

Maths : Video - 43

Leetcode
- 3047
medium



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Motivation -

Don't waste another year.

Make this an impactful one.

You've to do it to get your
dream life.

Please don't waste time...



MIK...

3047. Find the Largest Area of Square Inside Two Rectangles

Medium

Topics

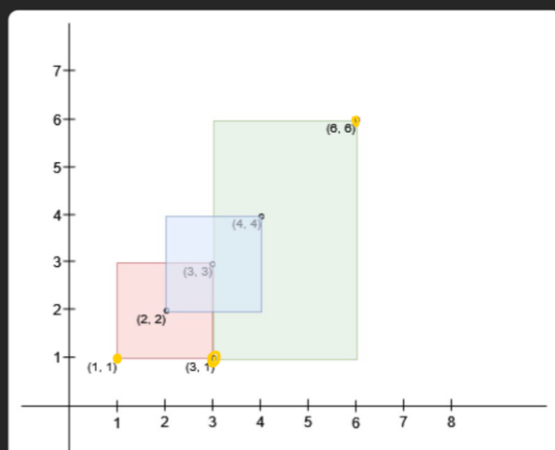
Companies

Hint

There exist n rectangles in a 2D plane with edges parallel to the x and y axis. You are given two 2D integer arrays `bottomLeft` and `topRight` where `bottomLeft[i] = [a_i, b_i]` and `topRight[i] = [c_i, d_i]` represent the **bottom-left** and **top-right** coordinates of the i^{th} rectangle, respectively.

You need to find the **maximum area of a square** that can **fit inside the intersecting region** of at least two rectangles. Return `0` if such a square does not exist.

Example 1:



Input: `bottomLeft = [[1, 1], [2, 2], [3, 1]]`, `topRight = [[3, 3], [4, 4], [6, 6]]`

