Lab-2 Complexity Analysis

**1 Merge**

**1.1 A + B**

Time Complexity: O(m + n)

Space Complexity: O(m + n)

**1.2 A ∪ B**

Time Complexity: O(m + n)

Space Complexity: O(m + n)

**1.3 A ∩ B**

Time Complexity: O(m + n)

Space Complexity: O(m + n)

**2 In-place merge**

Time Complexity: O(n2)

Space Complexity: O(1)

**3 Merge Sort with in-place merge**

Time Complexity: O(n2 log n)

Space Complexity: O(log n)

**4 Median of array**

Time Complexity: O(n) (average)

Space Complexity: O(log n) (average)

**5 Finding first and second minima**

Time Complexity: O(n)

Space Complexity: O(1)

**6 Quick Sort with pivot as almost the median**

Time Complexity: O(n log n) (average)

Space Complexity: O(log n) (average)

By Arnav Jain

EE220002018