SEARCHING AND SORTING

LINEAR SEARCH

```
 #include <stdio.h>
int main()
{
    int array[100],search,i,n;
    printf("enter no of elements in an array\n");
    scanf("%d",&n);
    printf("enter %d integrals\n",n);
    for(i=0;i<n;i++)
    scanf("%d",&array[i]);
    printf("enter a no to search\n");
    scanf("%d",&search);
    for(i=0;i<n;i++)
     {
        if(array[i]==search)
        {
          printf("%d is present at location %d\n",search,i+1);
          break;
        }
     }
      if (i==n)
      printf("%d is not present in the array\n",search);
}
```

BINARY SEARCH

```
#include <stdio.h>
int main()
{
	int i,first,last,mid,n,search,a[100];
	printf("enter the no of elements\n");
	scanf("%d",&n);
	printf("enter the elements\n");
	for(i=0;i<n;i++)
	{
		scanf("%d",&a[i]);
	}
	printf("enter the value to be searched\n");
	scanf("%d",&search);
	first=0;
	last=n-1;
	mid=(first+last)/2;
	while(first<=last)
	{
		if(a[mid]<search)
		{
			first=mid+1;
		}
		else if(a[mid]==search)
```

```
                {
                        printf("%d found at location %d\n",search,mid+1);
                        break;
                }
                else
                {
                        last=mid-1;
                }
                        mid=(first+last)/2;
                if(first>last)
                printf("not found %d is not present\n",search);
        }
}
```

BUBBLE SORTING

```
#include <stdio.h>
int main()
{
    int i,j,n,a[20],t;
    printf("enter how many elements you want to enter\n");
    scanf("%d",&n);
    printf("enter the elements\n");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++)
    {
        for(j=0;j<n-(i+1);j++)
        {
            if(a[j]>a[j+1])
            {
                t=a[j];
                a[j]=a[j+1];
                a[j+1]=t;
            }
```

```
        }
    }
    printf("after sorting\n");
    for(i=0;i<n;i++)
    printf("%d\n",a[i]);
   return 0;
}
```

SELECTION SORTING

```
#include <stdio.h>
int main()
{
    int i,j,n,a[20],min,t;
    printf("enter how many elements you want to enter\n");
    scanf("%d",&n);
    printf("enter the elements\n");
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("elements before sorting");
    for(i=0;i<n;i++)
    printf("%5d\n",a[i]);
            printf("selection of sorting begins\n");
            for(i=0;i<n;i++)
    {
            min=i;
      for(j=i+1;j<n;j++)
      {
          if(a[j]<a[min])
          min=j;
```

```
      }
        t=a[i];
        a[i]=a[min];
        a[min]=t;
    }
    printf("after sorting\n");
    for(i=0;i<n;i++)
    printf("%d\n",a[i]);
}
```

INSERTION SORTING

```
#include<stdio.h>
int ins(int [],int );
int main()
{
 int i,n,a[20];
 printf("enter the no. of elements\n");
 scanf("%d",&n);
 printf("enter the elements in an array\n");
 for(i=0;i<n;i++)
 {
  scanf("%d",&a[i]);
 }
 printf("before sorting\n");
 for(i=0;i<n;i++)
 {
 printf("%5d\n",a[i]);
 }
 printf("insertion sorting begins\n");
 ins(a,n);
}
int ins(int x[],int n)
```

```
{
 int s,i,j;
 for(i=1;i<n;i++)
 {
  s=x[i];
  for(j=i-1;j>=0&&s<x[j];j--)
  {
   x[j+1]=x[j];
   x[j]=s;
  }
 }
 printf("after sorting\n");
 for(i=0;i<n;i++)
 printf("%5d",x[i]);
}
```