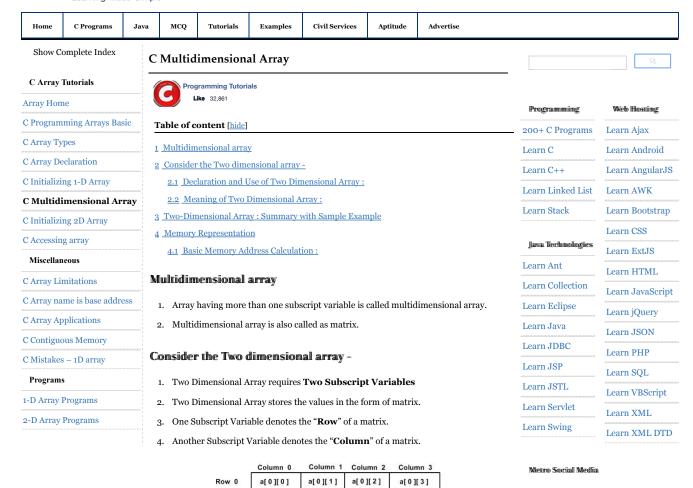
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Declaration and Use of Two Dimensional Array:

a[1][0]

a[2][0]

Row 1

int a[3][4];

a[1][1]

a[2][1]

a[1][2]

a[2][2]

a[1][3]

a[2][3]

Use:

for (i=0;i<row,i++)
 for (j=0;j<col,j++)
 {
 printf("%d",a[i][j]);
}</pre>

Meaning of Two Dimensional Array:

- 1. Matrix is having 3 rows (i takes value from 0 to 2)
- 2. Matrix is having 4 Columns (j takes value from 0 to 3)
- 3. Above Matrix 3×4 matrix will have 12 blocks having 3 rows & 4 columns.
- 4. Name of 2-D array is 'a' and each block is identified by the row & column number.
- 5. Row number and Column Number Starts from o.

Cell Location Meaning

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C	Mu	ltidim	ensional	Array

Cell Location	Meaning
a[0][0]	oth Row and oth Column
a[0][1]	oth Row and 1st Column
a[0][2]	oth Row and 2nd Column
a[0][3]	oth Row and 3rd Column
a[1][0]	1st Row and oth Column
a[1][1]	1st Row and 1st Column
a[1][2]	1st Row and 2nd Column
a[1][3]	1st Row and 3rd Column
a[2][0]	2nd Row and oth Column
a[2][1]	2nd Row and 1st Column
a[2][2]	2nd Row and 2nd Column
a[2][3]	2nd Row and 3rd Column

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Two-Dimensional Array: Summary with Sample Example

Summary Point	Explanation
No of Subscript Variables Required	2
Declaration	a[3][4]
No of Rows	3
No of Columns	4
No of Cells	12
No of for loops required to iterate	2

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Memory Representation

- 1. 2-D arrays are Stored in contiguous memory location row wise.
- 2. 3 X 3 Array is shown below in the first Diagram.
- 3. Consider 3×3 Array is stored in Contiguous memory location which starts
- 4. Array element $\underline{\mathbf{a[o][o]}}$ will be stored at address $\underline{\mathbf{4000}}$ again $\underline{\mathbf{a[o][1]}}$ will be stored to next memory location i.e Elements stored row-wise
- After **Elements of First Row are stored** in appropriate memory location , elements of next row get their corresponding mem. locations.

	Col 0	Col 1	Col 2
Row 0	1	2	3
Row 1	4	5	6
Row 2	7	8	9
		\A/\A/\A/	c4learn com

2 of 3 4/9/15, 10:42 AM 6. This is integer array so each element requires 2 bytes of memory.

Basic Memory Address Calculation:

a[0][1] = a[0][0] + Size of Data Type

Element	Memory Location
a[o][o]	4000
a[0][1]	4002
a[o][2]	4004
a[1][0]	4006
a[1][1]	4008
a[1][2]	4010
a[2][0]	4012
a[2][1]	4014
a[2][2]	4016

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1	2	3
4000	4002	4004
4	5	6
4006	4008	4010
7	8	9
4012	4014	4016

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