**ASSIGNMENT NO.**

NAME: SHRUTI DILIP BHUJANGE

CLASS: BE COMP-1 ROLL NO.: 402006

PROGRAM:

#include<stdio.h>

#include<omp.h>

void InsertionSort(int a[],int n);

void BinarySearch(int a[],int bottom,int top,int num);

int main()

{

int a[20],n,num,i,j,mid, top, bottom;

double start,finish;

printf("Enter the number of elements in an array: ");

scanf("%d", &n);

printf("\nEnter the elements of array: \n");

for (i=0;i<n;i++)

scanf("%d", &a[i]);

start=omp\_get\_wtime();

InsertionSort(a,n);

printf("\nSorted array is : \n");

for (i=0;i<n;i++)

printf("%d\t",a[i]);

printf("\n\nEnter number to be searched : ");

scanf("%d", &num);

top = n - 1;

bottom = 0;

BinarySearch(a,bottom,top,num);

finish=omp\_get\_wtime();

printf("\nRequired time is %f seconds.\n", finish - start);

return 0;

}

void InsertionSort(int a[],int n)

{

int i,j,temp;

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

{

temp=a[i];

for(j=i-1;j>=0 && a[j]>temp;j--)

{

a[j+1]=a[j];

}

a[j+1]=temp;

}

}

void BinarySearch(int a[],int bottom,int top,int num)

{

int mid,tid;

while (num != a[mid] && bottom <= top)

{

mid = (top + bottom)/2;

#pragma omp parallel sections

{

#pragma omp section

{

tid = omp\_get\_thread\_num();

printf("Thread %d is checking if required number is less than mid (%d)\n",tid,a[mid]);

if (num < a[mid])

top = mid - 1;

}

#pragma omp section

{

tid = omp\_get\_thread\_num();

printf("Thread %d is checking if required number is greater than mid (%d)\n",tid,a[mid]);

if (num > a[mid])

bottom = mid + 1;

}

}

}

if (num == a[mid])

printf("\nThe number is found at index: %d\n", mid);

else

printf("\nThe number is not found.\n");

}