

Criteria for analysis

- ① No. of comparison.
- ② No. of swaps
- ③ Adaptive
- ④ Stable
- ⑤ Extra memory.

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|-----------------------|-----------------|-------------------------|--------------------|
| 1. Bubble Sort |] $O(n^2)$ |] Comparison based sort | |
| 2. Insertion Sort | | | |
| 3. Selection Sort | | | |
| 4. Heap Sort |] $O(n \log n)$ | | |
| 5. Merge Sort | | | |
| 6. Quick Sort | | | |
| 7. Tree Sort | | | |
| 8. Shell Sort | | | |
| 9. Count Sort |] $O(n)$ | |] Index based sort |
| 10. Bucket / bin sort | | | |
| 11. Radix Sort | | | |

Stable

Name	A	B	C	D	E	F	G
marks	5	8	6	4	6	7	10

↓
9th after sorting
C's 6 come before
E's 6 then stable

Name	D	A	C	E	F	B	G
marks	4	5	6	6	7	8	10

Bubble Sort

* Adaptive

* Stable

In k th pass

k largest element

Selection Sort

$$\text{No. of comparison} = \frac{n(n-1)}{2}$$

$$\text{No. of swap} = O(n^2)$$

In k th pass

k smallest element