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)
```