**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](https://beginnersbook.com/2014/01/c-tutorial-for-beginners-with-examples/) 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 store and print 12 values entered by the user

#include <stdio.h>

int main()

{

int test[2][3][2];

printf("Enter 12 values: \n");

for (int i = 0; i < 2; ++i)

{

for (int j = 0; j < 3; ++j)

{

for (int k = 0; k < 2; ++k)

{

scanf("%d", &test[i][j][k]);

}

}

}

// Printing values with proper index.

printf("\nDisplaying values:\n");

for (int i = 0; i < 2; ++i)

{

for (int j = 0; j < 3; ++j)

{

for (int k = 0; k < 2; ++k)

{

printf("test[%d][%d][%d] = %d\n", i, j, k, test[i][j][k]);

}

}

}

return 0;

}

**Output**

Enter 12 values:

1

2

3

4

5

6

7

8

9

10

11

12

Displaying Values:

test[0][0][0] = 1

test[0][0][1] = 2

test[0][1][0] = 3

test[0][1][1] = 4

test[0][2][0] = 5

test[0][2][1] = 6

test[1][0][0] = 7

test[1][0][1] = 8

test[1][1][0] = 9

test[1][1][1] = 10

test[1][2][0] = 11

test[1][2][1] = 12