Correction of Selection sort

Selection Sort is an algorithm to sort numbers in an array. It works by going through the array multiple times and picking the smallest number in the array, then putting it where it fits. This process is repeated until everything is sorted.

Understanding Selection Sort Correctness

For an algorithm to be **correct**, it must:

1. **Terminate** (always finish in finite steps).
2. **Produce the right output** for **all possible inputs**.
3. **Follow the intended logic**.

Fixed correct Implement

```
def selection_sort(arr):
    n = len(arr)
    for i in range(n - 1):
        minpos = i
        for j in range(i + 1, n):
            if arr[j] < arr[minpos]:
                minpos = j
        arr[i], arr[minpos] = arr[minpos], arr[i]  # Swap


arr = [6, 4, 8, 2, 9, 5]
selection_sort(arr)
print('Sorted List:', arr)
```

Correctness Argument

To prove **Selection Sort is correct**, we use an **invariant-based proof**:

1. **Loop Invariant:** After the ith iteration, the first i + 1 elements are in sorted order.
2. **Base Case (i = 0):** The first iteration finds the smallest element and places it in the first position.
3. **Inductive Step:** Assuming the first i elements are sorted, the next iteration places the i+1th smallest element in its correct position.
4. **Termination:** When i = n - 1, all elements are in the correct position.