Selection Sort in C

Selection Sort is a simple sorting algorithm that repeatedly finds the minimum element from an unsorted array and swaps it with the first element of the unsorted part.

Algorithm:

1. **Find the minimum element:**
    - Iterate through the unsorted part of the array to find the minimum element.
2. **Swap the minimum element with the first element:**
    - Swap the found minimum element with the first element.
3. **Repeat steps 1 and 2 for the remaining unsorted part.**

C Implementation:

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

Time Complexity:

- **Best Case:** O(n^2)
- **Average Case:** O(n^2)
- **Worst Case:** O(n^2)

Space Complexity: O(1)

Key Points:

- Selection Sort is a simple but inefficient sorting algorithm for large datasets.
- It's not suitable for large datasets as it has a quadratic time complexity.
- It can be useful for small datasets or when memory writes are expensive.