Minor in AI

More on Algorithms II

17 March Notes

Programs used:

def bubble\_sort(num):

    n = len(num)

    for i in range(n-1):

        for j in range(n-i-1):

            if num[j] > num[j+1]:

                num[j], num[j+1] = num[j+1], num[j]

    return num

# Example usage

num = [1, 2, 3, 4, 5, 6, 7, 8]

sorted\_list = bubble\_sort(num)

print("Sorted array:", sorted\_list)

def bubble\_sort(num):

    n = len(num)

    comparisons = 0  # Initialize comparison count

    for i in range(n-1):

        for j in range(n-i-1):

            comparisons += 1

            if num[j] > num[j+1]:

                num[j], num[j+1] = num[j+1], num[j]

    print("Number of comparisons:", comparisons)

    return num

# Example usage

num = num = [1, 2, 3, 4, 5, 6, 7, 8]

sorted\_list = bubble\_sort(num)

print("Sorted array:", sorted\_list)

def bubble\_sort(num):

    n = len(num)

    comparisons = 0  # Initialize comparison count

    for i in range(n - 1):

        swapped = False  # Flag to track swapping

        for j in range(n - i - 1):

            comparisons += 1

            if num[j] > num[j + 1]:

                num[j], num[j + 1] = num[j + 1], num[j]

                swapped = True  # A swap occurred

        if not swapped:

            break

    print("Number of comparisons:", comparisons)

    return num

# Example usage

num = [1, 2, 3, 4, 5, 6, 7, 8]

sorted\_list = bubble\_sort(num)

print("Sorted array:", sorted\_list)

Selection Sort

def selection\_sort(num):

    n = len(num)

    for i in range(n):

        min\_index = i

        for j in range(i + 1, n):

            if num[j] < num[min\_index]:

                min\_index = j

        num[i], num[min\_index] = num[min\_index], num[i]

    return num

# Example usage

num = [64, 25, 12, 22, 11]

sorted\_list = selection\_sort(num)

print("Sorted array:", sorted\_list)