Problem 149: Max Points on a Line

Problem Information

Difficulty: Hard
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Given an array of

points

where

points[i] = [x

i

, y

i

]

represents a point on the

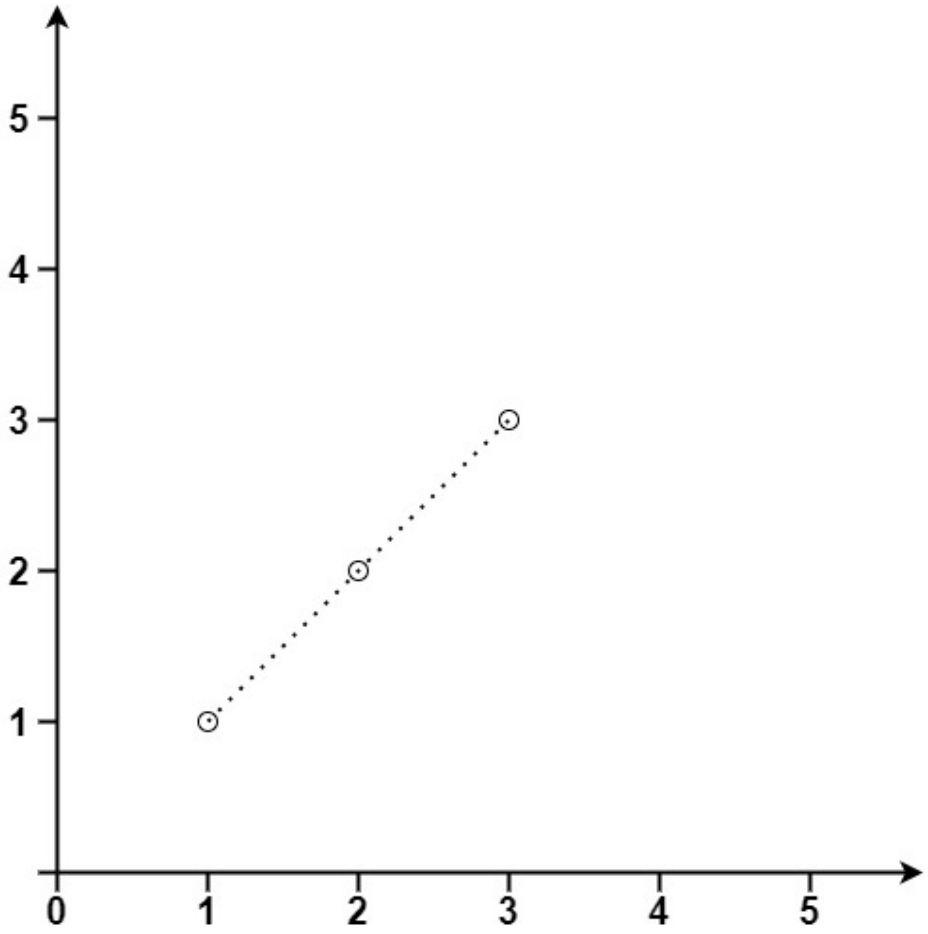
X-Y

plane, return

the maximum number of points that lie on the same straight line

.

Example 1:



