**Assignment 1**

**Aim: Write a program to implement following search techniques in Menu driven format.**

1. **Linear Search**
2. **Binary Search**

**Source Code:**

#include<iostream>

#include<stdlib.h>

#include<windows.h>

#define MAX 20

using namespace std;

int BinarySearch(int arr[], int start, int end, int search\_value)

{

if (end >= start){

int mid = (start + end) / 2;

if (arr[mid] == search\_value)

return mid;

if (arr[mid] > search\_value)

return BinarySearch(arr, start, mid-1, search\_value);

else

return BinarySearch(arr, mid+1, end, search\_value);

}

return -1;

}

void LinearSearch (int arr[], int size, int search\_value)

{

int index, flag;

flag = 0;

for (int i = 0; i < size; i++){

if (arr[i] == search\_value){

index = i;

flag = 1;

break;

}

}

// Shift this to another function

(flag) ? cout << "\n The value " << search\_value << " was found at position "

<< index + 1 << " of the Array." << endl

: cout << "\n The value " << search\_value

<< " does not exist in the Array." << endl;

}

int main()

{

int size, value;

cout << " Enter the size of the Array : ";

cin >> size;

if (size > MAX){

cout << "\n The Array size exceeds the available size." << endl;

exit(0);

}

else{

int arr[size]; // Initializing the Array with the size specified by the User

cout << "\n\n Enter the " << size << " elements of the Array...\n";

for (int i = 0; i < size; i++)

cin >> arr[i];

system("cls");

int choice;

cout << "\n\n Enter the value to be Searched within the Array: ";

cin >> value;

cout << "\n\n ##### SEARCHING ALGORITHMS AVAILABLE #####\n\n";

cout << "1. Linear Search\n"

<< "2. Binary Search\n"

<< "3. EXIT\n\n";

cout << " Enter your choice: ";

cin >> choice;

switch(choice){

case 1:

LinearSearch(arr, size, value);

break;

case 2:{

int search\_result = BinarySearch(arr, 0, size, value);

(search\_result == -1) ? cout << "\n\n Specified element is not present in the Array." << endl

: cout << "\n\n The value " << value << " found at position "

<< search\_result+1 << " of the Array." << endl;

break;

}

case 3:{

cout << "\n\n Goodbye!" << endl;

exit(0);

break;

}

}

}

return 0;

}

**Output:**







