C-58 ⟹ Two Dimensional Array

2D-Array - Program 3

* Program to print sum of individual rows and columns of a matrix :-

$$
\begin{array}{ccc}
 & 0 & 1 & 2 \\
0 & 1 & 2 & 1 & \Rightarrow 4 \\
1 & 2 & 3 & 5 & \Rightarrow 10 \\
2 & 0 & 5 & -1 & \Rightarrow 4 \\
 & \downarrow & \downarrow & \downarrow \\
 & 3 & 10 & 5
\end{array}
$$

(3×3)

```
void main()
{
    int i,j, a[3][3], SR, SC, DR=0.
    printf(" Enter 3×3 Matrix Elements:\n");
    for(i=0; i<3; i++)
    {
        for(j=0; j<3; j++)
        {
            scanf(" %d", &a[i][j]);
        }
    }
    printf(" 3×3 Matrix is:\n");
    for(i=0; i<3; i++)
    {
        for(j=0; j<3; j++)
        {
            printf("%d\t", a[i][j]);
        }
        printf("\n");
    }
```

SR   SC&

□0   □0

SD

□1

```
for (i = 0; i < 3; i++)
{
    SR = 0; CR = 0;
    for (j = 0; j < 3; j++)
    {
        SR = SR + a[i][j];
        SC& = CR + a[j][i];      if ( i == j )
                                 {
    }                              SD = SD +
                                     a[i][j]
                                 }
    printf (" sum of Row: %d,
             sum of columns: %d",
                            SR, SC&);
    prunf ("sum of Dragon:
    getch();              %d", SD);
}
```

$*$ Sum of Row and Column is   initialized
before i and j

$*$ because ; once we go to new row
then sum = 0 from there - and same
for also Column.

O/P

1	2	1
2	3	5
0	5	-1

4	3
10	10
4	5

CODE 1:

```c
#include <stdio.h>
#include <stdlib.h>
#define N 100
/** 3 - 2D ARRAY PROGRAM **/
/** READ A MATRIX AND PRINT SUM OF INDIVIDUAL ROWS & COLUMNS **/
int main()
{
    int a[N][N],m,n,i,j,row_sum,col_sum,dig_sum=0;
    printf("Enter number of rows:");
    scanf("%d",&m);
    printf("Enter number of columns:");
    scanf("%d",&n);

    for(i=0;i<m;i++)
    {
     for(j=0;j<n;j++)
     {
      printf("Enter value of a[%d][%d]:",i,j);
      scanf("%d",&a[i][j]);
     }
    }

    printf("\nMatrix is:\n");
    for(i=0;i<m;i++)
    {
     for(j=0;j<n;j++)
     {
      printf("%d\t",a[i][j]);
     }
     printf("\n");
    }

    for(i=0;i<m;i++)
    {
     row_sum=0;
     col_sum=0;
     for(j=0;j<n;j++)
     {
      row_sum=row_sum+a[i][j];
      col_sum=col_sum+a[j][i];
      if(i==j)
       dig_sum=dig_sum+a[i][j];
     }
     printf("Sum of row:%d, Sum of Column:%d\n",row_sum,col_sum);
    }
    printf("\nSum of diagonals:%d\n",dig_sum);

 getch();
}
```

```
Enter number of rows:3
Enter number of columns:3
Enter value of a[0][0]:1
Enter value of a[0][1]:2
Enter value of a[0][2]:3
Enter value of a[1][0]:1
Enter value of a[1][1]:2
Enter value of a[1][2]:3
Enter value of a[2][0]:1
Enter value of a[2][1]:2
Enter value of a[2][2]:3

Matrix is:
1       2       3
1       2       3
1       2       3
Sum of row:6, Sum of Column:3
Sum of row:6, Sum of Column:6
Sum of row:6, Sum of Column:9

Sum of diagonals:6
```