



Data Structure and Algorithm (MCA 271)

Lab Practical –

BY

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SUBMITTED TO

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Program Description:

Code of the program

Output: - Paste the o/p of the program.

1. Linear Search : --

```
#include <stdio.h>

int linear_search(int arr[], int size, int target) {
    for (int i = 0; i < size; i++) {
        if (arr[i] == target) {
            return i; // Return the index of the target
        }
    }
    return -1; // Return -1 if the target is not found
}

int main() {
    int arr[] = {5, 3, 8, 4, 2};
    int size = sizeof(arr) / sizeof(arr[0]);
    int target = 4;

    int result = linear_search(arr, size, target);
    if (result != -1) {
        printf("Element found at index: %d\n", result);
    } else {
        printf("Element not found\n");
    }

    return 0;
}
```

Output : --

```
[Running] cd "d:\2MCA\DSA\" && gcc Linear_Search.c -o Linear_Search && "d:\2MCA\DSA\"Linear_Search
Element found at index: 3

[Done] exited with code=0 in 1.099 seconds
```

2. Binary Search : --

```
#include<stdio.h>

// An iterative binary search function
int binarySearch(int arr[], int low, int high, int x){
    while (low <= high)
    {
        int mid = low + (high-low)/2;

        // Check if x is present at mid
        if(arr[mid] == x)
            return mid;

        // If x greater, ignore left half
        if(arr[mid] < x)
            low = mid + 1;

        // If x smaller, ignore right half
        else
            high = mid - 1;
    }
    // If we reach here, then element was not present
    return -1;
}

int main(void){
    int arr[] = {2,3,4,10,40};
    int n = sizeof(arr)/sizeof(arr[0]);
    int x = 10;
    int result = binarySearch(arr,0,n - 1,x);
    if(result == -1) printf("Element is not present in array");
    else printf("Element is present at index %d",result);
}
```

Output : --

```
[Running] cd "d:\2MCA\DSA\" && gcc binary_search.c -o binary_search && "d:\2MCA\DSA\"binary_search  
Element is present at index 3  
[Done] exited with code=0 in 2.359 seconds
```