SOURCE CODE: BUBBLE SORT:

```
#include<stdio.h>
#include<conio.h>
void main()
{
	int a[10],i,n,j,t;
	clrscr();
	printf("Enter the number of elements\n");
	scanf("%d",&n);
	printf("Enter the elements to be sorted\n");
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	for(i=1;i<n;i++)
	{
		for(j=0;j<n-i;j++)
		{
			if(a[j]>a[j+1])
			{
				t=a[j];
				a[j]=a[j+1];
				a[j+1]=t;
			}
		}
	}
	printf("Elements after sorted\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	getch();
}
```

OUTPUT:

```
Enter the number of elements
10
Enter the elements to be sorted
14 87 96 63 25 21 24 28 26 27
Elements after sorted
14      21      24      25      26      27      28      63      87      96
```

SOURCE CODE: HEAP SORT:

```
#include<stdio.h>
#include<conio.h>
void makeheap(int a[],int n);
void heapsort(int a[],int n);
int main()
{
	int a[10],n,i;
	printf("Enter how many elements\n");
	scanf("%d",&n);
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	makeheap(a,n);
	printf("Before sorting\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	heapsort(a,n);
	printf("\nAfter sorting\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	getch();
	return 0;
}
void makeheap(int a[],int n)
{
	int i,val,f;
	for(i=0;i<n-1;i++)
	{
		val=a[i];
		f=(i-1)/2;
		while(i>0&&a[f]<val)
		{
			a[i]=a[f];
			i=f;
```

```
                f=(i-1)/2;
            }
            a[i]=val;
        }
}
void heapsort(int a[],int n)
{
        int i,s,f,ivalue;
        for(i=n-1;i>0;i--)
        {
            ivalue=a[i];
            a[i]=a[0];
            f=0;
            if(i==1)                s=-1;
            else                    s=1;
            if(i>2&&a[2]>a[1])      s=2;
            while((s>=0)&&(ivalue<a[s]))
            {
                a[f]=a[s];
                f=s;
                s=2*f+1;
                if((s+1<=(i-1))&&(a[s]<a[s+1]))                    s++;
                if(s>(i-1))                                        s=-1;
            }
            a[f]=ivalue;
        }
}
```

OUTPUT:

```
Enter how many elements
10
14 78 85 96 32 21 45 56 58 57
Before sorting
96      85      78      58      32      21      45      14      56      57

After sorting
14      21      32      45      56      57      58      78      85      96
```

SOURCE CODE: INSERTION SORT:

```
#include<stdio.h>
#include<conio.h>
void insertion_sort(int a[],int n);
void main()
{       int a[10],i,n;
        printf("Enter the number of elements\n");
        scanf("%d",&n);
        printf("Enter the elements to be sorted\n");
        for(i=0;i<n;i++)                scanf("%d",&a[i]);
        insertion_sort(a,n);
        printf("Sorted array is\n");
        for(i=0;i<n;i++)
                printf("%d\t",a[i]);
        getch();
}
void insertion_sort(int a[],int n)
{       int i,j,t;
        for(i=1;i<n;i++)
        {
                t=a[i];
                j=i-1;
                while((t<a[j])&&(j>=0))
                {
                        a[j+1]=a[j];
                        j--;
                }       a[j+1]=t;
        }
}
```

OUTPUT:

```
Enter the number of elements
10
Enter the elements to be sorted
14 78 85 96 63 52 54 51 56 58
Sorted array is
14      51      52      54      56      58      63      78      85      96
```

SOURCE CODE: ONE WAY MERGE SORT:

```
#include<stdio.h>
#include<conio.h>
void merge_sort(int a[],int l,int h);
void merge(int a[],int l,int m,int h);
int main()
{
	int a[100],i,n;
	printf("Enter no of elements\n");
	scanf("%d",&n);
	printf("Enter the elements\n");
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	merge_sort(a,0,n-1);
	printf("Sorted array\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	getch();
	return 0;
}
void merge_sort(int a[],int l,int h)
{
	int m;
	if(l<h){
		m=(l+h)/2;
		merge_sort(a,l,m);
		merge_sort(a,m+1,h);
		merge(a,l,m,h);
	}
}
void merge(int a[],int l,int m,int h)
{	int i=l,j=m+1,t=l,c[100],k;
	while((i<=m)&&(j<=h))
	{
```

```
            if(a[i]<a[j])       {
                                        c[t]=a[i];
                                        i++;
                                }
            Else                {
                                        c[t]=a[j];
                                        j++;
                                }                   t++;
        }
        if(i>m)  {
                        while(j<=h)
                        {
                                c[t]=a[j];
                                j++;
                                t++;
                        }
        }
        else     {
                        while(i<=m)
                        {
                                c[t]=a[i];
                                i++;
                                t++;
                        }
            }
            for(k=l;k<t;k++)
                        a[k]=c[k];
}
```