Output: 1

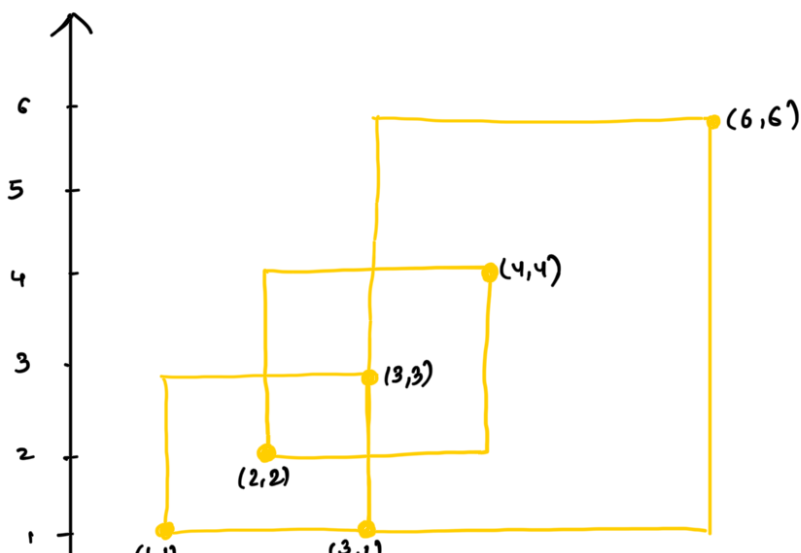
side = 1

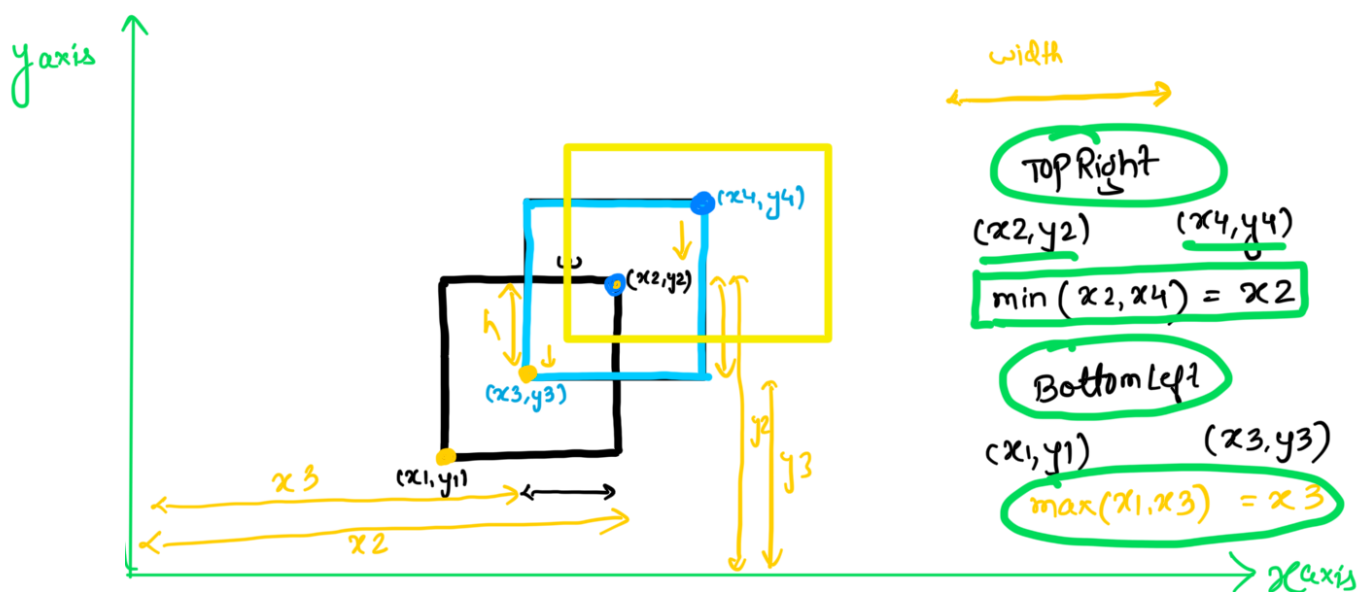
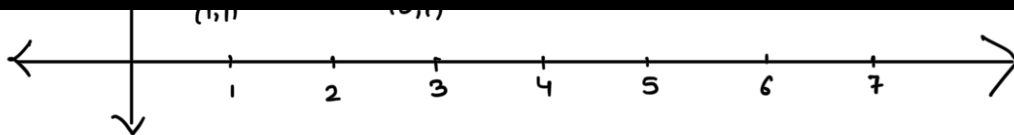
Constraint
Analysis:

Constraints:

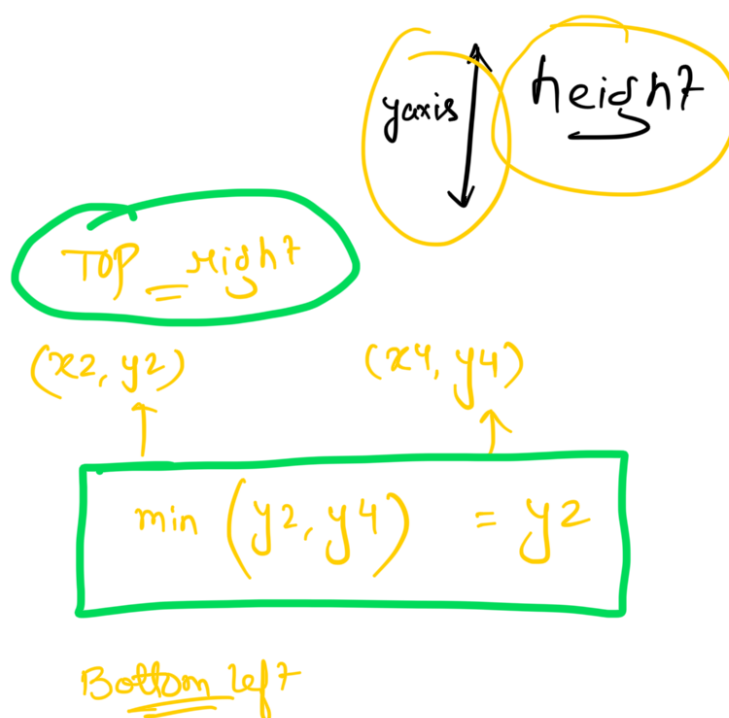
- $n == \text{bottomLeft.length} == \text{topRight.length}$
- $2 \leq n \leq 10^3$
- $\text{bottomLeft}[i].\text{length} == \text{topRight}[i].\text{length} == 2$
- $1 \leq \text{bottomLeft}[i][0], \text{bottomLeft}[i][1] \leq 10^7$
- $1 \leq \text{topRight}[i][0], \text{topRight}[i][1] \leq 10^7$
- $\text{bottomLeft}[i][0] < \text{topRight}[i][0]$
- $\text{bottomLeft}[i][1] < \text{topRight}[i][1]$

