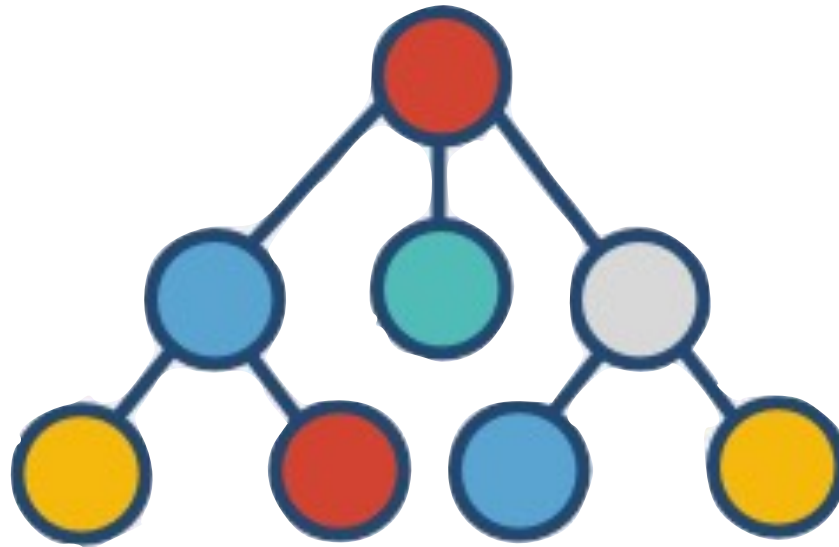


DATA STRUCTURE & ALGORITHMS



(By Prince Agarwal)
(“HELLO WORLD”)

Multidimensional Arrays

- **Multidimensional array means, —> Array of Array**
- **Two dimensional array: `int two_d[10][20];`**
- **Three dimensional array: `int three_d[10][20][30];`**

