**Assignment No:-**

**Assignment Name**:- **Write a program for searching element form given array using binary search for n=1000,2000,3000 find exact time of execution.**

**Name:- WARKE PURVA DILIP.**

**Roll No:- 136.**

#include<iostream.h>

#include<conio.h>

#include<stdlib.h>

#include<timer.h>

class LIST

{

int n,\*A;

public:

LIST(int);

void SORT();

void BIN\_SRCH(int,int &);

void BIN\_SRCH1(int,int &);

void DISPLAY();

};

LIST::LIST(int par)

{

n=par;

A=new int[n+1];

for(int i=1;i<=n;i++)

A[i]=random(1000);

}

void LIST::BIN\_SRCH(int x,int &j)

{

int low,high,mid;

low=1;high=n;

while(low<=high)

{

mid=(low+high)/2;

if(x < A[mid])

high=mid-1;

else

if(x > A[mid])

low=mid+1;

else

{

j=mid;

return;

}

}

}

void LIST::BIN\_SRCH1(int x,int &j)

{

int low,high,mid;

low=1;high=n+1;

while(low<high-1)

{

mid=(low+high)/2;

if(x < A[mid])

high=mid;

else

low=mid;

}

if(x==A[low])

j=low;

else

j=0;

}

void LIST::DISPLAY()

{

cout<<"\n List ele are :\n";

for(int i=1;i<=n;i++)

cout<<A[i]<<" ";

}

void LIST::SORT()

{

for(int i=1;i<=n-1;i++)

for(int j=1;j<=n-i;j++)

if( A[j]>A[j+1] )

{

int t=A[j];A[j]=A[j+1];A[j+1]=t;

}

}

void main()

{

Timer T;

int x,size,pos;

cout<<"\nEnter size of list : ";

cin>>size;

LIST obj(size);

clrscr();

obj.DISPLAY();

obj.SORT();

obj.DISPLAY();

cout<<"\nEnter ele to srch : ";

cin>>x;

T.start();

obj.BIN\_SRCH1(x,pos);

T.stop();

if(pos)

cout<<"\nele "<<x<<" is found at "<<pos;

else

cout<<"\nele not found ";

cout<<"\nTime taken to search is "<<T.time();

getch();

}