QUESTION 1

```
#include <stdio.h>

void main()

{

  int i,n,a[100];

  printf("Input the number of elements to store in the array :");

  scanf("%d",&n);

  for(i=0;i<n;i++)

    {

          printf("%d place -  : ",i);

          scanf("%d",&a[i]);

          }

  printf("\nThe values store into the array are : \n");

  for(i=0;i<n;i++)

   {

           printf("% 2d",a[i]);

         }

  printf("\n\nThe values store into the array in reverse are :\n");

  for(i=n-1;i>=0;i--)

    {

           printf("% 2d",a[i]);

          }

  printf("\n\n");

}
```

OUTPUT:

```
Input the number of elements to store in the array :4

0 place -
  : 8

1 place -
  : 5
```

```
2 place -
: 9

3 place - : 3

The values store into the array are :

 8 5 9 3

The values store into the array in reverse are :

 3 9 5 8
```

QUESTION 2

```
#include <stdio.h>

void main()

{

   int a[150];

   int i, n, sum=0;

    printf("Input the number of elements:");

    scanf("%d",&n);

      for(i=0;i<n;i++)

       {

                printf("%d place  : ",i);

                scanf("%d",&a[i]);

              }


   for(i=0; i<n; i++)

   {

      sum += a[i];

   }


   printf("Sum of all elements is : %d\n\n", sum);

}
```

OUTPUT:

```
Input the number of elements:5

0 place  : 4

1 place  : 5

2 place  : 2

3 place  : 1

4 place  : 0

Sum of all elements is : 12
```

QUESTION 3

```
#include <stdio.h>


void main()
{
   int arr1[100], arr2[100];
   int i, n;



     printf("\n\nCopy the elements one array into another array :\n");



     printf("Input the number of elements to be stored in the array :");
     scanf("%d",&n);

     printf("Input %d elements in the array :\n",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("\nThe elements stored in the first array are :\n");
   for(i=0; i<n; i++)
   {
      printf("% 5d", arr1[i]);
   }

   printf("\n\nThe elements copied into the second array are :\n");
   for(i=0; i<n; i++)
   {
      printf("% 5d", arr2[i]);
   }
            printf("\n\n");
}
```

OUTPUT

```
Copy the elements one array into another array :

Input the number of elements to be stored in the array :4

Input 4 elements in the array :

element - 0 : 9

element -
 1 : 7

element -
 2 : 6

element - 3 : 4

The elements stored in the first array are :
```

```
    9    7    6    4


The elements copied into the second array are :
    9    7    6    4
```

QUESTION 4

```
#include <stdio.h>
int main()
{
   int arr[150];
   int i, j, size, count = 0;
   printf("Enter size of the array : ");
   scanf("%d", &size);
   printf("Enter elements in array : ");
   for(i=0; i<size; i++)
   {
      scanf("%d", &arr[i]);
   }

   for(i=0; i<size; i++)
   {
      for(j=i+1; j<size; j++)
      {
         if(arr[i] == arr[j])
         {
            count++;
            break;
         }
      }
```

```
    }

    printf("\nTotal number of duplicate elements found in array = %d", count);

    return 0;
```

OUTPUT

```
Enter size of the array : 4
Enter elements in array : 2 2 5 5


Total number of duplicate elements found in array = 2
```

QUESTION 5

```
#include <stdio.h>
int main()
{
    int a[1000],i,n,min,max;
    printf("Enter size of the array : ");
    scanf("%d",&n);
    printf("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 : 4

Enter elements in array : 4 6 8 4

minimum of array is : 4

maximum of array is : 8
```

QUESTION 6

```
#include <stdio.h>


void main()
 {
   int arr1[10], odd[10], even[10];
   int i,j=0,k=0,n;
     printf("Input the number of elements to be stored in the array :");
     scanf("%d",&n);
     for(i=0;i<n;i++)
        {
            printf(" %d place  : ",i);
            scanf("%d",&arr1[i]);
          }

   for(i=0;i<n;i++)
   {
         if (arr1[i]%2 == 0)
```

```
        {
          even[j] = arr1[i];
          j++;
        }
        else
        {
          odd[k] = arr1[i];
          k++;
        }
  }

  printf("\nThe Even elements are : \n");
  for(i=0;i<j;i++)
  {
        printf(" % 2d ",even[i]);
  }

  printf("\nThe Odd elements are :\n");
  for(i=0;i<k;i++)
  {
        printf("% 2d ", odd[i]);
  }
  printf("\n\n");
}
```

