Que 1) read n number of values in an array and display it in reverse order.

```c
#include <stdio.h>
void main()
{
   int i,n,a[100];
  printf("Input the no. of elements in the array :");
   scanf("%d",&n);
   for(i=0;i<n;i++)
      {
  printf("element - %d : ",i);
  scanf("%d",&a[i]);
  }
   printf("The values store into the array are:");
   for(i=0;i<n;i++)
     {
   printf("%d",a[i]);
}
   printf("\nThe values in reverse are:");
   for(i=n-1;i>=0;i--)
      {
   printf("%d",a[i]);
  }
   printf("\n");
}
```

```
Input the no. of elements in the array :3
element - 0 : 1
element - 1 : 2
element - 2 : 3
The values store into the array are:123
The values in reverse are:321
```

Que 2) find the sum of all elements of the array.

```c
#include <stdio.h>
void main()
{
    int a[100];
    int i, n, sum=0;
     printf("Input the no. of elements  in the array :");
       scanf("%d",&n);
       for(i=0;i<n;i++)
        {
      printf("element - %d : ",i);
      scanf("%d",&a[i]);
    }
    for(i=0; i<n; i++)
    {
        sum += a[i];
    }
 printf("Sum of all elements in the array is : %d\n", sum);
}
```

```
Input the no. of elements  in the array :3
element - 0 : 1
element - 1 : 2
element - 2 : 3
Sum of all elements in the array is : 6
```

Que 3) copy the elements of one array into another array.

```c
#include <stdio.h>
void main()
{
    int arr1[100], arr2[100];
    int i, n;
       printf("Input the no. of elements in the array :");
```

```
       scanf("%d",&n);
       for(i=0;i<n;i++)
        {
      printf("element - %d : ",i);
      scanf("%d",&arr1[i]);
    }
    for(i=0; i<n; i++)
    {
        arr2[i] = arr1[i];
    }
    printf("The elements stored in the 1st array are:");
    for(i=0; i<n; i++)
    {
        printf("%d", arr1[i]);
    }
    printf("\nThe elements copied into the 2nd array are:");
    for(i=0; i<n; i++)
    {
        printf("%d", arr2[i]);
    }
       printf("\n");
}
```

```
Input the no. of elements in the array :3
element - 0 : 2
element - 1 : 3
element - 2 : 4
The elements stored in the 1st array are:234
The elements copied into the 2nd array are:234
```

Que 4) count a total number of duplicate elements in an array.

```
#include <stdio.h>
void main()
{
    int a1[100];
int a2[100];
int a3[100];
    int n,mm=1,ctr=0;
    int i, j;
       printf("Input the no. of elements in the array:");
       scanf("%d",&n);
       for(i=0;i<n;i++)
        {
      printf("element - %d: ",i);
      scanf("%d",&a1[i]);
    }
for(i=0;i<n; i++)
        {
a2[i]=a1[i];
a3[i]=0;
        }
for(i=0;i<n; i++)
        {
for(j=0;j<n;j++)
{
if(a1[i]==a2[j])
{
a3[j]=mm;
mm++;
}
```

```
}
mm=1;
        }
   for(i=0; i<n; i++)
    {
      if(a3[i]==2){ctr++;}
    }
      printf("no. of duplicate elements is: %d \n", ctr);
}
```

```
Input the no. of elements in the array:3
element - 0: 1
element - 1: 1
element - 2: 3
no. of duplicate elements is: 1
```

Que 5) find the maximum and minimum element in an array.

```
#include <stdio.h>
void main()
{
    int a1[100];
    int i, b, c, d;
       printf("Input the no. of elements in the array :");
       scanf("%d",&d);
       for(i=0;i<d;i++)
          {
      printf("element-%d : ",i);
      scanf("%d",&a1[i]);
    }
    b = a1[0];
    c = a1[0];
    for(i=1; i<d; i++)
    {
        if(a1[i]>b)
        {
              b = a1[i];
        }
        if(a1[i]<c)
        {
            c= a1[i];
        }
    }
    printf("Maximum: %d\n", b);
    printf("Minimum: %d", c);
}
```

```
Input the no. of elements in the array :3
element-0 : 1
element-1 : 2
element-2 : 3
Maximum: 3
Minimum: 1
```

Que 6) separate odd and even integers in separate arrays.

```
#include <stdio.h>
void main()
{
    int arr1[10], arr2[10], arr3[10];
    int i,j=0,k=0,n;
       printf("Input the no. of elements in the array:");
       scanf("%d",&n);
       for(i=0;i<n;i++)
            {
      printf("element-%d:",i);
      scanf("%d",&arr1[i]);
```

```
    }
    for(i=0;i<n;i++)
    {
if (arr1[i]%2 == 0)
{
   arr2[j] = arr1[i];
   j++;
}
else
{
   arr3[k] = arr1[i];
   k++;
}
    }
    printf("Even:-");
    for(i=0;i<j;i++)
    {
printf("%d ",arr2[i]);
    }
     printf("\nOdd:-");
    for(i=0;i<k;i++)
    {
printf("%d ", arr3[i]);
    }
}
```

```
Input the no. of elements in the array:4
element-0:1
element-1:2
element-2:3
element-3:4
Even:-2 4
Odd:-1 3
```