Thought Process





$$\text{width} = x2 - x3$$



$$(x_1, y_1) \quad , \quad (x_3, y_3)$$

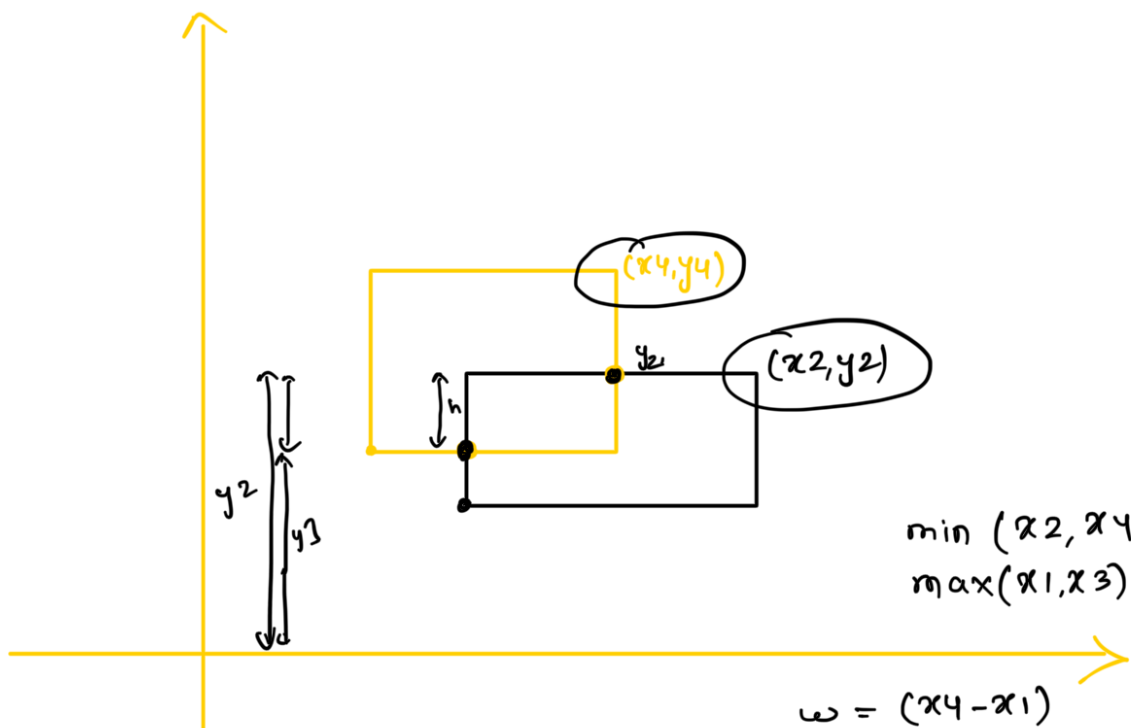
$$\max(y_1, y_3) = y_3$$

$$h = y_2 - y_3$$

$$w, h \rightarrow \min(w, h) = \text{side}$$



$$\text{area} = (\text{side} \times \text{side}) ;$$



$$\min(x_2, x_4) = x_4$$

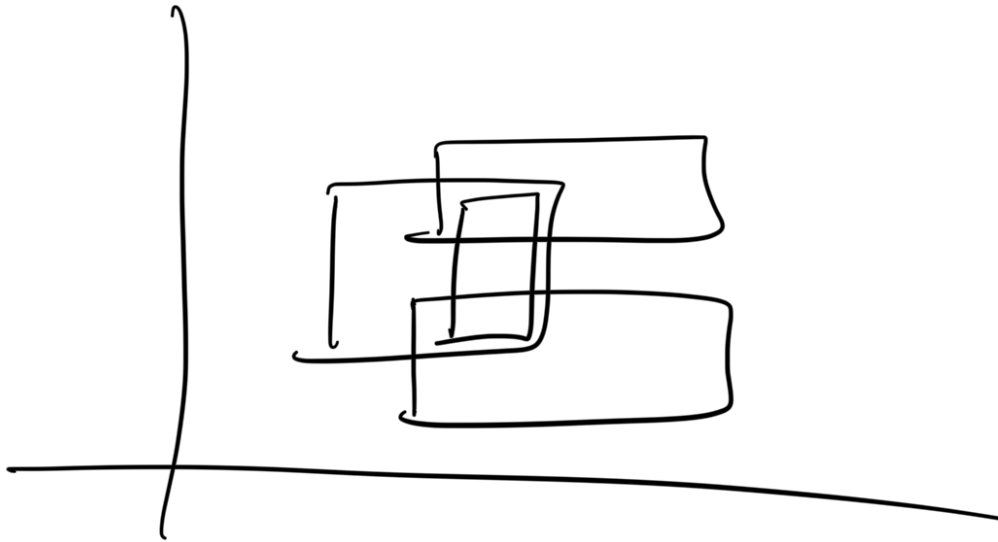
$$\max(x_1, x_3) = x_1$$

$$\min(y_2, y_4) = y_2$$

$$\max(y_1, y_3) = y_3$$

$$h = y_2 - y_3$$

All intersections among all rectangles:-



$\{(x_1, y_1), (x_3, y_3)\}$

$\{(x_2, y_2), (x_4, y_4)\}$

maxSide = 0;

for (i = 0; i < n; i++) {

for (j = i+1; j < n; j++) {

// topright $\rightarrow x$ \rightarrow width (w)
// BottomLeft $\rightarrow x$

// top Ri } j \rightarrow height (h)
// BottomLeft } y

side = min(h, w);

maxSide = max(side, maxSide);

}

}

return (maxSi & meS).
ε

the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million (1990–1999) (Department of Health 2000).

There is a growing emphasis on the need to improve the quality of care in the public sector. The Department of Health (2000) has set out a number of key objectives for the public sector, including the need to improve the quality of care, to reduce waiting times, and to improve the efficiency of the system. The National Audit Office (2000) has also highlighted the need for the public sector to improve its performance in a number of key areas, including the quality of care, the efficiency of the system, and the management of resources.

One of the key challenges facing the public sector is the need to improve the quality of care. This is a complex task, as it involves a number of different factors, including the quality of the staff, the quality of the facilities, and the quality of the services. The National Audit Office (2000) has identified a number of key areas where the public sector needs to improve its performance, including the quality of care, the efficiency of the system, and the management of resources.

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One of the key areas where the public sector needs to improve its performance is the management of resources. This is a complex task, as it involves a number of different factors, including the quality of the staff, the quality of the facilities, and the quality of the services. The National Audit Office (2000) has identified a number of key areas where the public sector needs to improve its performance, including the quality of care, the efficiency of the system, and the management of resources.

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the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million (1990–1999) (Department of Health 2000).

There is a growing emphasis on the importance of the public sector in the provision of health care services, and the need to ensure that the public sector is able to meet the needs of the population. This has led to a number of initiatives to improve the efficiency and effectiveness of the public sector, including the introduction of performance indicators, the establishment of public sector bodies, and the implementation of various reforms. The aim of this paper is to review the literature on the public sector and to discuss the implications for the future of the public sector.

The paper is organized as follows. Section 2 discusses the role of the public sector in the provision of health care services. Section 3 discusses the challenges facing the public sector. Section 4 discusses the initiatives to improve the efficiency and effectiveness of the public sector. Section 5 discusses the implications for the future of the public sector.

2. The role of the public sector in the provision of health care services

The public sector is the largest provider of health care services in the UK. It is responsible for the majority of the health care services provided to the population, including the majority of the hospital care, the majority of the community care, and the majority of the primary care services.

