

1. Use union-find data structure. $O(k \cdot \alpha(k)) = O(nm \cdot \alpha(nm))$.
 2. This is the incremental dynamic graph connectivity problem, when the graph is planar (grid), and the final resulting planar graph is given upfront. $O(k)$ [1].
- The problem is offline, so we can also use decremental connectivity. $O(k)$ [2].

162 / 162 test cases passed.

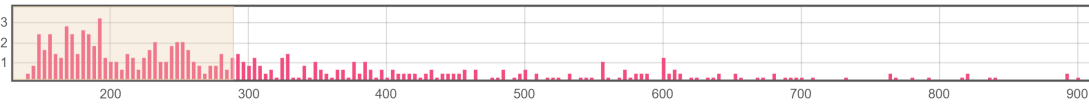
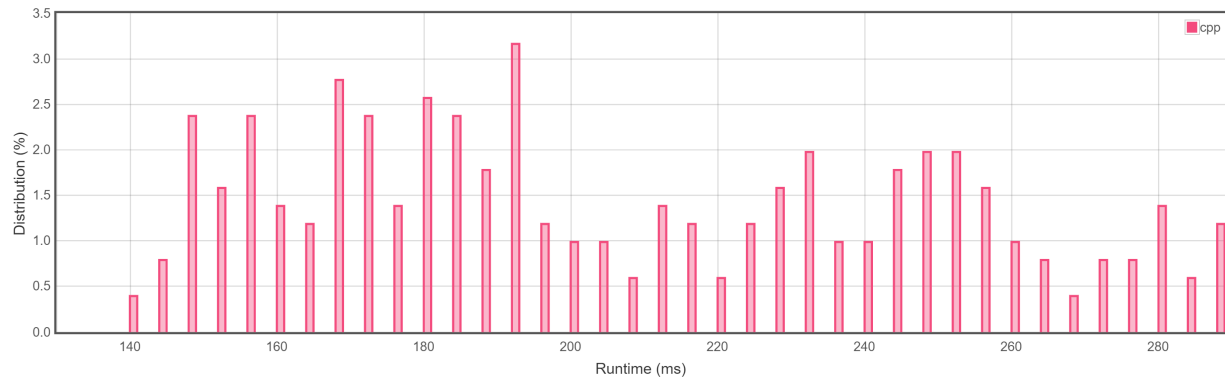
Runtime: 128 ms

Memory Usage: 34.7 MB

Status: **Accepted**

Submitted: 0 minutes ago

Accepted Solutions Runtime Distribution



Runtime: 128 ms, faster than 100.00% of C++ online submissions for Number of Islands II.

Memory Usage: 34.7 MB, less than 97.43% of C++ online submissions for Number of Islands II.

References

- [1] Jens Gustedt. Efficient union-find for planar graphs and other sparse graph classes. *Theoretical Computer Science*, 203(1):123–141, 1998.
- [2] Jakub Lacki and Piotr Sankowski. Optimal decremental connectivity in planar graphs. In Ernst W. Mayr and Nicolas Ollinger, editors, *32nd International Symposium on Theoretical Aspects of Computer Science, STACS 2015, March 4-7, 2015, Garching, Germany*, volume 30 of *LIPIcs*, pages 608–621, 2015.