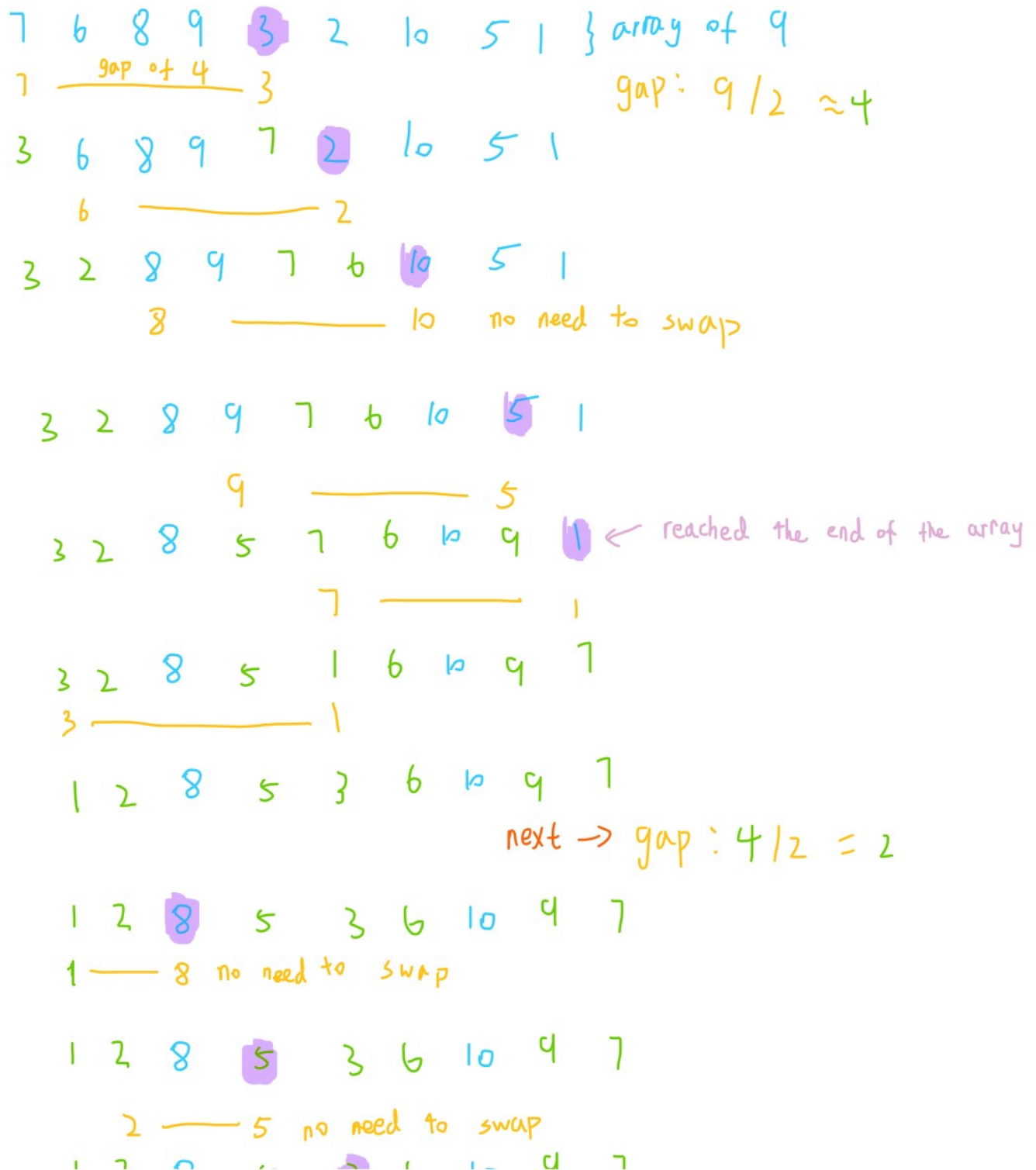


Shell Sort

2022年10月21日 15:29

Shell sort is an expansion of insertion sort. The fundamental sorting mechanism of both sorts are the same. However, shell sort is faster than insertion sort.

Insertion sort involves swapping the adjacent items in the array, meaning an item can only be moved one place to the left or one place to the right at a time. Therefore, if the smallest item happens to be at the end of the array of size N , then, it will take this item $N-1$ swaps to get to where it belongs.



2 — 5 no need to swap
1 2 8 5 3 6 10 4 7

8 — 3
1 2 3 5 8 6 10 4 7

1 — 3 no need to swap

1 2 3 5 8 6 10 4 7

5 — 6 no need to swap

1 2 3 5 8 6 10 4 7

8 — 10 no need to swap

1 2 3 5 8 6 10 4 7

6 — 9 no need to swap

1 2 3 5 8 6 10 4 7 ← reached the end of the array

10 — 7

1 2 3 5 8 6 7 9 10

next → gap: $2/2 = 1$

(Insertion sort)

1 2 3 5 8 6 7 9 10

1 — 2 no need to swap

1 2 3 5 8 6 7 9 10

2 — 3 no need to swap

1 2 3 5 8 6 7 9 10

3 — 5 no need to swap

1 2 3 5 8 6 7 9 10

5 — 8 no need to swap

1 2 3 5 8 6 7 9 10

1 2 3 5 8 6 7 9 10

8 — 6

1 2 3 5 6 8 7 9 10

5 — 6 no need to swap

1 2 3 5 6 8 7 9 10

8 — 7

1 2 3 5 6 7 8 9 10

6 — 7 no need to swap

1 2 3 5 6 7 8 9 10

8 — 9 no need to swap

1 2 3 5 6 7 8 9 10

9 — 10 no need to swap



x