1.Read n number of values in an array and display it in reverse order.

```
#include <stdio.h>
int main()
{
   int arr[10];
   int size,i;
   printf("Enter size of the array:");
   scanf("%d",&size);
printf("Enter element in array:");
for(i=0;i<10;i++)
{
scanf("%d",&arr[i]);
}
printf("\n Array in reverse order: ");
for(i=size-1;i>=0;i--)
{
   printf("%d\t",arr[i]);
}
   return 0;
}
```

Output:

Enter size of the array :7

Enter element in array: 3 4 5 8 7 0 9

Array in reverse order: 9 0 7 8 5 4 3

2.Find the sum of all elements of the array.

```
#include <stdio.h>
int main()
{
   int arr[10];
   int i,n,sum=0;
   printf("Enter size of the array:");
   scanf("%d",&n);
printf("Enter %d element in array:",n);
for(i=0;i<10;i++)
{
scanf("%d",&arr[i]);
sum +=arr[i];
}
printf("Sum of all elements in the array = %d",sum);

   return 0;
}
```

Output:

Enter size of the array: 4

Enter 4 elemnts in the array: 5 6 7 8

Sum of all elements of array= 26

3.Copy the elements of one array into another array.

```
#include <stdio.h>
int main()
{
   int arr1[10],arr2[10];
   int i,j,n1;
   printf("\nEnter size of the array:");
   scanf("%d",&n1);
printf("Enter the 1st elements one by one\n");
for(i=1;i<=n1;i++)
scanf("%d",&arr1[i]);
for(i=1;i<=n1;i++)
arr2[i] = arr2[i];
printf("The coppied Array elements in the 2nd Array:\n");
for(j=1;j<=n1;j++)
printf("%d",arr2[j]);
   return 0;
}
```

Output:

Enter size of the array:4

Enter the 1st elements one by one

6789

The copied Array elements in the 2nd Array:

6 7 8 9

4.Count a total number of duplicate elements in an array.

```
#include <stdio.h>
int main()
{
   int arr[10],i,j,Size,Count = 0;
   printf("\n Enter Number of elements in an array : ");
   scanf("%d",&Size);
printf("\n Enter %d the elements of an Array : ",Size);
for(i=0;i<Size;i++)
{
scanf("%d",&arr[i]);
}
for(i=0;i<Size;i++)
{
   for(j=i+1;i<Size;j++)
   {
   if(arr[i] == arr[j])
   {
      Count++;
      break;
   } } }
printf("\n Total Number of Duplicate elements in the Array = %d", Count);
   return 0;
}
```

Output:

Enter Number of elements in an array : 5

Enter 6 the elements of an Array : 10 20 10 30 20

Total Number of Duplicate Elements in this Array = 2

5.Find the maximum and minimum element in an array.

```
#include <stdio.h>
int main()
{
   int a[1000],i,n,min,max;
   printf("Enter size of the array : ");
   scanf("%d",&n);
printf("\n Enter elements in array : ");
for(i=0;i<n;i++)
{
scanf("%d",&a[i]);
}
min=max=a[0];
for(i=1;i<n;i++)
{
   if(min>a[i])
   min=a[i];
   if(max<a[i])
   max=a[i];
}
  printf("minimum of array is : %d",min);
  printf("\nmaximum of array is : %d",max);
   return 0;
}
```

Output:

Enter size of the array : 6

Enter elements in array : 16 12 10 14 17

minimum of array is : 10

maximum of array is : 17

6.Separate odd and even integers in separate arrays.

```
#include <stdio.h>
int main()
{
   int i,j,k;
   int num[10]={1,2,3,4,5,6,7,8,9,10};
   int odd[10];
   int even[10];
   j = 0;
   k = 0;
for(i=0;i<10;i++)
{
if(num[i]%2==0){
   even[j]=num[i];
   j++;
}else{
   odd[k]=num[i];
   k++;
}
}
printf("even numbers : ");
for(i=0;i<j;i++){
   printf("%d",even[i]);
}
printf("\nodd numbers : ");
for(i=0;i<k;i++){
   printf("%d",odd[i]);
}
```

```
   printf("\n");
   return 0;
}
```

Output:

even numbers : 246810

odd numbers : 13579

7.Insert New value in the array.

```
#include <stdio.h>
int main()
{
   int array[100],position,c,n,value;
   printf("Enter number of elements in array:");
   scanf("%d",&n);
   printf("Enter %d elements:",n);
for(c=0;c<n;c++)
scanf("%d",&array[c]);
printf("Enter the location where you wish to insert an element:");
scanf("%d",&position);
printf("Enter the value to insert:");
   scanf("%d",&value);
for(c=n-1;c>=position-1;c--)
array[c+1]=array[c];
array[position-1]=value;
   printf("Resultant array is:");
for(c=0;c<=n;c++)
   printf("%d\t",array[c]);
```

```
   return 0;
}
```