OUTPUT

```
Input the number of elements to be stored in the array :4
 0 place  : 4
 1 place  : 5
 2 place  : 3
 3 place  : 8
```

```
The Even elements are :

  4   8

The Odd elements are :

 5  3
```

QUESTION 7

```
#include <stdio.h>

void main()

{

  int arr1[100],i,n,p,x;

      printf("Input the size of array : ");

      scanf("%d", &n);

      for(i=0;i<n;i++)

     {

                printf("%d element  : ",i);

                scanf("%d",&arr1[i]);

              }



  printf("Input the value to be inserted : ");

  scanf("%d",&x);

  printf("Input the Position, where the value to be inserted :");

  scanf("%d",&p);


  printf("The curren array is :\n");

  for(i=0;i<n;i++)

    printf("% 5d",arr1[i]);


  for(i=n;i>=p;i--)
```

```
  {
    arr1[i]= arr1[i-1];
  }
    arr1[p-1]=x;
  printf("\n\nAfter Insert the element the new list is :\n");
  for(i=0;i<=n;i++)
    printf("% 5d",arr1[i]);
          printf("\n\n");
}
```

OUTPUT

```
Input the size of array : 4
0 element  : 7
1 element  : 8
2 element  : 4
3 element  : 0
Input the value to be inserted : 44
Input the Position, where the value to be inserted :2
The curren array is :
    7    8    4    0

After Insert the element the new list is :
    7   44    8    4    0
```

QUESTION 8

```
#include <stdio.h>
void main(){
  int arr1[50],i,pos,n;

     printf("\n\nDelete an element at desired position from an array :\n");
```

```
    printf("Input the size of array : ");
    scanf("%d", &n);

    printf("Input %d elements in the array in ascending order:\n",n);
    for(i=0;i<n;i++)
        {
            printf("element - %d : ",i);
            scanf("%d",&arr1[i]);
           }

printf("\nInput the position where to delete: ");
scanf("%d",&pos);

i=0;
while(i!=pos-1)
        i++;
         while(i<n){
        arr1[i]=arr1[i+1];
        i++;
}
n--;
 printf("\nThe new list is : ");
for(i=0;i<n;i++)
    {
                    printf("  %d",arr1[i]);
                  }
        printf("\n\n");

}
```

OUTPUT

```
Delete an element at desired position from an array :

Input the size of array : 4

Input 4 elements in the array in ascending order:

element -
 0 : 5

element - 1 : 4

element -
 2 : 8

element -
 3 : 5



Input the position where to delete: 0



The new list is :   5  4  8
```

QUESTION 9

```
#include <stdio.h>

void main(){

  int arr1[50],n,i,j=0,fst,tnd;

      printf("Input the size of array : ");

      scanf("%d", &n);

      for(i=0;i<n;i++)

      {

               printf(" %d place : ",i);

               scanf("%d",&arr1[i]);

             }

   fst=0;

  for(i=0;i<n;i++)

  {

     if(fst<arr1[i])
```

```
            {
        fst=arr1[i];
        j = i;
    }
 }
  tnd=0;
 for(i=0;i<n;i++)
 {
   if(i==j)
     {
       i++;
                    i--;
     }
    else
     {
       if(tnd<arr1[i])
            {
          tnd=arr1[i];
        }
     }
 }


  printf("The Second largest element in the array is :  %d \n\n", tnd);
}
```

OUTPUT

```
Input the size of array : 4
 0 place : 6
 1 place : 8
 2 place : 4
 3 place : 5
```

```
The Second largest element in the array is :  6
```

QUESTION 10

```
#include <stdio.h>


int getMedian(int ar1[], int ar2[], int n, int m)
{
   int i = 0;
   int j = 0;
   int count;
   int m1 = -1, m2 = -1;
   if((m + n) % 2 == 1) {
      for (count = 0; count <= (n + m)/2; count++) {
         if(i != n && j != m){
         m1 = (ar1[i] > ar2[j]) ? ar2[j++] : ar1[i++];
         }
         else if(i < n){
         m1 = ar1[i++];
         }
         else{
         m1 = ar2[j++];
         }
      }
      return m1;
   }

   else {
      for (count = 0; count <= (n + m)/2; count++) {
         m2 = m1;
```

```
        if(i != n && j != m){
        m1 = (ar1[i] > ar2[j]) ? ar2[j++] : ar1[i++];
        }
        else if(i < n){
        m1 = ar1[i++];
        }
        else{
        m1 = ar1[j++];
        }
      }
      return (m1 + m2)/2;
   }
}

int main()
{
   int ar1[] = {4, 9, 16, 45};
   int ar2[] = {3, 8, 11, 20};

   int n1 = sizeof(ar1)/sizeof(ar1[0]);
   int n2 = sizeof(ar2)/sizeof(ar2[0]);
   printf("The median is:%d", getMedian(ar1, ar2, n1, n2));
   getchar();
   return 0;
}
```

