```c
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
#include<time.h>
void quick_sort(int [] ,int,int);
int partition(int [] ,int,int);

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

    quick_sort(a,0,n-1);
    printf("\nSorted Elements :\n");
    for(i=0;i<n;i++)
    {
        printf("%d\t",a[i]);
    }
    clock_t t;
    double cpu_time;
    t=clock();
    for (c = 1; c <= 5000; c++) for (d = 1; d <= 5000; d++) { }
    t = clock() - t;
    cpu_time=((double)t)/CLOCKS_PER_SEC;
    printf("\nTime taken :%f sec\n", cpu_time);
    return 0;
}
void quick_sort(int a[],int low,int high)
```

```c
37  }
38  void quick_sort(int a[],int low,int high)
39  {
40      int mid;
41      if(low<high)
42      {
43          mid=partition(a,low,high);
44          quick_sort(a,low,mid-1);
45          quick_sort(a,mid+1,high);
46      }
47  }
48
49  int partition(int a[],int low,int high)
50  {
51      int i,j,temp,pivot;
52      pivot=a[low];
53      i=low+1;
54      j=high;
55      while(i<=j)
56      {
57          while(a[i]<=pivot)
58          {
59              i++;
60          }
61          while(a[j]>pivot)
62          {
63              j--;
64          }
65          if(i<j)
66          {
67              temp=a[i];
68              a[i]=a[j];
69              a[j]=temp;
70          }
71      }
72      temp=a[low];
73      a[low]=a[j];
74      a[j]=temp;
```

```c
41          if(low<high)
42          {
43              mid=partition(a,low,high);
44              quick_sort(a,low,mid-1);
45              quick_sort(a,mid+1,high);
46          }
47  }
48
49  int partition(int a[],int low,int high)
50  {
51      int i,j,temp,pivot;
52      pivot=a[low];
53      i=low+1;
54      j=high;
55      while(i<=j)
56      {
57          while(a[i]<=pivot)
58          {
59              i++;
60          }
61          while(a[j]>pivot)
62          {
63              j--;
64          }
65          if(i<j)
66          {
67              temp=a[i];
68              a[i]=a[j];
69              a[j]=temp;
70          }
71      }
72      temp=a[low];
73      a[low]=a[j];
74      a[j]=temp;
75      return j;
76  }
77
```

```
C:\WINDOWS\SYSTEM32\cmd.exe
Enter the No: of elements :100
Array elements :
32      161     973     282     770     170     178     51      191     625     854     81      259     39      169     867     174     140     250     882
        46      643     486     138     665     72      138     861     815     532     621     90      47      13      433     788     946     295     684
        181     405     160     882     421     171     691     965     894     706     315     895     538     268     210     127     686     921     826
        259     360     771     796     725     440     314     176     537     707     921     972     54      606     609     112     131     449     572
        913     931     305     469     36      340     546     334     70      901     973     930     258     990     95      132     594     668     42
        535     193     773     0
Sorted Elements :
0       13      32      36      39      42      46      47      51      54      70      72      81      90      95      112     127     131     132     138
        138     140     160     161     169     170     171     174     176     178     181     191     193     210     250     258     259     259     268
        282     295     305     314     315     334     340     360     405     421     433     440     449     469     486     532     535     537     538
        546     572     594     606     609     621     625     643     665     668     684     686     691     706     707     725     770     771     773
        788     796     815     826     854     861     867     882     882     894     895     901     913     921     921     930     931     946     965
        972     973     973     990
Time taken :0.043000 sec


------------------
(program exited with code: 0)

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