

sorting algorithm
 ↳ ascending order → small → large
 ↳ descending order → large → large .

[S_A , 3, 2 S_B]

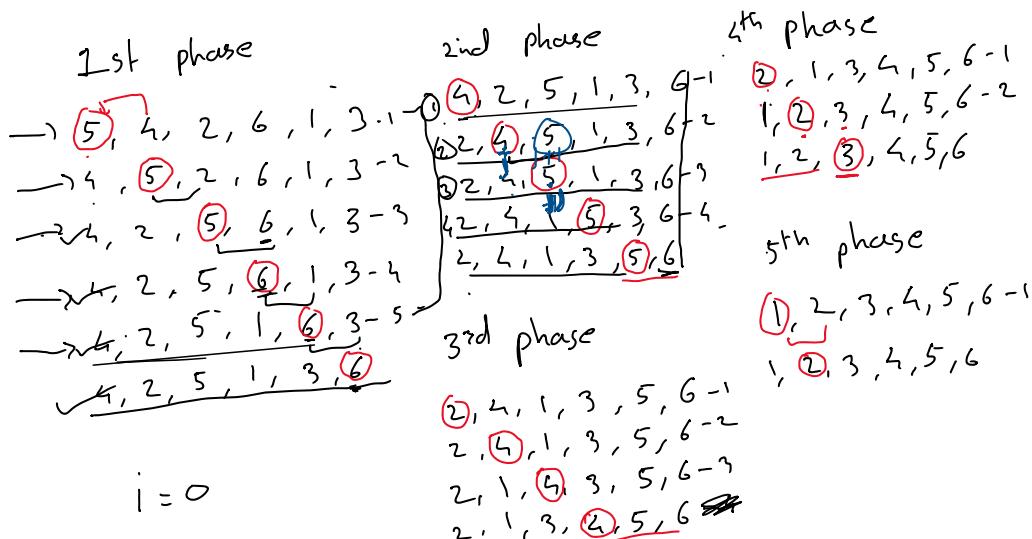
$[2, 3, \underline{S_A}, S_B] \rightarrow$ stable →

$[2, 3, S_B, S_A] \rightarrow$ unstable →

Bubble sort
 Selection sort
 Insertion sort

bubble sort

— $[5, 4, 2, 6, 1, 3]$



$$\begin{aligned} n-1 & \\ 6-0-1 &= 5 \\ n-i-1 & \\ j=0; j < n-i-1 & \end{aligned}$$

```

for (i=0; i<n-1; i++) {
    for (j=0; j<n-i-1; j++) {
        if (arr[j] > arr[j+1]) {
            int temp = arr[j];
            arr[j] = arr[j+1];
            arr[j+1] = temp;
        }
    }
}
  
```

{

{

{

selection sort

[2, 4, 7, 8, 10]

[0] = 7

[7, 2, 4, 8, 10]
i j j j j

current = ∅ x 3

i = ∅ x 3

j = i + 1
x x 4

[2, 7, 4, 8, 10]
— i j j j j

[2, 4, 7, 8, 10]
— i j j j j

[2, 4, 7, 8, 10]
— i j j j j
 i j
 i j

for(int i=0; i<n-1; i++) {

 int current = i

 for(int j=i+1; j<n; j++) {

 if(arr[j] < arr[current]) {

 current = j

}

}

 temp = arr[i]

 arr[i] = arr[current]

 arr[current] = temp

}

$O(n^2)$

$O(n^2)$