**Assignment 3**

**Aim: Write a program to perform Interpolation Search on a user defined Array.**

**Source Code:**

#include<iostream>

#include<stdlib.h>

#define MAX 20

using namespace std;

int InterpolationSearch(int arr[], int size, int value)

{

int low = 0, high = (size - 1);

while (low <= high && value >= arr[low] && value <= arr[high]){

if (low == high){

if (arr[low] == value)

return low;

return -1;

}

int pos = low + (((high - low) / (arr[high] - arr[low])) \* (value - arr[low]));

if (arr[pos] == value)

return pos;

if (arr[pos] < value)

low = pos + 1;

else

high = pos - 1;

}

return -1;

}

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");

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

cin >> value;

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

(search\_result != -1) ? cout << "\n\n The value " << value << " found at position "

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

: cout << "\n\n Specified element is not present in the Array." << endl;

}

return 0;

}

**Output:**



