Bubble sort

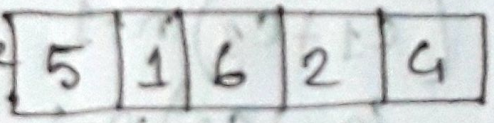
① Sorting with the first element (Index = 0) compare the current element with the next element of the array.

② If the current element is greater than the next element of the array, swap them.

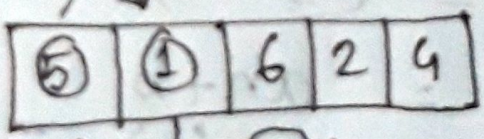
③ If the current element is less than the next element, Repeat ①.

Lets consider array with values {5, 1, 6, 2, 4}

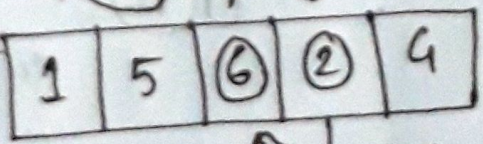
5 > 1, so interchange



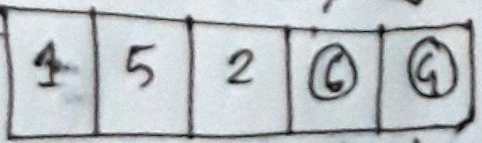
5 > 6, No swapping

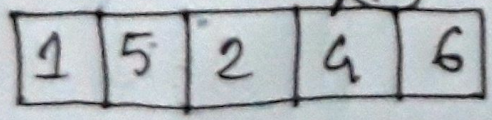


6 > 2, interchange



6 > 4, interchange





$$T(n) = (c_1 + c_3)n - 1 + c_3(1+2+3\ldots+n-1)$$

$$= (c_1 + c_3)n - 1 + c_3 \cdot n(n-1)/2$$

$$= a n^2 + b^2 + c$$

$$= O(n^2)$$

Average case: $O(n^2)$

Best case: when the array is already sorted. The inner loop won't execute.

$$T(n) = (c_1 + c_3)n - 1$$

$$= (c_1 + c_3)n - 1$$

$$= an + b$$

$$= O(n)$$