Output:

Enter number of elements in array:5

Enter 5 elements:1 2 3 4 5

Enter the location where you wish to insert an element:3

Enter the value to insert: 6

Rusultant array is: 1 2 6 3 4 5

8.Delete an element at desired position from an array.

```
#include <stdio.h>
int main()
{
   int array[100],z,c,n;
   printf("Enter number of elements in array:");
   scanf("%d",&n);
   printf("Enter %d elements\n",n);
for(c=0;c<n;c++)
scanf("%d",&array[c]);
printf("Enter the location where you wish to delete an element:");
scanf("%d",&z);
if(z>=n+1)
printf("Deletion not possible.\n");
else
{
for(c=z-1;c<n-1;c++)
```

```
array[c]=array[c+1];
   printf("Resultant array:\n");
for(c=0;c<n-1;c++)
   printf("%d\n",array[c]);
}
   return 0;
}
```

Output:

Enter number of elements in array:4

Enter 4 elements

2345

Enter the location where you wish to delete element:4

Resultant array:

2

3

5

9.Find the second largest element in an array.

```
#include <stdio.h>
int main()
{
   int array[10]={30,45,78,23,65,76,98,56,11,100};
   int a,largest,second_largest;
   if(array[0]>array[1]){
      largest=array[0];
      second_largest =array[1];
```

```
    }else{
        largest = array[1];
        second_largest = array[0];
    }
    for(a=2;a<10;a++){
        if(largest<array[a]){
            second_largest=largest;
            largest = array[a];
        }else if(second_largest<array[a]){
            second_largest= array[a];
        }
    }
    printf("second_largest: %d\n",second_largest);
    return 0;
}
```

Output:

second_largest: 98

10.Find the median of two sorted arrays of same size.

```
#include <stdio.h>
int getMedian(int ar1[],int ar2[],int n)
{
    int i = 0,j = 0;
    int count;
    int m1 = -1,m2 = -1;
    for(count = 0;count <= n;count++){
```

```
        if(i == n){
        m1 = m2;
        m2 = ar2[0];
        break;
        }
        else if(j == n){
        m1 = m2;
        m2 = ar1[i];
        break;
        }
    if(ar1[i] <= ar2[j])
    {
        m1 = m2;
        m2 = ar2[i];
        i++;
    }
    else{
        m1 = m2;
        m2 = ar2[j];
        j++;
    }
    }
    return (m1 + m2)/2;
}
int main(){
    int ar1[] = {1,14,16,25,36};
    int ar2[] = {2,15,18,28,40};
    int n1 = sizeof(ar1)/sizeof(ar1[10]);
    int n2 = sizeof(ar2) /sizeof(ar2[0]);
```

```
    if(n1 == n2)
    printf("Median is %d",getMedian(ar1,ar2,n1));
    else
    printf("Doesn't work for arrays of unequal size");
    return 0;
}
```

Output:

Median is 18

11.Multiplication of two sequare Matrix.

```
#include <stdio.h>
int main()
{
    int a[10][10],b[10][10],mul[10][10],r,c,i,j,k;
    printf("enter the number of row=");
    scanf("%d",&r);
    printf("enter the number of column=");
    scanf("%d",&c);
    printf("enter the first matrix element=\n");
    for(i=0;i<r;i++){
    for(j=0;j<c;j++){
       scanf("%d",&a[i][j]);
    }}
       printf("enter the second matrix element=\n");
    for(i=0;i<r;i++){
    for(j=0;j<c;j++){
```

```
        scanf("%d",&b[i][j]);
}}
    printf("multiply of the matrix=\n");
    for(i=0;i<r;i++){
    for(j=0;j<c;j++){
        mul[i][j]=0;
        for(k=0;k<c;k++){
            mul[i][j]+=a[i][k]*b[k][j];
        }}}
        for(i=0;i<r;i++){
        for(j=0;j<c;j++){
            printf("%d\t",mul[i][j]);
        }
        printf("\n");
        }
     return 0;
}
```

