**Design and Analysis of Algorithm**

**Experiment No. : 2**

**Write a program to implement Binary Search using Recursion**

Experiment No. 2

1. **Aim:** Write a program to implement Binary Search using Recursion.
2. **Algorithm**

**Binary Search:**

Binary Search is a searching algorithm used in a sorted array by repeatedly dividing the search interval in half. The idea of binary search is to use the information that the array is sorted and reduce the time complexity to O(Log n). The basic steps to perform Binary Search are:

1. Find the middle element of array. using , middle = initial\_value + end\_value
2. If middle = element, return ‘element found’ and index.
3. if middle > element, call the function with end\_value = middle - 1 .
4. if middle < element, call the function with start\_value = middle + 1 .
5. exit.

Best case time complexity: O(1).

Worst case time complexity: O(log n).

Average case time complexity: O(log n).

1. **Conclusion and Discussion:** Hence we have implemented Linear Search and Binary Search algorithm by using Recursive approach.