

**Bubble**

- worst  $O(n^2)$
- best  $O(n)$
- n-1 max pass
- sensitive

9536

5936

5396

5369

3569

3569

①

②

③

**Exchange**

- $O(n^2)$
- n-1 max pass
- not sensitive
- swaps [i] w/ next smallest

9536

5936

3956

3596

3569

①

②

③

**Selection**

- $O(n^2)$
- n-1 max pass
- not sensitive
- swaps [i] w/ min value

9536

3596

3596

3596

3569

①

②

③

**Insertion**

- worst  $O(n^2)$
- best  $O(n)$
- n-1 max pass
- sensitive
- [i] selects
- [j] inserts

9536

5936

3596

3569

**Shell**

- $O(n^{3/2})$
- pass=gap-decrement
- not sensitive

for(k=1);k≤n/9;k=3\*k+1){}

953617124810211

918571031226411

152487369101211

143105861227911

152367489101211

126491253781011

132547689101211

①

②

③

→ insertion sort

**Bucket**

- $O(n)$
- not sensitive

1915619711105

[0] 10

[1] 111

[5] 515

[6] 6

[7] 7

[9] 919

-create sublists by digit

-insertion sort sublists & re-insert each in order

1011151567919

1567910111519

①

②

**Merge**

- $O(n \log n)$
- not sensitive
- \*always left first

1915619711105

1915619711105

1915619711105

1915619711105

151916479105

161519510115510

1567910111519

1567910111519

①

②

↔ = swap

→ = no swap

**\*use ptrs**

**\*eval LCV once**

**\*inline swap**