DAY 4 LAB

1. Write a C program to implement Linear Search Algorithm.

```
#include <stdio.h>
int linearSearch(int arr[], int n, int key) {
   for (int i = 0; i < n; i++) {
      if (arr[i] == key) {
         return i;
      }
   }
   return -1;
}
int main() {
   int arr[] = {12, 45, 23, 67, 54, 33};
   int n = sizeof(arr) / sizeof(arr[0]);
   int key = 67;
   int result = linearSearch(arr, n, key);
   if (result == -1) {
      printf("Element not found\n");
   } else {
      printf("Element found at index: %d\n", result);
   }
   return 0;
}
```

OUTPUT:

Element found at index: 3

2. Write a C program to implement Binary Search Algorithm.

```
#include <stdio.h>
int binarySearch(int arr[], int left, int right, int target) {
   while (left <= right) {
      int mid = left + (right - left) / 2;
      if (arr[mid] == target)
         return mid;
      if (arr[mid] < target)
         left = mid + 1;
      else
         right = mid - 1;
   }
   return -1;
}
int main() {
   int arr[] = {2, 4, 6, 8, 10, 12, 14, 16, 18, 20};
   int n = sizeof(arr) / sizeof(arr[0]);
   int target = 12;
   int result = binarySearch(arr, 0, n - 1, target);
   if (result == -1)
```

```
        printf("Element not found\n");
    else
        printf("Element found at index %d\n", result);
    return 0;
}
```

OUTPUT:
Element found at index 5