**1. Counting Sort**

**Stability**

* **Stable: Maintains the relative order of equal elements if implemented correctly.**

**Complexity**

* **Time Complexity: O(n + k), where nn is the number of elements and kk is the range of values.**
* **Space Complexity: O(n + k) due to the need for count and output arrays.**

**Pros**

* **Linear Time: Highly efficient when the value range is not significantly larger than the number of elements.**
* **Simple and Easy to Implement.**
* **Stable.**