

→ Selection-Sort Correctness:

Pseudo Code:

```
n = X.length
for i = 0 to n-2
    min index = i
    for j = i+1 to n-1
        if X[j] < X[min index]
            min index = j
    if min index ≠ i
        swap X(i) with X(min index)
```

Base(case) :

The Sorted portion of The array is initially Empty.

~~Maintain~~ Maintenance :

after 'k' iterations, The 1st k elements of array → Sorted
Remaining → unsorted.

It will swap it with first unsorted element
∴ Extending The Sorted portion by 1 element

Termination

At point where unsorted portion is Empty
The loop run 'n-1' times & all elements are
in Their correct position.

Correctness:

Places the min element from unsorted in its correct position. This ensures the sorted portion to unsorted in maintaining the order of the array.

Time Complexity:

It is $O(n^2)$ \rightarrow Worst Case.

