ARRAY-2D

```
#include<stdio.h>
int main()
{
int row,col, ar[100][100],i,j;
printf("Enter row and column of array : ");
scanf("%d%d",&row,&col);

printf("Enter the elements of array\n");
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {
                scanf("%d",&ar[i][j]);
        }
}
printf("The elements of array\n");
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {        if(i==j)
                printf(" %d ",ar[i][j]);
sum=sum+ ar[i][j];
        }
        printf("\n");
}
        return 0;
 }
```

/*Write a c Program to find addition of two 2d array*/

```
#include<stdio.h>
int main()
{
        int arr1[50][50],arr2[50][50],sum[50][50];
        int i,j,r1,r2,c1,c2;
        printf("Enter row and column of 1st array : ");
        scanf("%d%d",&r1,&c1);
        printf("Enter elements of array 1st array: \n");
        for(i=0;i<r1;i++)
        {
           for(j=0;j<c1;j++)
                {
                   scanf("%d",&arr1[i][j]);
                }
        }
        printf("Enter row and column of 2nd array : ");
        scanf("%d%d",&r2,&c2);
        printf("Enter elements of array 2nd array: \n");
        for(i=0;i<r1;i++)
        {
           for(j=0;j<c2;j++)
                {
                   scanf("%d",&arr2[i][j]);
                }
        }
        if(r1==r2&&c1==c2)
```

```
        {
        for(i=0;i<r1;i++)
           {
              for(j=0;j<c1;j++)
                    {
                       sum[i][j]=arr1[i][j]+arr2[i][j];
                    }
           }

           printf("Sum Of Two Matrices : \n");
        for(i=0;i<r1;i++)
           {
              for(j=0;j<c1;j++)
                    {
                       printf("%d\t",sum[i][j]);
                    }
                    printf("\n");
           }
        }
        else
        printf("Addition Not Possible");

        return 0;
 }
```

/*Write a C Program to print the upper and lower triangle in a matrix*/

```
#include<conio.h>
#include<stdio.h>
#define row 3
#define col 3
int main()
{
int ar[row][col],i,j,n;
printf("Enter the elements of array\n");
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {
                scanf("%d",&ar[i][j]);
        }
}
printf("The elements of array\n");
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {
                printf(" %d ",ar[i][j]);
        }
        printf("\n");
}
if(row==col)
{
                printf("The lower triangular matrix\n");
                for(i=0;i<row;i++)
                {
                        for(j=0;j<col;j++)
```

```
                        {
                                if(j<=i)
                                {
                                        printf(" %d ",ar[i][j]);
                                }
                        }
                    printf("\n");
                }

                printf("The upper triangular matrix\n");
            for(i=0;i<row;i++)
            {
                    for(j=0;j<col;j++)
                    {
                      if(j>=i)
                      {
                        printf(" %d ",ar[i][j]);
                      }
                      else
                      {
                        printf("    ");
                      }
                    }
                printf("\n");
            }
}
else
printf("Can't calculate the upper/lower triangle in matrix");
return 0;
}
```

/*Write a C Program to find row sum & column sum */

```
#include<stdio.h>
int main()
{
        int mat[50][50];
        int i,j,r,c,rsum,csum,d1=0,d2=0;
        printf("Enter row and column of an array : ");
        scanf("%d%d",&r,&c);
        printf("Enter elements of array an array: \n");
        for(i=0;i<r;i++)
        {
           for(j=0;j<c;j++)
                {
                   scanf("%d",&mat[i][j]);
                }
        }
        //Code to print elements
        for(i=0;i<r;i++)
        {
           for(j=0;j<c;j++)
                {
                   printf(" %d",mat[i][j]);
                }
                printf("\n");
```

```
        }
          //Row sum
          for(i=0;i<r;i++)
          {
                  rsum=0;
             for(j=0;j<c;j++)
                  {
                     rsum=rsum+mat[i][j];
                  }
                  printf("Row Sum %d\n", rsum);
           }
        //Column Sum
        for(i=0;i<c;i++)
          {
                  csum=0;
             for(j=0;j<r;j++)
                  {
                     csum=csum+mat[j][i];
                  }
                  printf("Column Sum %d\n",csum);
           }

        return 0;
 }


//logic for individual right diagonal
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {          if(i==j)
                   {
                     printf(" %d ",ar[i][j]);
                   }
                   Else
                   {
                   Printf(“ “);
                   }
        }
        printf("\n");
}


//logic for individual left diagonal
for(i=0;i<row;i++)
{
        for(j=0;j<col;j++)
        {          if(i+j=row-1)
                   {
                     printf(" %d ",ar[i][j]);
                   }
                   Else
                   {
                   Printf(“  “);
                   }
        }
```

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

Write a C Program to add the elements of both diagonals of a user defined matrix (method 1)

```
#include<stdio.h>
int main()
{
        int n,i,j,r,c,arr[100][100],dsum=0;
        printf("Enter the number of rows and columns.");
        scanf("%d%d",&r,&c);
        if(r==c)
        {

        for(i=0;i<=r-1;i++)
        {
                for(j=0;j<=c-1;j++)
                {
                        scanf("%d",&arr[i][j]);
                }
        }
        for(i=0;i<=r-1;i++)
        {
                for(j=0;j<=c-1;j++)
                {
                        if((i==j)||(i+j==r-1))
                        {
                          dsum=dsum+arr[i][j];
                        }
                }
        }
        printf("The sum of elements of both diagonals is %d.",dsum);

        }
        else
        {
                printf("The sum of diagonals cannot be calculated.");
        }
        return 0;

}
```

Write a C Program to add the elements of both diagonals of a user defined matrix (method 2)

```
#include<stdio.h>
int main()
{
        int n,i,j,r,c,arr[100][100],dsum=0;
        printf("Enter the number of rows and columns.");
        scanf("%d%d",&r,&c);
        if(r==c)
        {

        for(i=0;i<=r-1;i++)
        {
                for(j=0;j<=c-1;j++)
                {
                        scanf("%d",&arr[i][j]);
```

```
            }
        }
        for(i=0;i<=r-1;i++)
        {
            dsum=dsum+arr[i][i];

        }
        for(i=0;i<=r-1;i++)
        {
            dsum=dsum+arr[i][r-1-i];

        }
        printf("The sum of elements of both diagonals is %d.",dsum);

        }
        else
        {
            printf("The sum of diagonals cannot be calculated.");
        }
        return 0;

}
```