

Two dimensional (2D) arrays in C programming with example

An array of arrays is known as 2D array. The two dimensional (2D) array in [C programming](#) is also known as matrix. A matrix can be represented as a table of rows and columns. Before we discuss more about two Dimensional array lets have a look at the following C program.

	D1	D2	D3
S1	10	20	45
S2	100	500	600

Simple Two dimensional(2D) Array Example

For now don't worry how to initialize a two dimensional array, we will discuss that part later. This program demonstrates how to store the elements entered by user in a 2d array and how to display the elements of a two dimensional array.

```
#include<stdio.h>
int main(){
    /* 2D array declaration*/
    int disp[2][3];
    /*Counter variables for the loop*/
    int i, j;
    for(i=0; i<2; i++) {
        for(j=0;j<3;j++) {
            printf("Enter value for disp[%d][%d]:", i, j);
            scanf("%d", &disp[i][j]);
        }
    }
    //Displaying array elements
    printf("Two Dimensional array elements:\n");
    for(i=0; i<2; i++) {
        for(j=0;j<3;j++) {
            printf("%d ", disp[i][j]);
            if(j==2){
                printf("\n");
            }
        }
    }
    return 0;
}
```

Output:

```
Enter value for disp[0][0]:1
Enter value for disp[0][1]:2
Enter value for disp[0][2]:3
Enter value for disp[1][0]:4
Enter value for disp[1][1]:5
Enter value for disp[1][2]:6
Two Dimensional array elements:
1 2 3
4 5 6
```

Multi Dimensional Array Example

```
// C program to find the sum of two matrices of order 2*2

#include <stdio.h>
int main()
{
    float a[2][2], b[2][2], result[2][2];

    // Taking input using nested for loop
    printf("Enter elements of 1st matrix\n");
    for (int i = 0; i < 2; ++i)
        for (int j = 0; j < 2; ++j)
        {
            printf("Enter a%d%d: ", i + 1, j + 1);
            scanf("%f", &a[i][j]);
        }

    // Taking input using nested for loop
    printf("Enter elements of 2nd matrix\n");
    for (int i = 0; i < 2; ++i)
        for (int j = 0; j < 2; ++j)
        {
            printf("Enter b%d%d: ", i + 1, j + 1);
            scanf("%f", &b[i][j]);
        }

    // adding corresponding elements of two arrays
    for (int i = 0; i < 2; ++i)
        for (int j = 0; j < 2; ++j)
        {
            result[i][j] = a[i][j] + b[i][j];
        }

    // Displaying the sum
    printf("\nSum Of Matrix:");

    for (int i = 0; i < 2; ++i)
        for (int j = 0; j < 2; ++j)
        {
            printf("%.1f\t", result[i][j]);

            if (j == 1)
                printf("\n");
        }
}
```

```
return 0;  
}
```