**East West University**

**Department of Computer Science and Engineering**

**Course: CSE246 Algorithm Topic: Divide and Conquer Lab: 01**

1. Binary search: Given a sorted array of n integers and a target value, determine if the target exists in the array in logarithmic time using the binary search algorithm. If the target exists in the array, print the index of it.

|  |  |
| --- | --- |
| Sample Input | Sample output |
| Data: 2, 3, 5, 7, 9  Target: 7 | Found at index: 3 |
| Data: 6, 7, 12  Target: 15 | Not Found |

1. Merge Sort: Given an integer array, sort it using the merge sort algorithm.

|  |  |
| --- | --- |
| Sample input | Sample output |
| Data: 2, 3, 7,5 | 2 3 5 7 |
| Data: 12, 6, 7 | 1. 7 12 |

1. Quick Sort: Given an integer array, sort it using the merge sort algorithm.

|  |  |
| --- | --- |
| Sample input | Sample output |
| Data: 2, 3, 7,5 | 2 3 5 7 |
| Data: 12, 6, 7 | 6 7 12 |

1. Closet pair of points: We are given an array of n points in the plane, and the problem is to find out the closest pair of points in the array.

|  |  |
| --- | --- |
| Sample input | Sample output |
| {2, 3}, {12, 30}, {40, 50}, {5, 1}, {12, 10}, {3, 4} | The smallest distance is 1.41421 |