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

1. 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