Output:

enter the number of row=2

enter the number of column=2

enter the first matrix element=

1 2

3 4

Enter the second matrix element=

5 6

7 8

Multiply of the matrix=

19 22

43 50

12.Find transpose of a given matrix.

```
#include <stdio.h>
int main()
{
   int a[10][10],transpose[10][10],r,c,i,j;
   printf("Enter row and column:");
   scanf("%d %d",&r,&c);
   printf("\nEnter matrix elements:\n");
   for(i=0;i<r;i++)
   for(j=0;j<c;j++){
      printf("Enter element a%d%d:",i+1,j+1);
      scanf("%d",&a[i][j]);
   }
      printf("\n Entered matrix\n");
   for(i=0;i<r;i++)
   for(j=0;j<c;j++){
      printf("%d ",&a[i][j]);
      if(j==c-1)
      printf("\n");
}
   for(i=0;i<r;++i)
   for(j=0;j<c;++j){
      transpose[j][i]=a[i][j];
   }
   printf("\nTranspose of the matrix:\n");
      for(i=0;i<c;++i)
   for(j=0;j<r;++j){
   printf("%d ",transpose[i][j]);
```

```
    if(j==r-1)
       printf("\n");
       }
    return 0;
}
```

Output:

Enter row and column:3 2

Enter matrix elements:

Enter element a11:1

Enter element a12:2

Enter element a21:3

Enter element a22:4

Enter element a31:5

Enter element a32:6

Entered matrix:

1 3 5

2 4 6

13.Find the sum of left diagonals of a matrix.

```
#include <stdio.h>
int main()
{
   int i,j,arr1[50][50],sum=0,n,m=0;
   printf("Input the size of the square matrix:");
   scanf("%d",&n);
   m=n;
```

```
   printf("Input elements in the first matrix:\n");
   for(i=0;i<n;i++)
   {
   for(j=0;j<n;j++)
   {
      printf(" element-[%d],[%d]:",i,j);
      scanf("%d",&arr1[i][j]);
   }
   }
      printf("The matrix is:\n");
   for(i=0;i<n;i++)
   {
   for(j=0;j<n;j++)
      printf("% 4d ",&arr1[i][j]);
      printf("\n");
   }
      for(i=0;i<n;i++){
      m=m-1;
      for(j=0;j<n;j++){
         if(j==m)
      {
         sum=sum+arr1[i][j];
      }}}
      printf(" Addition of the     left Diagonal elements is:%d\n",sum);
    return 0;
}
```

Output:

Input the size of the square matrix:2

Input elements in the first matrix:

element-[0],[0]:1

element-[0],[1]:2

element-[1],[0]:3

element-[1],[1]:4

The matrix is:

1 2

3 4

Addition of the left Diagonal elements is:5

14.Check whether a given matrix is an identity matrix.

```
#include <stdio.h>
int main()
{
   int arr1[10][10];
   int r1,c1;
   int i,j,yn=1;
   printf("Input number of Rows for the matrix:");
   scanf("%d",&r1);
      printf("Input number of Column for the matrix:");
   scanf("%d",&c1);
      printf("Input elements in the first matrix:\n");
      for(i=0;i<r1;i++)
      {
            for(j=0;j<c1;j++)
            {
               printf("element-[%d],[%d]:",i,j);
```

```
            scanf("%d",&arr1[i][j]);
          }
      }
      printf("The matrix is :\n");
      for(i=0;i<r1;i++)
      {
      for(j=0;j<c1;j++)
      printf("%4d",arr1[i][j]);
      printf("\n");
      }
       for(i=0;i<r1;i++)
       {
       for(j=0;j<c1;j++)
       {
          if(arr1[i][j]!=1 && arr1[i][j]!=0)
          {
             yn=0;
             break;
          }
       }
       }
       if(yn==1)
       printf("The matrix is an identity matrix.\n\n");
       else
            printf("The matrix is not an identity matrix.\n\n");
   return 0;
}
```

Output:

Input number of Rows for the matrix:3

Input number of Column for the matrix:3

Input elements in the first matrix:

element-[0],[0]:1

element-[0],[1]:2

element-[0],[2]:3

element-[1],[0]:4

element-[1],[1]:5

element-[1],[2]:6

element-[2],[0]:7

element-[2],[1]:8

element-[2],[2]:9

The matrix is :

1 2 3

4 5 6

7 8 9

The matrix is not an identity matrix.

15.Search an element in a row wise and column wise sorted matrix.

```
#include <stdio.h>
int search(int mat[4][4],int n,int x)
{
   int i=0,j=n-1;
   while(i<n && j>=0)
   {
```

```
        if(mat[i][j]==x)
        {
            printf("The given value for searching is %d,%d",i,j);
            return 1;
        }
        if(mat[i][j]>x)
        j--;
        else
        i++;
    }
    printf("n Element not found");
    return 0;
}
    int main()
    {
        int mat[4][4]={{10,20,30,40},{15,25,35,45},{18,28,38,48},{34,32,36,42}};
        search(mat,4,28);
        return 0;
    }
```

Output:

The given value for searching is 2,1