```c
#include <stdio.h>
#include <process.h>
#include <time.h>
#include <stdlib.h>

void insertion_Sort(int a[],int n)
{
  int i,j;
  int y;
for (i=1;i<n;i++)
{
  y=a[i];
  j=i-1;
while(j>=0&&a[j]>y)
{
  a[j+1]=a[j];
  j=j-1;
}
a[j+1]=y;
}
printf("\nSorted Array :\n ");
for(i=0;i<n;i++)
{
   printf("%d\t",a[i]);
}
}

int main()
{
    int n,i;
    int c,d;
    srand(time(0));
    printf("Enter the No: of elements :");
    scanf("%d",&n);
    int a[n];
    for(i=0;i<n;i++)
    {
        a[i]=rand()%1000;
```

```c
18      }
19    a[j+1]=y;
20    }
21    printf("\nSorted Array :\n ");
22    for(i=0;i<n;i++)
23    {
24       printf("%d\t",a[i]);
25    }
26    }
27
28    int main()
29    {
30        int n,i;
31        int c,d;
32        srand(time(0));
33        printf("Enter the No: of elements :");
34        scanf("%d",&n);
35        int a[n];
36        for(i=0;i<n;i++)
37        {
38            a[i]=rand()%1000;
39        }
40        printf("\nThe Array elements are :\n");
41        for(i=0;i<n;i++)
42        {
43           printf("%d\t",a[i]);
44        }
45        clock_t t;
46        double cpu_time;
47        t=clock();
48        insertion_Sort(a,n);
49        for (c = 1; c <= 5000; c++) for (d = 1; d <= 5000; d++) { }
50            t = clock() - t;
51        cpu_time=((double)t)/CLOCKS_PER_SEC;
52        printf("\nTime taken :%f sec\n", cpu_time);
53        return 0;
54    }
55
```

```
Enter the No: of elements :100

The Array elements are :
744      39       871      541      228      955      230      595      575      940      564      698      965      390      738      478      551      142      710      974
         382      451      220      908      573      552      828      800      10       487      446      877      605      448      28       3        428      10       110
         855      974      121      796      912      278      529      551      163      227      826      113      322      822      940      183      768      395      469
         275      864      980      873      943      614      202      57       895      630      549      503      382      453      894      113      916      501      667
         772      838      220      339      242      806      958      987      247      413      434      208      49       998      771      333      998      877      696
         103      51       576      70
Sorted Array :
 3       10       10       28       39       49       51       57       70       103      110      113      113      121      142      163      183      202      208      220
         220      227      228      230      242      247      275      278      322      333      339      382      382      390      395      413      428      434      446
         448      451      453      469      478      487      501      503      529      541      549      551      551      552      564      573      575      576      595
         605      614      630      667      696      698      710      738      744      768      771      772      796      800      806      822      826      828      838
         855      864      871      873      877      877      894      895      908      912      916      940      940      943      955      958      965      974      974
         980      987      998      998
Time taken :0.061000 sec


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Press any key to continue . . . _
```

```
Enter the No: of elements :200

The Array elements are :
87      742     833     53      146     277     358     911     588     753     802     323     19      50      387     738     392     479     327     696
        594     318     913     544     789     844     2       43      695     999     865     11      803     210     910     12      906     745     155
        421     198     582     596     115     89      83      241     759     350     617     753     137     381     736     82      749     285     720
        846     109     901     120     967     751     211     12      367     520     705     852     753     457     981     387     276     874     152
        750     417     444     42      670     683     627     892     759     863     595     629     25      316     938     505     374     756     79
        374     150     859     498     297     464     56      964     921     642     850     768     898     946     420     314     334     237     668
        774     102     273     945     604     455     215     395     931     803     835     135     708     653     894     67      865     953     27
        143     733     602     553     349     661     694     921     90      200     384     960     517     275     509     55      959     72      529
        785     396     415     771     693     185     125     310     717     926     701     857     646     198     637     673     833     61      42
        661     345     210     14      722     214     829     825     288     1       946     373     917     433     118     343     369     565     857
        827     138     131     933     247     945     473     47      786
Sorted Array :
1       2       11      12      12      14      19      25      27      42      42      43      47      50      53      55      56      61      67      72
        79      82      83      87      89      90      102     109     115     118     120     125     131     135     137     138     143     146     150
        152     155     185     198     198     200     210     210     211     214     215     237     241     247     273     275     276     277     285
        288     297     310     314     316     318     323     327     334     343     345     349     350     358     367     369     373     374     374
        381     384     387     387     392     395     396     415     417     420     421     433     444     455     457     464     473     479     498
        505     509     517     520     529     544     553     565     582     588     594     595     596     602     604     617     627     629     637
        642     646     653     661     661     668     670     673     683     693     694     695     696     701     705     708     717     720     722
        733     736     738     742     745     749     750     751     753     753     753     756     759     759     768     771     774     785     786
        789     802     803     803     825     827     829     833     833     835     844     846     850     852     857     857     859     863     865
        865     874     892     894     898     901     906     910     911     913     917     921     921     926     931     933     938     945     945
        946     946     953     959     960     964     967     981     999
Time taken :0.049000 sec


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(program exited with code: 0)

Press any key to continue . . .
```