Que 7) insert New value in the array.

```
#include <stdio.h>
void main()
{
   int a1[100],i,n,p,x;
    printf("Input the size of array : ");
    scanf("%d", &n);
       for(i=0;i<n;i++)
            {
      printf("element - %d : ",i);
      scanf("%d",&a1[i]);
    }
   printf("Input the value to be inserted : ");
   scanf("%d",&x);
   for(i=0;i<n;i++)
     if(x<a1[i])
     {
       p = i;
       break;
     }
   for(i=n;i>=p;i--)
      a1[i]= a1[i-1];
      a1[p]=x;
      printf("After Insert the list is : ");
   for(i=0;i<=n;i++)
      printf("%d",a1[i]);
}
```

```
Input the size of array : 3
element-0 : 1
element-1 : 2
element-2 : 3
Input the value to be inserted : 2
After Insert the list is : 1223
```

Que 8) delete an element at desired position from an array.

```
#include <stdio.h>
void main(){
  int a1[50],i,pos,n;
       printf("Input the size of array : ");
       scanf("%d", &n);
       for(i=0;i<n;i++)
            {
      printf("element-%d-",i);
      scanf("%d",&a1[i]);
    }
  printf("Input the position where to delete:");
  scanf("%d",&pos);
   i=0;
  while(i!=pos-1)
            i++;
  while(i<n){
            a1[i]=a1[i+1];
            i++;
  }
  n--;
   printf("The new list is : ");
  for(i=0;i<n;i++)
        {
   printf(" %d",a1[i]);
}
}
```

```
Input the size of array : 3
element-0-1
element-1-5
element-2-9
Input the position where to delete:2
The new list is :  1 9
```

Que 9) find the second largest element in an array.

```
#include<stdio.h>
void main(){
  int a1[50],n,i,j=0,lrg,slarge;
       printf("Input the size of array : ");
       scanf("%d", &n);
       for(i=0;i<n;i++)
            {
      printf("element-%d- ",i);
      scanf("%d",&a1[i]);
    }
   lrg=a1[0];
   lrg=0;
  for(i=0;i<n;i++)
  {
      if(lrg<a1[i])
  {
            lrg=a1[i];
            j = i;
      }
  }
 slarge=0;
  for(i=0;i<n;i++)
```

```
  {
     if(i==j)
        {
          i++;
  i--;
        }
      else
        {
          if(slarge<a1[i])
     {
                slarge=a1[i];
              }
        }
  }
  printf("The Second largest is :  %d",slarge);
}
```

```
Input the size of array : 3
element-0- 1
element-1- 2
element-2- 7
The Second largest is :  2
```

Que 11) multiplication of two square Matrices

```
#include <stdio.h>
void main()
{
   int A[3][3],B[3][3],c[3][3],i,j,k,sum;
   printf("Enter 9 no.s for first matrix");
   for(i=0;i<=2;i++)
      for (j=0;j<=2;j++)
          scanf("%d",&A[i][j]);
   printf("Enter 9 no.s for 2nd matrix");
   for(i=0;i<=2;i++)
      for (j=0;j<=2;j++)
          scanf("%d",&B[i][j]);
   for(i=0;i<=2;i++)
      for (j=0;j<=2;j++)
      {
        sum=0;
        for(k=0;k<=2;k++)
        sum=sum+A[i][k]*B[k][j];
        c[i][j]=sum;
      }
      for(i=0;i<=2;i++)
      {
      for (j=0;j<=2;j++)
      printf("%d  ",c[i][j]);
      printf("\n");
      }
}
```

```
Enter 9 no.s for first matrix2
3
1
4
0
2
3
1
5
Enter 9 no.s for 2nd matrix1
2
0
4
1
3
4
2
1
18  9  10
12  12  2
27  17  8
```

Que 12) find transpose of a given matrix.

```
#include <stdio.h>
void main()
  {
  int arr1[50][50],brr1[50][50],i,j,r,c;
```

```
       printf("Input the rows and columns: ");
       scanf("%d %d",&r,&c);
       printf("Input elements in the first matrix :\n");
       for(i=0;i<r;i++)
        {
            for(j=0;j<c;j++)
            {
           printf("element-[%d],[%d]:",i,j);
           scanf("%d",&arr1[i][j]);
            }
               }
printf("The matrix is :");
  for(i=0;i<r;i++)
    {
      printf("\n");
      for(j=0;j<c;j++)
          printf("%d\t",arr1[i][j]);
    }
  for(i=0;i<r;i++)
     {
      for(j=0;j<c;j++)
            {
                   brr1[j][i]=arr1[i][j];
            }
      }
      printf("\nThe transpose of a matrix is : ");
      for(i=0;i<c;i++){
      printf("\n");
      for(j=0;j<r;j++){
           printf("%d\t",brr1[i][j]);
      }
  }
}
```

```
Input the rows and columns: 3
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 transpose of a matrix is :
1	4	7
2	5	8
3	6	9
```

Que 13) find the sum of left diagonals of a matrix.

```
#include <stdio.h>
void 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++)
```

```
Input the size of the square 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
left Diagonal Addition  is :15
```

```
{
   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("left Diagonal Addition is:%d\n",sum);
    }
```

Que 14) check whether a given matrix is an identity matrix.

```
#include <stdio.h>
void main()
{
   int arr1[10][10];
   int r1,c1;
   int i, j, yn=1;
   printf("number of Rows :");
   scanf("%d", &r1);
   printf("number of Columns :");
   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[j][i] !=0)
{
   yn = 0;
```

```
number of Rows :3
number of Columns :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.
```

```
   break;
}
}
   }
   if(yn == 1 )
printf(" The matrix is an identity matrix.\n\n");
   else
printf(" The matrix is not an identity matrix.\n\n");
}
```