-PRAC-08_ARR-STR
-  PRACTICE-10_MAT-FUN
-  LAB-PRAC-09_PTR-MAT
-  LAB-PRAC-10_MAT-FUN
-  PRACTICE-11_FUN-PTR
-  LAB-PRAC-11_FUN-PTR
-  LAB-PRAC-12_FUN-STRUC
-  LABEXAM-PRAC-02_ENDSEM
-  LAB-PRAC-13_STRUC-NUM
-  LAB-PRAC-14_SORT-MISC

Isotonic Regression

LAB-PRAC-04_COND

Isotonic Regression [20 marks]**Problem Statement**

You will be given 5 (x,y) coordinate pairs (**all coordinates will be integers**), say (x1, y1) till (x5, y5) in a format described below. The values x1, x2, x3, x4, x5 will always be unique and given in increasing order. Given this, we define the following function

$$\begin{aligned}
 f(x_1) &= y_1 \\
 f(x_2) &= \begin{cases} y_2 & \text{if } y_2 \geq f(x_1) \\ f(x_1) & \text{if } y_2 < f(x_1) \end{cases} \\
 f(x_3) &= \begin{cases} y_3 & \text{if } y_3 \geq f(x_2) \\ f(x_2) & \text{if } y_3 < f(x_2) \end{cases} \\
 f(x_4) &= \begin{cases} y_4 & \text{if } y_4 \geq f(x_3) \\ f(x_3) & \text{if } y_4 < f(x_3) \end{cases} \\
 f(x_5) &= \begin{cases} y_5 & \text{if } y_5 \geq f(x_4) \\ f(x_4) & \text{if } y_5 < f(x_4) \end{cases}
 \end{aligned}$$

Your job is to output, on **four different lines** the values f(x2), f(x3), f(x4) and f(x5) in the format described below. All values of f will be **integers**.

Caution

1. Be careful about extra/missing lines and extra/missing spaces.
2. Be careful that you do not have to print f(x1). You only have to print f(x2), f(x3), f(x4) and f(x5), and that too on 4 different lines using the format described below.
3. Although x1, x2 etc are unique, y1, y2 etc may not be unique.

INPUT:

(x1, y1) (x2, y2) (x3, y3) (x4, y4) (x5, y5)

OUTPUT:

f(value of x2) = f(x2)

f(value of x3) = f(x3)

f(value of x4) = f(x4)

f(value of x5) = f(x5)

EXAMPLE:

INPUT

(1, 1) (2, 4) (3, 9) (4, 4) (5, 1)

OUTPUT:

f(2) = 4

f(3) = 9

f(4) = 9

f(5) = 9

Grading Scheme:

Total marks: **[20 Points]**

There will be partial grading in this question. There are four lines in your output. Printing each line correctly, in the correct order, carries 25% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

 **Start Solving! (/editor/practice/6057)**