**Program-5**

**Sort a given set of N integer elements using Insertion Sort technique and compute  
its time taken.**

#include <stdio.h>

#include<stdlib.h>

#include<time.h>

int n;

void insertion\_sort(int arr[n])

{

int i,j,temp;

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

{

temp=arr[i];

j=i-1;

while(j>=0 && arr[j]>temp)

{

arr[j+1]=arr[j];

j--;

}

arr[j+1]=temp;

}

}

int main()

{

  double start, end;

printf("Enter the no of elements\n");

scanf("%d",&n);

int arr[n],i;

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

{

arr[i]=rand()%100;

}

printf("the unsorted elements are:\n");

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

{

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

}

printf("\nthe sorted list is\n");

start=clock();

insertion\_sort(arr);

end=clock();

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

printf("%d \n",arr[i]);

  printf("\nTime taken by insertion sort for %d elements : %f\n", n, ((double)(end - start) / CLOCKS\_PER\_SEC));

}