

Selection Sort Correctness Argument:

- a) Selection Sort works by repeatedly finding the smallest element in the unsorted portion and swapping it with the current position.
- b) Since it always moves the smallest remaining element into its correct place, and never disturbs sorted elements, it is guaranteed to produce a sorted array in $O(n^2)$ time complexity.
- c) Finding the smallest element in the unsorted section and moving it to the proper location is known as invariant maintenance.
- d) No Sorted Elements Are Rearranged: The elements that have been sorted stay in their original places.
- e) Termination Guarantees Arrangement: Until the full list is sorted, the loop keeps going.