OUTPUT

```
The median is:10
```

QUESTION 11

```
#include<stdio.h>
#include<stdlib.h>
int main(){
int a[3][3],b[3][3],mul[3][3],r,c,i,j,k;
system("cls");
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 printing result
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=3
enter the number of column=3
enter the first matrix element=
3 4 5 6 7 3 1 5 7
enter the second matrix element=
5 7 2 0 8 4 2 1 6
multiply of the matrix=
25      58      52
36      101     58
19      54      64
```

QUESTION 12

```
#include <stdio.h>
int main() {
   int a[3][3], transpose[3][3], r, c, i, j;
   printf("Enter rows and columns: ");
   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("\nEntered 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 rows and columns: 3 3


Enter matrix elements:
Enter element a11: 2 5 6 3 4 7 1 5 64
Entered matrix:
2  5  6
3  4  7
1  5  64

Transpose of the matrix:
2  3  1
5  4  5
6  7  64
```

QUESTION 13

```
#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++)
      {
        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);
```

```
}
```

OUTPUT

```
Input the size of the square matrix : 3 3

Input elements in the first matrix :

element - [0],[0] : element -
 [0],[1] : 3 5

element - [0],[2] : element -
 [1],[0] : 5 7

element - [1],[1] : element -
 [1],[2] : 33 5

element - [2],[0] : element - [2],[1] : 8 5

element -
 [2],[2] : The matrix is :

   3   3   5

   5   7  33

   5   8   5

Addition of the  left Diagonal elements is :17
```

QUESTION 14

```
#include <stdio.h>


int main (void)
{
        int a[3][3];
        int i = 0, j = 0, row = 0, col = 0;

        printf ("Enter the order of the matrix (mxn): ");
        scanf ("%d %d", &row, &col);

        int flag = 0;
```

```
printf ("Enter the elements of the matrix\n");
for (i = 0; i < row; i++)
{
	for (j = 0; j < col; j++)
	{
		scanf ("%d", &a[i][j]);
	}
}

for (i = 0; i < row; i++)
{
	for (j = 0; j < col; j++)
	{
		if (i == j && a[i][j] != 1)
		{
			flag = -1;
			break;
		}
		else if (i != j && a[i][j] != 0)
		{
			flag = -1;
			break;
		}
	}
}

if (flag == 0)
{
	printf ("It is a IDENTITY MATRIX\n");
}
```

```
        else
        {
                printf ("It is NOT an identity matrix\n");
        }

        return 0;
}
```

OUTPUT

```
Enter the order of the matrix (mxn): 3 3

Enter the elements of the matrix

5 3 57 8 2 8 3 0 9

It is NOT an identity matrix
```

QUESTION 15

```
#include<stdio.h>

void main(){

int mat[5][5]={{10,20,30,40,50},
           {11,22,33,44,55},
           {12,23,34,45,56},
           {13,24,35,46,57},
           {14,25,36,47,58}};

int x,y=0,i,j;
printf("The matrix is : \n");

for(i=0;i<5;i++)
{
        for(j=0;j<5;j++){
        printf("%d\t",mat[i][j]);
        }
        printf("\n");
}
printf("Enter the element to be searched : ");
scanf("%d",&x);
for(i=0;i<5;i++){
         for(j=0;j<5;j++){
                  if(x==mat[i][j]){
                   printf("%d is found at position [%d][%d]\n",x,i,j);
                    }
```

```
   }
}
if(y==0){
   printf("%d is not found in the matrix",x);
}
}
```

OUTPUT

```
The matrix is :

10      20      30      40      50

11      22      33      44      55

12      23      34      45      56

13      24      35      46      57

14      25      36      47      58

Enter the element to be searched : 56

56 is found at position [2][4]

56 is not found in the matrix
```