NIELIT GORAKHPUR

Course Name: O Level (2nd Sem B2 and B3 Batch)   **Subject:** C Language
Topic: Multidimensional (2D) Array in C   **Date:** 12-May-2020

Multidimensional Array:

The array which is used to represent and store data in a tabular form is called as 'multidimensional array.' Such type of array specially used to represent data in a matrix form.
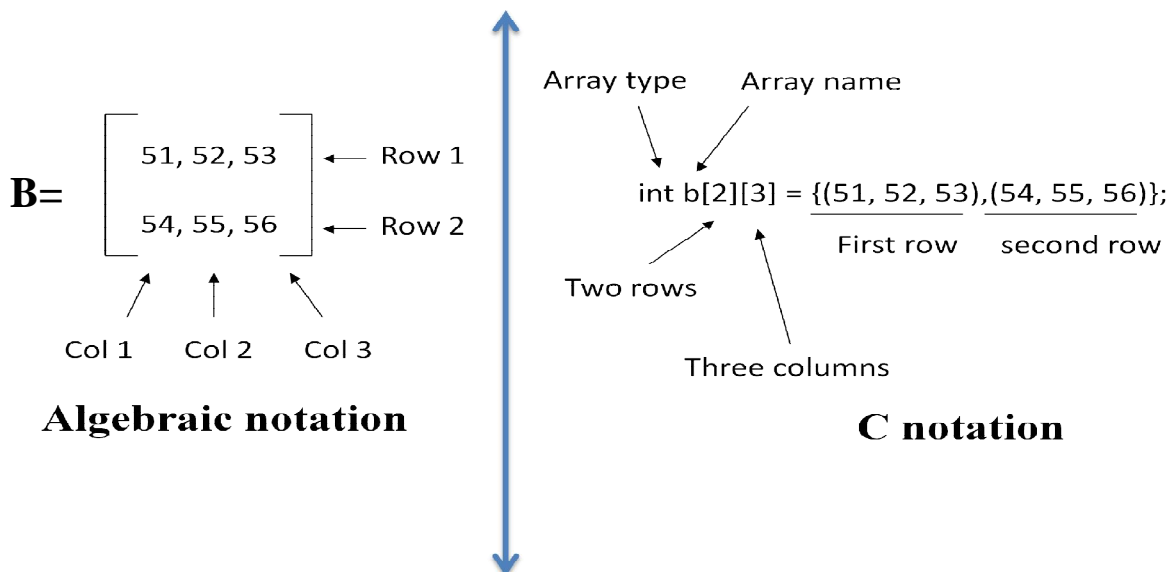
The following syntax is used to represent multidimensional array.

Syntax: <data-type> <array_name> [row_size][column_size];
Example: int a[3][3];

Notation of Multidimensional Array

Algebraic notation   **C notation**

Example: **Program to store and display the element of 2D array.**

```c
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[3][3],i,j;
    clrscr();
    printf("enter the elements of an array");
    for(i=0 ; i<3 ; i++)
    for(j=0 ; j<3 ; j++)
    scanf("%d",&a[i][j]);
```

```
   for(i=0 ; i<3 ; i++)
   {
     for(j=0 ; j<3 ; j++)
     printf("%d",c[i][j]);
    printf("\n");
   }
  getch();
  }
```

Limitations of Multidimensional array:

- ➤ We cannot delete any element from an array.
- ➤ If we don't know that how many elements have to be stored in a memory in advance, then there will be memory wastage if large array size is specified.

Advantages:
- ➤ It is used to represent multiple data items of same type by using only single name.
- ➤ It can be used to implement other data structures like linked lists, stacks, queues, trees, graphs etc.
- ➤ Multidimensional arrays are used to represent matrices.

Disadvantages:
- ➤ We must know in advance that how many elements are to be stored in array.
- ➤ Array is static structure. It means that array is of fixed size. The memory which is allocated to array cannot be increased or reduced.
- ➤ Since array is of fixed size, if we allocate more memory than requirement then the memory space will be wasted. And if we allocate less memory than requirement, then it will create problem.
- ➤ The elements of array are stored in consecutive memory locations. So insertions and deletions are very difficult and time consuming.