Really Easy Understanding Solution(O(n), Java)

Last Edit: Apr 17, 2018, 9:21 PM (/hu19) hu19 (/hu19) ★ 270

The right answer must satisfy two conditions:

1. the large rectangle area should be equal to the sum of small rectangles
2. count of all the points should be even, and that of all the four corner points should be one

```java
public boolean isRectangleCover(int[][] rectangles) {

        if (rectangles.length == 0 || rectangles[0].length == 0) return false;

        int x1 = Integer.MAX_VALUE;
        int x2 = Integer.MIN_VALUE;
        int y1 = Integer.MAX_VALUE;
        int y2 = Integer.MIN_VALUE;

        HashSet<String> set = new HashSet<String>();
        int area = 0;

        for (int[] rect : rectangles) {
            x1 = Math.min(rect[0], x1);
            y1 = Math.min(rect[1], y1);
            x2 = Math.max(rect[2], x2);
            y2 = Math.max(rect[3], y2);

            area += (rect[2] - rect[0]) * (rect[3] - rect[1]);

            String s1 = rect[0] + " " + rect[1];
            String s2 = rect[0] + " " + rect[3];
            String s3 = rect[2] + " " + rect[3];
            String s4 = rect[2] + " " + rect[1];

            if (!set.add(s1)) set.remove(s1);
            if (!set.add(s2)) set.remove(s2);
            if (!set.add(s3)) set.remove(s3);
            if (!set.add(s4)) set.remove(s4);
        }

        if (!set.contains(x1 + " " + y1) || !set.contains(x1 + " " + y2) || !set.cor

        return area == (x2-x1) * (y2-y1);
    }
```

Notes

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fun4LeetCode (/fun4leetcode) ★ 3594 Oct 16, 2016, 1:00 PM

Thanks for sharing this nice solution. For those who are concerned with the validity of the two conditions, here is a quick proof.

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virpro (/virpro) ★ 29 Sep 17, 2016, 4:01 PM

Can you prove the input satisfy the two rules makes a perfect rectangle?

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三千世界 (/san-qian-shi-jie) ★ 450 Dec 17, 2016, 10:00 AM

literally…
your smart ass solution makes this brain fucking problem a joke :) gj

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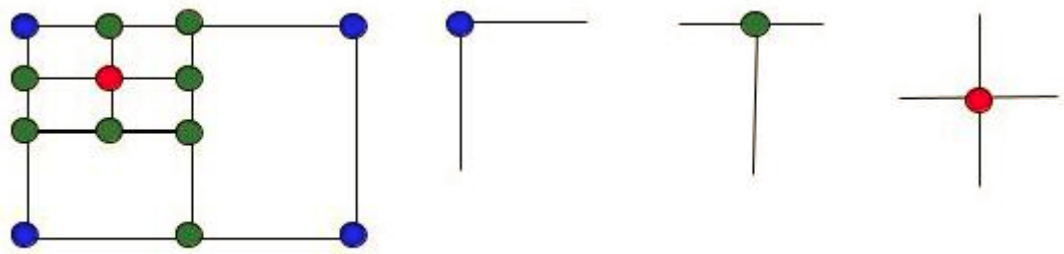
notturno (/notturno) ★ 9 Feb 2, 2017, 2:35 AM

found this image in another thread
very helpful to understand this algorithm



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kotlavaibhav (/kotlavaibhav) ★ 4 Dec 5, 2016, 2:46 AM

C++ version

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sircodesalotOfTheRound (/sircodesalotoftheround) ★ 25 Mar 28, 2017, 1:11 PM

Rad solution!
Micro optimization:

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lzl124631x (/lzl124631x) 84 Feb 10, 2017, 7:06 AM

C++ Version

```
class Solution {
private:
    inline string getKey(int x, int y) { return to_string(x) + " " + to_string(y); }
  ...
```

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Notes

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infini (/infini) 12 Dec 21, 2016, 10:57 AM

@hu19 Thanks for sharing this brilliant algorithm!
Here is the Improvements I made that finishes in 42ms, beat 99.13%

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reformasky (/reformasky) 1 Oct 10, 2016, 9:34 PM

@hu19 Do you need the first condition here. Can you provide a counterexample?

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zhengpenghu (/zhengpenghu) 22 Sep 25, 2016, 9:00 PM

@hu19
Hi hu19,
“count of all the points should be even”—I think this is a redundant condition, if there are 4 points’ count is one, and the large rectangle’s area equal to the sum of all small rectangles, then we can guarantee it’s a perfect rectangle.

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