

149. Max Points on a Line

题目描述: <https://leetcode.com/problems/max-points-on-a-line/>

给定二维平面上的多个点，判断在一条线上最多的点有多少个。

解题思路:

$O(n^2)$

代码:

```

/**
 * Definition for a point.
 * struct Point {
 *     int x;
 *     int y;
 *     Point() : x(0), y(0) {}
 *     Point(int a, int b) : x(a), y(b) {}
 * };
 */
class Solution {
public:
    int maxPoints(vector<Point>& points) {
        int n = points.size();
        if(points.size() == 0 || points.size() == 1) return points.size();
        int m1 = INT_MIN;
        for(int i = 0; i < n; i++) {
            unordered_map<double, int> mp;
            int samex = 1;
            int samep = 0;
            for(int j = 0; j < n; j++) {
                if(j == i) continue;
                if(points[i].x == points[j].x && points[i].y == points[j].y) {
                    samep++;
                }
                if(points[i].x == points[j].x) {
                    samex++;
                }
                else {
                    double k = (points[i].y-points[j].y)*1.0/((points[i].x-points[
j].x)*1.0);
                    if(mp.find(k) != mp.end()) {
                        mp[k]++;
                    }
                    else {
                        mp[k] = 2;
                    }
                    m1 = max(m1, samep + mp[k]);
                }
            }
            m1 = max(m1, samex);
        }
        return m1;
    }
};

```