

1. offline, reduce to sorting. $O(\text{sort}(n))$.
2. reduce to one-dimensional range reporting. static: $O(1)$ query time [1], dynamic: $O(\log \log w)$ query time [2]. but the preprocessing time is not faster than sorting.

References

- [1] Stephen Alstrup, Gerth Brodal, and Theis Rauhe. Optimal static range reporting in one dimension. In *Proceedings of the thirty-third annual ACM symposium on Theory of computing*, pages 476–482, 2001.
- [2] Christian Worm Mortensen, Rasmus Pagh, and Mihai Patrăşcu. On dynamic range reporting in one dimension. In *Proceedings of the thirty-seventh annual ACM symposium on Theory of computing*, pages 104–111, 2005.