**Experiment # 03**

**OBJECTIVE:**

To become familiar with Binary Search

**Theory:**

**Binary Search:**

Binary search quicker method of searching for value in the array .binary search is very quick but it can only search an sorted array .it cannot be applied on an unsorted array .

**Algorithm for Binary Search:**

* It locates the middle element of Array and compares with the search number .
* If the are equal,search is successful and the index of middle element is returned.
* If they are not equal,it reduces the search to half of the array .
* If the search number is less then middle element it searches the first half of array .otherwise it searches the second half of the array the process continues until the required number is found or loop completes without successful search.

**Lab Tasks**

**Compile and Execute the given code display its ouput.**

**Develop a code that initializes an array of five integers.it inputs an integer from the user**

**And searches the value in the array by using binary search.**

#include<iostream.h>

#include<conio.h>

Void main()

{

Int arr[22,20,44,55,66};

Int n,I,mid,start,end,loc;

loc=-1;

start=0;

end=4;

cout<<”Enter any number to fnd:”;

cin>>n;

while(start<=end)

{

Mid=(start+end)/2;

If(arr[mid]==n)

{

loc=mid;

break;

}

else if (n<arr[mid])

end=mid-1;

else

start=mid+1;

}

If(loc==-1)

Cout<<”not found!”<<endl;

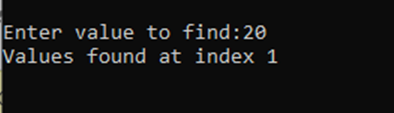
Else

Cout<<:n<<”found at index”<<loc<<endl;

getch();

}

**OUTPUT:**



**QUESTION NUMBER : 01:**

**Compile and Execute the given code display its ouput.**

**Answer :**

**You will find your answer in above Example .**

**QUESTION NUMBER : 02:**

**Develop a code that initializes an array of five integers.it inputs an integer from the user**

**And searches the value in the array by using binary search.**

**PROGRAM:**

#include <iostream>

#include<conio.h>

using namespace std;

int main()

{

int arr[5]={22,33,44,55,66};

int n,i,mid,start,end,loc;

loc=-1;

start=0;

end=4;

cout<<" Enter any number to find:";

cin>>n;

while(start<=end)

{

mid=(start+end)/2;

if(arr[mid]==n)

{

loc=mid;

break;

}

else if (n<arr[mid])

end=mid-1;

else

start=mid+1;

}

if(loc==-1)

cout<<" not found!"<<endl;

else

cout<<n<<":"<<" found at index=["<<loc<<"]"<<endl;

getch();

}

**OUTPUT:**