The public sector is also responsible for the majority of the health care services provided to the most vulnerable members of the population, including the elderly, the disabled, and the socially disadvantaged. This is because the public sector is the only provider of health care services that is able to provide these services to these groups of people.

The public sector is also responsible for the majority of the health care services provided to the population at large. This is because the public sector is the only provider of health care services that is able to provide these services to the population at large.

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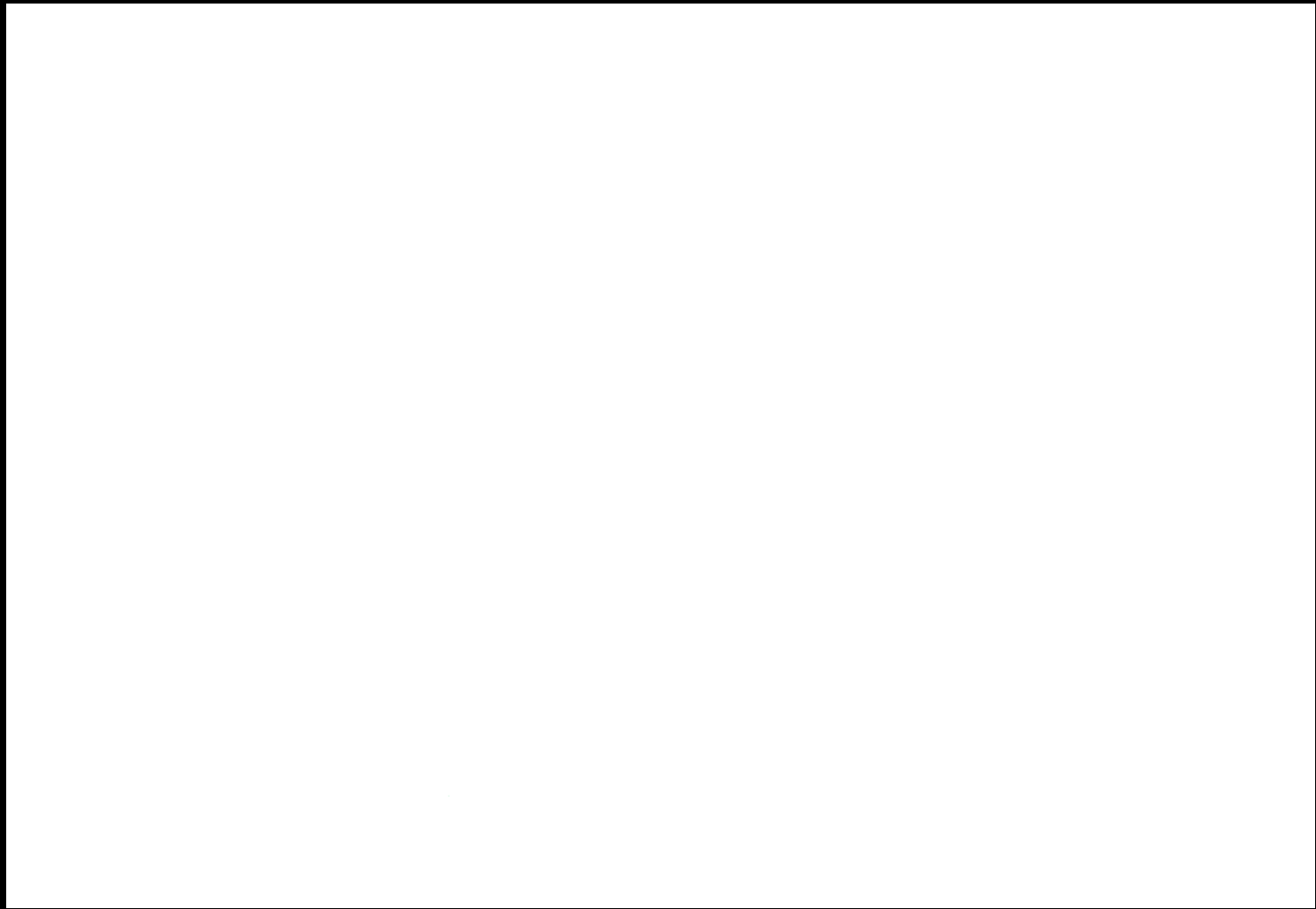
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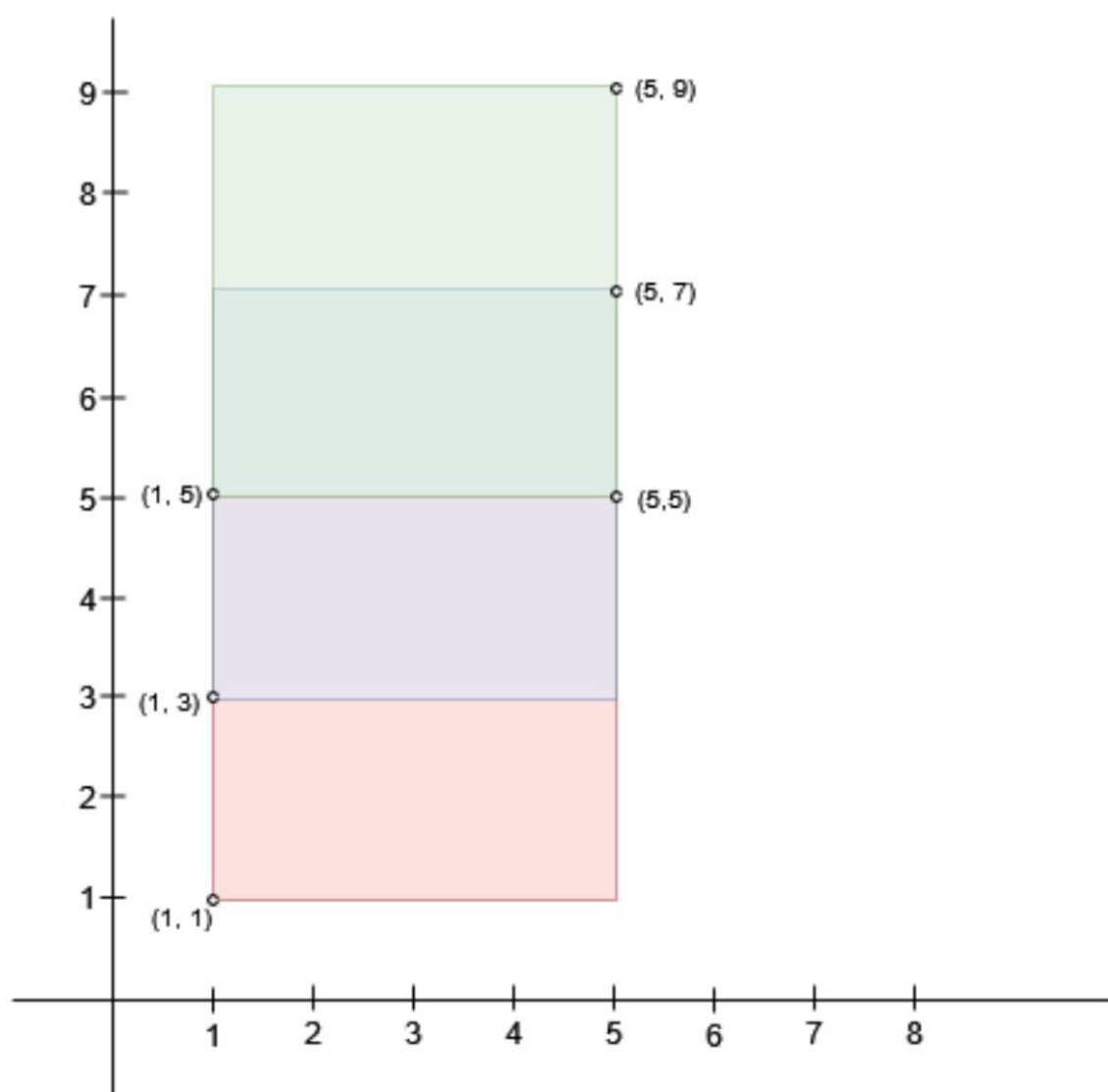
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Example 2:



Input: bottomLeft = [[1,1],[1,3],[1,5]], topRight = [[5,5],[5,7],[5,9]]

Output: 4