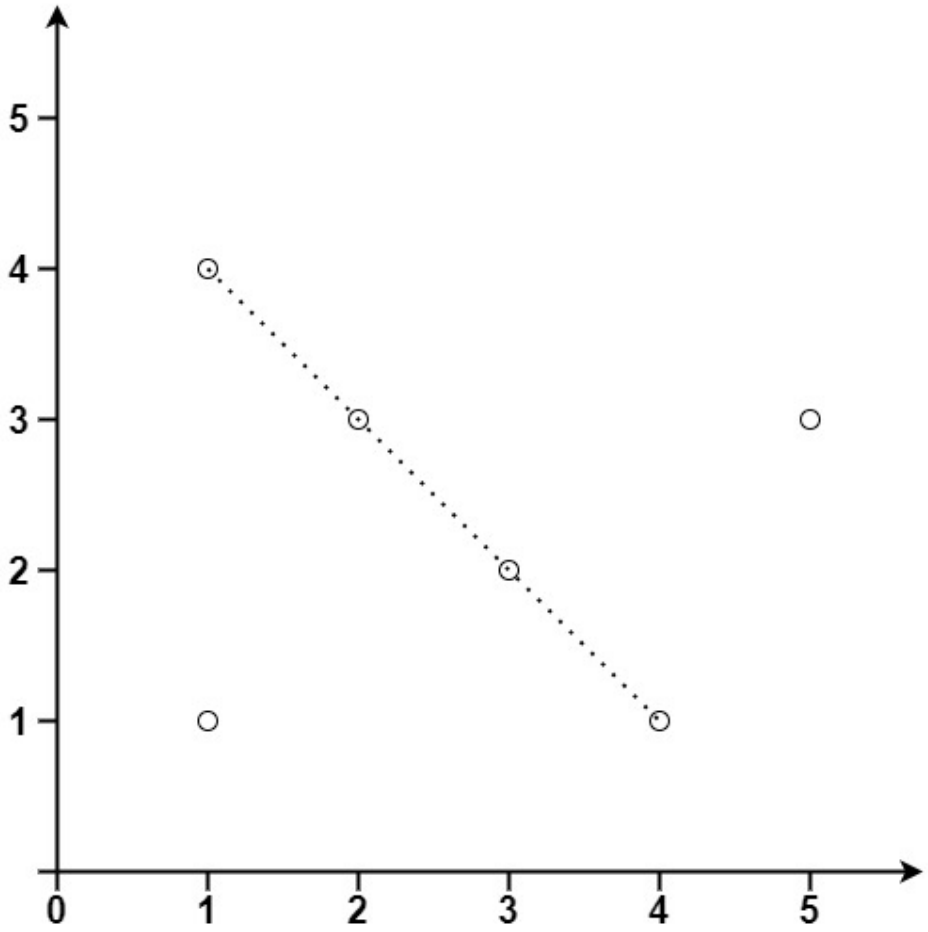
Input:

points = [[1,1],[2,2],[3,3]]

Output:

3

Example 2:



Input:

points = [[1,1],[3,2],[5,3],[4,1],[2,3],[1,4]]

Output:

4

Constraints:

1 <= points.length <= 300

points[i].length == 2

-10

4

<= x

i

, y

i

<= 10

4

All the

points

are

unique

.

Code Snippets

C++:

```
class Solution {
public:
int maxPoints(vector<vector<int>>& points) {

}
};
```

Java:

```
class Solution {
public int maxPoints(int[][] points) {

}
```

```
}
```

Python3:

```
class Solution:
def maxPoints(self, points: List[List[int]]) -> int:
```

Python:

```
class Solution(object):
def maxPoints(self, points):
"""
:type points: List[List[int]]
:rtype: int
"""
```

JavaScript:

```
/**
* @param {number[][]} points
* @return {number}
*/
var maxPoints = function(points) {

};
```

TypeScript:

```
function maxPoints(points: number[][]): number {

};
```

C#:

```
public class Solution {
public int MaxPoints(int[][] points) {

}
}
```

C:

```
int maxPoints(int** points, int pointsSize, int* pointsColSize) {

}
```

Go:

```
func maxPoints(points [][]int) int {

}
```

Kotlin:

```
class Solution {
fun maxPoints(points: Array<IntArray>): Int {

}
}
```

Swift:

```
class Solution {
func maxPoints(_ points: [[Int]]) -> Int {

}
}
```

Rust:

```
impl Solution {
pub fn max_points(points: Vec<Vec<i32>>) -> i32 {

}
}
```

Ruby:

```
# @param {Integer[][]} points
# @return {Integer}
def max_points(points)

end
```

