**Introduction:**

2D array is an array of arrays. In this we store data in tabular form, rows and columns.

Syntax: datatype [size][size]

Example:- int twodarr[4][4];

**Size of array:**

When you multiply the size of an array you can store that number of values in the 2D array.

Example: int arr[3][3];

In this example multiply 3x3=9, so you can store 9 elements in the array.

**Initializing the 2-D array:**

Method 1:

int a[4][4] = {

{2,4,6,8} , /\* values of row indexed 0 \*/

{1,2,3,4} , /\* values of row indexed 1 \*/

{9,8,7,11}, /\* values of row indexed 2 \*/

{4,8,10,5} /\* values of row indexed 3 \*/

};

Method 2:

int a[4][3] = {0,1,2,3,4,5,6,7,8,9,10,11};

**Access the elements of an array:**

We make use of row number and column number to access the elements.

Example:

int a[4][4] = {

{2,4,6,8} ,

{1,2,3,4} ,

{9,8,7,11},

{4,8,10,5}

};

int val = a[3][3];

This is return 5 by moving rowwise 0-3 an columnwise 0-3

**Code:**

#include <iostream>

using namespace std;

int main () {

// an array of 4 rows and 3 columns.

int a[4][3] = { {0,4,5}, {1,2,3}, {2,4,9}, {3,6,8}};

// output will be 2nd element from 3rd row

cout << a[3][2]: ;

return 0;

}

**Output :**

8

// As the array indexing starts from 0 we have 0 to 3 rows and 0 to 2 columns

**Method to enter data to a 2-D array**

Nested loops can be used to enter the elements in the array. We can use for loop or while depending upon the requirement.

#include<iostream>

using namespace std;

int main()

{

int matrix [5] [4];

for (int mat1=0 ; mat1<5 ; mat1++)

{

for (int mat2=0 ; mat2<4 ; mat2++)

{

matrix [m1] [m2] ;

}

}

}

**Initializing the 2-D character array:**

Write char instead of int at the time of initialization.

Example:

char array[4] [3]= { 'm', 'a', 'n' ,

'b', 'a', 'n' ,

'g', 'r', 't'

‘a’,’n’,’d’};

**Code:**

#include <iostream>

int main()

{

// Initialize 2D array

char array[5] [10]= { "man", "pot", "van", "run"};

// Printing Strings stored in 2D array

for (int i = 0; i < 4; i++)

std::cout << array[i] << "\n";

return 0;

}

**Output:**

man

pot

van

run

**Summary:**

It has become easy to store values in variables with the help of arrays.