OUTPUT:

```
Enter no of elements
10
Enter the elements
14 78 85 96 63 52 51 54 58 57
Sorted array
14      51      52      54      57      58      63      78      85      96
```

SOURCE CODE: QUICK SORT:

```
#include<stdio.h>
#include<conio.h>
void quick_sort(int a[],int l,int r);
int split(int a[],int l,int r);
int main()
{
	int a[10],i,j,n,t;
	printf("Enter how many elements\n");
	scanf("%d",&n);
	printf("Enter the elements\n");
	for(i=0;i<n;i++)
	{
		scanf("%d",&a[i]);
	}
	quick_sort(a,0,n-1);
	for(i=0;i<n;i++)
	{
		printf("%d\t",a[i]);
	}
	getch();
	return 0;
}
void quick_sort(int a[],int l,int r)
{
	int i;
	if(r>l)
	{
		i=split(a,l,r);
		quick_sort(a,l,i-1);
		quick_sort(a,i+1,r);
	}
}
int split(int a[],int l,int r)
```

```
{
        int i,p,q,t;
        p=l+1;
        q=r;
        i=a[l];
        while(q>=p)
        {
                while((a[p]<i)&&(q>=p))
                        p++;
                while((a[q]>i)&&(q>=p))
                        q--;
                if(q>p)
                {
                        t=a[p];
                        a[p]=a[q];
                        a[q]=t;
                }
        }
        t=a[l];
        a[l]=a[q];
        a[q]=t;
        return q;
}
```

OUTPUT:

```
Enter how many elements
10
Enter the elements
14 78 85 96 63 25 21 54 57 58
14      21      25      54      57      58      63      78      85      96
```

SOURCE CODE: RADIX SORT:

```
#include<stdio.h>
#include<conio.h>
int largest(int a[],int n);
void radix_sort(int a[],int n);
int main()
{
	int a[10],i,j,n,k;
	printf("Enter how many elements\n");
	scanf("%d",&n);
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	radix_sort(a,n);
	printf("The sorted array is\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	getch();
}
int largest(int a[],int n)
{
	int l=a[0],i;
	for(i=1;i<n;i++)
	{	if(a[i]>l)
			l=a[i];
	}
	return l;
}
void radix_sort(int a[],int n)
{
	int bucket[10][10],bucket_count[10];
	int i,j,k,r,nop=0,d=1,l,p;
	l=largest(a,n);
	while(l>0)
	{
```

```
            nop++;
            l=l/10;
        }
        for(p=0;p<nop;p++)
        {
            for(i=0;i<10;i++)
                bucket_count[i]=0;
            for(i=0;i<n;i++)
            {
                r=(a[i]/d)%10;
                bucket[r][bucket_count[r]]=a[i];
                bucket_count[r]+=1;
            }
            i=0;
            for(k=0;k<10;k++)
            {
                for(j=0;j<bucket_count[k];j++)
                {
                    a[i]=bucket[k][j];
                    i++;
                }
            }
            d*=10;
        }
}
```

OUTPUT:

```
Enter how many elements
10
14 78 85 89 63 32 25 21 24 27
The sorted array is
14      21      24      25      27      32      63      78      85      89
```

SOURCE CODE: SELECTION SORT:

```
#include<stdio.h>
#include<conio.h>
void main()
{
	int a[10],i,j,n,t;
	printf("Enter how many elements\n");
	scanf("%d",&n);
	printf("Enter the elements\n");
	for(i=0;i<n;i++)
	{
		scanf("%d",&a[i]);
	}
	for(i=0;i<n-1;i++)
	{
		for(j=i+1;j<=n-1;j++){
					if(a[i]>a[j])
					{
						t=a[i];
						a[i]=a[j];
						a[j]=t;
					}
				}
	}
	printf("Array after sorting is\n");
	for(i=0;i<n;i++)
			printf("%d\t",a[i]);
	getch();
}
```

OUTPUT:

```
Enter how many elements
10
Enter the elements
14 78 85 96 63 25 21 24 27 28
Array after sorting is
14      21      24      25      27      28      63      78      85      96
```

SOURCE CODE: SHELL SORT:

```
#include<stdio.h>
#include<conio.h>
void main()
{
	int a[10],i,j,n,f=1,gs,t;
	printf("Enter n\n");
	scanf("%d",&n);
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	gs=n;
	while(f==1||gs>1)
	{
		f=0;
		gs=(gs+1)/2;
		for(i=0;i<(n-gs);i++)
		{
			if(a[i+gs]<a[i])
			{
				t=a[i+gs];
				a[i+gs]=a[i];
				a[i]=t;
			}
		}
	}
	printf("sorted array\n");
	for(i=0;i<n;i++)
		printf("%d\t",a[i]);
	getch();
}
```

OUTPUT:

```
Enter n
10
78 74 85 96 63 32 31 34 35 38
sorted array
31      32      34      35      38      63      74      78      85      96
```