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 :6
0 place -  : 1
1 place -  : 4
2 place -  : 3
3 place -  : 7
4 place -  : 5
```

```
5 place -  : 3


The values store into the array are :
 1 4 3 7 5 3


The values store into the array in reverse are :
 3 5 7 3 4 1
```

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:6
0 place  : 2
```

```
1 place  : 4

2 place  : 6

3 place  : 8

4 place  : 3

5 place  : 7

Sum of all elements is : 30
```

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 : 2

element - 1 : 4

element - 2 : 5

element - 3 : 7


The elements stored in the first array are :

    2    4    5    7


The elements copied into the second array are :

    2    4    5    7
```

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 : 6
Enter elements in array : 6 6 5 5 4 8


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 : 6
Enter elements in array : 1 2 3 4 5 6
minimum of array is : 1
maximum of array is : 6
```

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 :6

 0 place  : 1

 1 place  : 2

 2 place  : 3

 3 place  : 4

 4 place  : 5

 5 place  : 6


The Even elements are :

  2   4   6

The Odd elements are :

 1  3  5
```

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  : 8
1 element  : 9
2 element  : 4
3 element  : 1
Input the value to be inserted : 3
Input the Position, where the value to be inserted :2
The curren array is :
    8    9    4    1
```

```
After Insert the element the new list is :

    8    3    9    4    1
```

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 : 1

element - 1 : 2

element - 2 : 3

element - 3 : 4


Input the position where to delete: 2


The new list is :   1  3  4
```

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 : 6
 0 place : 1
  1 place : 2
   2 place : 3
   3 place : 5
```

4 place : 6

5 place : 7

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: 4 5 6 7 8 9 1 2 3

Enter element a12: Enter element a13: Enter element a21: Enter element
a22: Enter element a23: Enter element a31: Enter elemen
t a32: Enter element a33:

Entered matrix:

4  5  6

7  8  9

1  2  3



Transpose of the matrix:

4  7  1

5  8  2

6  9  3
```

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 : 4 4

Input elements in the first matrix :

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

element - [0],[2] : element - [0],[3] : 2 3

element - [1],[0] : element - [1],[1] : 3 4

element - [1],[2] : element - [1],[3] : 4 5

element - [2],[0] : element - [2],[1] : 5 6

element - [2],[2] : element - [2],[3] : 3 5
```

```
element - [3],[0] : element - [3],[1] : 2 4

element - [3],[2] : element - [3],[3] : 6 8

The matrix is :

   4   1   2   2

   3   3   4   4

   5   5   6   3

   5   2   4   6

Addition of the  left Diagonal elements is :16
```

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): 4 4

Enter the elements of the matrix
```

```
2 4 5 6 1 2 3 4  5 6 7 8 9 0 1 2

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 : 45
45 is found at position [2][3]
45 is not found in the matrix
```