**COURSE CODE: DJS22ITC403 DATE:5/10/2023**

**COURSE NAME:** **Design and Analysis of Algorithms CLASS: I1-Batch1**

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**Experiment No.1**

# Aim: Complexity analysis for Linear search and Binary search

# Analysis of Linear Search

# Code:

# #include <stdio.h>

# void main()

# {

# 

# int arr1[5];

# for (int h = 0; h < 5; h++)

# {

# scanf("%d", &arr1[h]);

# }

# int t = 0;

# printf("input size | no.of searches\n");

# while (++t < 5)

# {

# int n = arr1[t];

# int i = 0, j = 0;

# int arr[n];

# int s = -1;

# int count = 0, flag = 0;

# for (i = 0; i < n; i++)

# {

# arr[i] = i \* n;

# }

# for (j = 0; j < n; j++)

# {

# if (s == arr[j])

# {

# count++;

# flag = 1;

# break;

# }

# count++;

# }

# printf("%d\t\t%d\n",arr1[t],count);

# count=0;

# }

# }

# Output:

# 

# Analysis of binary search

# Code:

# #include <stdio.h>

# #include <stdio.h>

# #include <math.h>

# void main()

# {

# int nums[] = {1, 10, 100, 1000, 10000, 100000};

# int table[6];

# int logm[6];

# for (int k = 0; k < 6; k++)

# {

# int n = nums[k];

# int i = 0, j = 0;

# int arr[n];

# int s = 123;

# int start = 0, end = n - 1;

# int mid = (start + end) / 2;

# int count = 0, flag = 0;

# for (i = 0; i < n; i++)

# {

# arr[i] = i \* n;

# }

# while (start <= end)

# {

# if (s == arr[mid])

# {

# count++;

# break;

# flag = 1;

# }

# else if (s > arr[mid])

# {

# start = mid + 1;

# }

# else if (s < arr[mid])

# {

# end = mid - 1;

# }

# mid = (start + end) / 2;

# count++;

# }

# table[k] = count;

# logm[k]=ceil(log(n)/log(2));

# }

# printf("number splits logn");

# for (int i = 0; i < 6; i++)

# {

# printf("\n");

# printf("%d\t%d\t%d", nums[i], table[i], logm[i]);

# printf("\n");

# }

# }

# Output:

# 

**Conclusion:** We implemented analysis of linear search and analysis of binary search in this experiment by comparing their time complexities for each input size and comparison with logn for binary search