PHP:

```
class Solution {

/**
* @param Integer[][] $points
* @return Integer
*/
function maxPoints($points) {

}
}
```

Dart:

```
class Solution {
int maxPoints(List<List<int>> points) {

}
}
```

Scala:

```
object Solution {
def maxPoints(points: Array[Array[Int]]): Int = {

}
}
```

Elixir:

```
defmodule Solution do
@spec max_points(points :: [[integer]]) :: integer
def max_points(points) do

end
end
```

Erlang:

```
-spec max_points(Points :: [[integer()]]) -> integer().
max_points(Points) ->
.
```

Racket:

```
(define/contract (max-points points)
(-> (listof (listof exact-integer?)) exact-integer?)
)
```

Solutions

C++ Solution:

```
/*
* Problem: Max Points on a Line
* Difficulty: Hard
* Tags: array, math, hash
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) for hash map
*/

class Solution {
public:
int maxPoints(vector<vector<int>>& points) {

}
};
```

Java Solution:

```
/**
* Problem: Max Points on a Line
* Difficulty: Hard
* Tags: array, math, hash
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) for hash map
*/

class Solution {
public int maxPoints(int[][] points) {

}
```

```
}
```

Python3 Solution:

```
"""
Problem: Max Points on a Line
Difficulty: Hard
Tags: array, math, hash

Approach: Use two pointers or sliding window technique
Time Complexity: O(n) or O(n log n)
Space Complexity: O(n) for hash map
"""

class Solution:
def maxPoints(self, points: List[List[int]]) -> int:
# TODO: Implement optimized solution
pass
```

Python Solution:

```
class Solution(object):
def maxPoints(self, points):
"""
:type points: List[List[int]]
:rtype: int
"""
```

JavaScript Solution:

```
/**
* Problem: Max Points on a Line
* Difficulty: Hard
* Tags: array, math, hash
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* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) for hash map
*/

/**
```

```
* @param {number[][]} points
* @return {number}
*/
var maxPoints = function(points) {

};
```

TypeScript Solution:

```
/**
* Problem: Max Points on a Line
* Difficulty: Hard
* Tags: array, math, hash
*
* Approach: Use two pointers or sliding window technique
* Time Complexity: O(n) or O(n log n)
* Space Complexity: O(n) for hash map
*/

function maxPoints(points: number[][]): number {

};
```

C# Solution:

```
/*
* Problem: Max Points on a Line
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* Tags: array, math, hash
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* Time Complexity: O(n) or O(n log n)
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*/

public class Solution {
public int MaxPoints(int[][] points) {

}
}
```

C Solution:

```
/*
* Problem: Max Points on a Line
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* Time Complexity: O(n) or O(n log n)
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*/

int maxPoints(int** points, int pointsSize, int* pointsColSize) {

}
```

Go Solution:

```
// Problem: Max Points on a Line
// Difficulty: Hard
// Tags: array, math, hash
//
// Approach: Use two pointers or sliding window technique
// Time Complexity: O(n) or O(n log n)
// Space Complexity: O(n) for hash map

func maxPoints(points [][]int) int {

}
```

Kotlin Solution:

```
class Solution {
fun maxPoints(points: Array<IntArray>): Int {

}
}
```

Swift Solution:

```
class Solution {
func maxPoints(_ points: [[Int]]) -> Int {
```

```
}
}
```

Rust Solution:

```
// Problem: Max Points on a Line
// Difficulty: Hard
// Tags: array, math, hash
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// Approach: Use two pointers or sliding window technique
// Time Complexity: O(n) or O(n log n)
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impl Solution {
pub fn max_points(points: Vec<Vec<i32>>) -> i32 {

}
}
```

Ruby Solution:

```
# @param {Integer[][]} points
# @return {Integer}
def max_points(points)

end
```

PHP Solution:

```
class Solution {

/**
* @param Integer[][] $points
* @return Integer
*/
function maxPoints($points) {

}
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```

Dart Solution:

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class Solution {
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