```c
#include<stdio.h>
#include<time.h>
void mergesort(int[],int,int);
void merge(int[],int,int,int);
void mergesort(int a[], int low, int high)
{
    int mid;
    if(low<high)
    {
        mid=(low+high)/2;
        mergesort(a,low,mid);
        mergesort(a,mid+1,high);
        merge(a,low,mid,high);
    }
}
void merge(int a[], int low, int mid, int high)
{
    int i,j,k,c[100];
    i=low;
    k=low;
    j=mid+1;
    while(i<=mid && j<=high)
    {
        if (a[i]<a[j])
            c[k++]=a[i++];
        else
            c[k++]=a[j++];
    }
    while(i<=mid)
        c[k++]=a[i++];
    while(j<=high)
        c[k++]=a[j++];
    for(i=low;i<=high;i++)
        a[i]=c[i];
}
void main()
{
    int n, a[100];
    clock_t start,end;
    srand(time(NULL));
    printf("Enter number of elements: ");
    scanf("%d",&n);
    printf("Array Elements: ");
    for(int c=0;c<n;c++)
        a[c]=rand()%100;
    for(int c=0;c<n;c++)
        printf("%d ",a[c]);
    start=clock();
    mergesort(a,0,n-1);
    end=clock();
    printf("\nSorted array: ");
    for(int i=0;i<n;i++)
        printf("%d ",a[i]);
    printf("\nTime Taken:%lf",(double)(end-start)/CLOCKS_PER_SEC);
}
```

```
x        Terminal

Enter number of elements: 5
Array Elements: 49 7 19 5 58
Sorted array: 5 7 19 49 58
Time Taken:0.000001
Process finished.
```

```
×    Terminal                                                                    ☐

Enter number of elements: 50
Array Elements: 70 80 43 39 6 69 45 1 4 43 52 83 93 6 85 96 34 19 91 71 98 21 86 69 84 87 85 3
Sorted array: 1 3 4 6 6 15 18 18 19 21 24 26 28 33 34 38 38 39 43 43 45 52 58 64 65 69 69 70 70
Time Taken:0.000005
Process finished.
```

```
Enter number of elements: 100
Array Elements: 80 87 31 23 67 75 53 97 10 85 22 15 9 85 27 34 56 62 61 23 29 91 24 40 52 77 78 8
Sorted array: 0 0 1 3 4 5 6 6 7 9 9 9 10 10 11 12 12 13 15 15 16 18 19 21 22 22 23 23 23 23 24 24
Time Taken:0.000013
Process finished.
```