# Problem 1584: Min Cost to Connect All Points

## Problem Information

**Difficulty:** Medium
**Acceptance Rate:** 69.87%
**Paid Only:** No
**Tags:** Array, Union Find, Graph, Minimum Spanning Tree

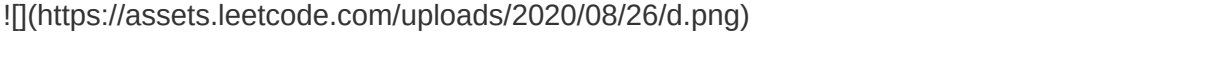
## Problem Description

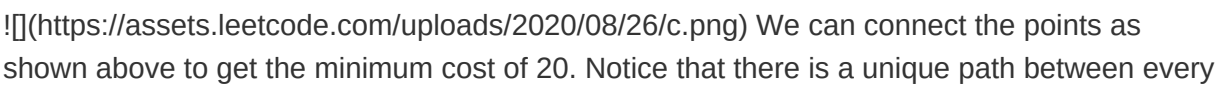
You are given an array `points` representing integer coordinates of some points on a 2D-plane, where `points[i] = [xi, yi]`.

The cost of connecting two points `[xi, yi]` and `[xj, yj]` is the **manhattan distance** between them: `|xi - xj| + |yi - yj|`, where `|val|` denotes the absolute value of `val`.

Return _the minimum cost to make all points connected._ All points are connected if there is **exactly one** simple path between any two points.

**Example 1:**



**Input:** points = [[0,0],[2,2],[3,10],[5,2],[7,0]] **Output:** 20 **Explanation:**  We can connect the points as shown above to get the minimum cost of 20. Notice that there is a unique path between every pair of points.

**Example 2:**

**Input:** points = [[3,12],[-2,5],[-4,1]] **Output:** 18

**Constraints:**

* `1 <= points.length <= 1000` * `-106 <= xi, yi <= 106` * All pairs `(xi, yi)` are distinct.

## Code Snippets

**C++:**

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

}
};
```

**Java:**

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

}
}
```

**Python3:**

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