* Sorting Functions:
* Heap Sort (heap\_sort\_count): Builds a max heap and sorts the array by repeatedly moving the largest element to the end and heapifying the reduced heap.
* Bubble Sort (bubble\_sort\_count): Repeatedly swaps adjacent elements if they are out of order.
* Insertion Sort (insertion\_sort\_count): Builds a sorted sublist one element at a time by inserting each element into its correct position.
* Selection Sort (selection\_sort\_count): Finds the smallest element and places it in the correct position for each pass.
* Array Generation:
* Generates random arrays, sorted arrays, and inversely sorted arrays for sizes ranging from 1 to 30.
* Comparison Count:
* Each sorting function counts comparisons made during sorting for performance evaluation.

• Heap Sort:

* Build Heap: O(n)
* Sort: O(n log n)
* Overall: O(n log n)

• Bubble Sort:

* Average Case: O(n^2)

• Insertion Sort:

* Average Case: O(n^2)

• Selection Sort:

* Average Case: O(n^2)