Hello world

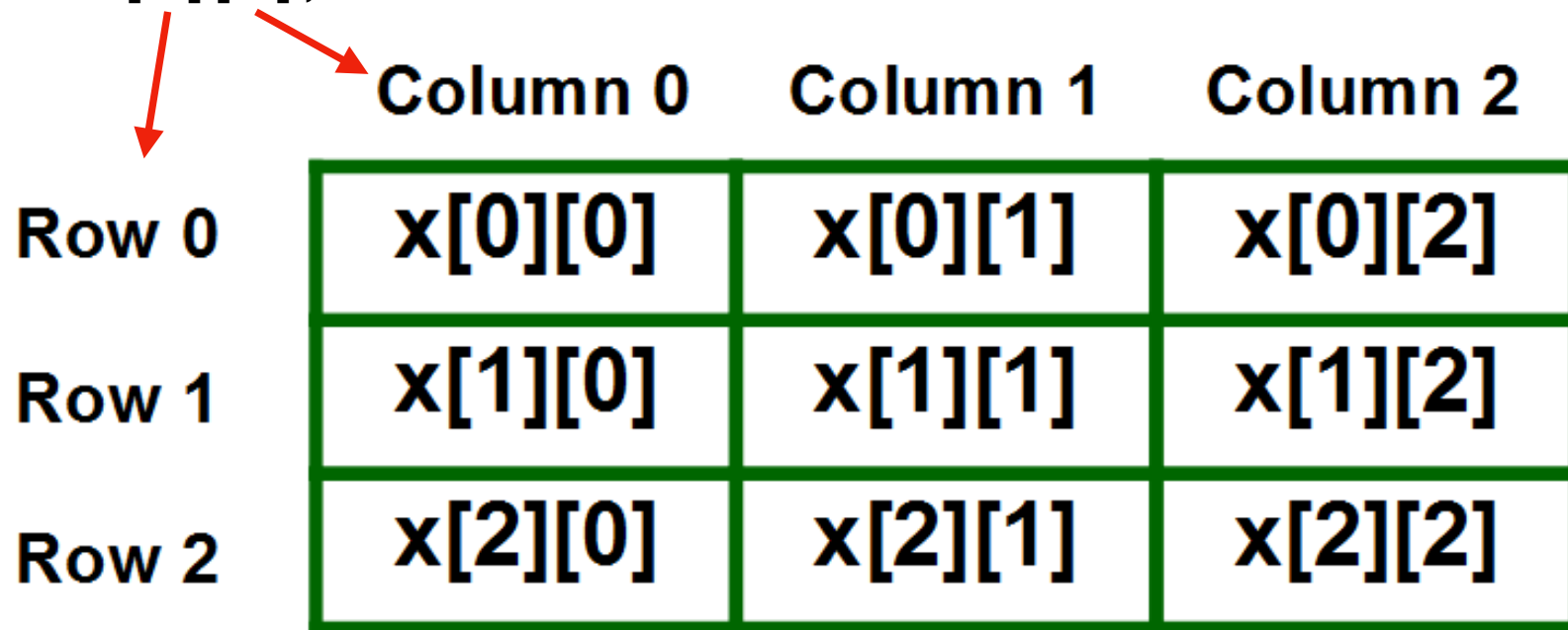
Multidimensional Arrays

■ Multidimensional array means, —> Array of Array

■ Two dimensional array: `int two_d[10][20];`

`arr[i][j]`

■ `Int arr[3][3];`



The diagram illustrates a 3x3 2D array. It features a table with three rows and three columns. The rows are labeled 'Row 0', 'Row 1', and 'Row 2' on the left. The columns are labeled 'Column 0', 'Column 1', and 'Column 2' at the top. Each cell in the table contains an array access notation: `x[i][j]`, where `i` is the row index and `j` is the column index. Two red arrows originate from the code `Int arr[3][3];` above the table. One arrow points from the first '3' to the 'Row 0' label, and the other points from the second '3' to the 'Column 0' label.

	Column 0	Column 1	Column 2
Row 0	<code>x[0][0]</code>	<code>x[0][1]</code>	<code>x[0][2]</code>
Row 1	<code>x[1][0]</code>	<code>x[1][1]</code>	<code>x[1][2]</code>
Row 2	<code>x[2][0]</code>	<code>x[2][1]</code>	<code>x[2][2]</code>

Hello world

Multidimensional Arrays

- Multidimensional array means, —> Array of Array
- `Int arr [3] ;`
- `Int arr [3] = { 4, 0, -1 } ;`
- `int x [3] [4] = { 0, 1 ,2 ,3 ,4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 }`
- `int x [3] [4] = { { 0,1,2,3 }, { 4,5,6,7 }, { 8,9,10,11 } } ;`

`int x [3] [4]`

0	1	2	3
4	5	6	7
8	9	10	11

Hello world

Multidimensional Arrays

```
int x [ 3 ] [ 4 ]
```

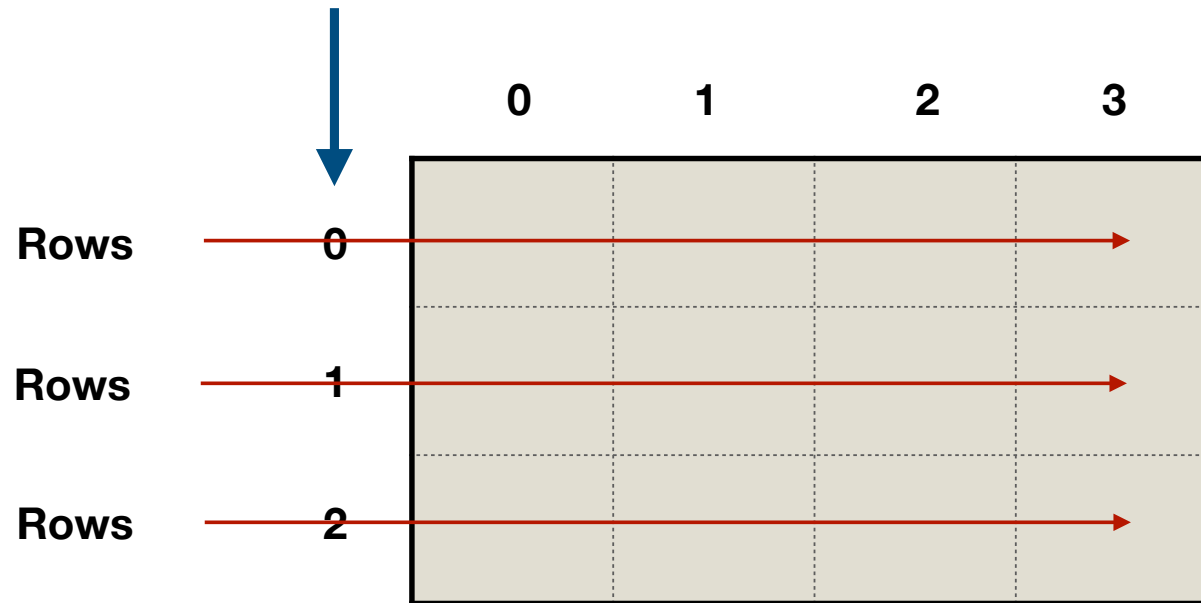
	0	1	2	3
0				
1				
2				

Hello world

Multidimensional Arrays

`int x [3] [4]`

Rows Count



Hello world

Multidimensional Arrays

`int x [3] [4]`

Col Count



Col

Col

Col

Col

0

1

2

3

0

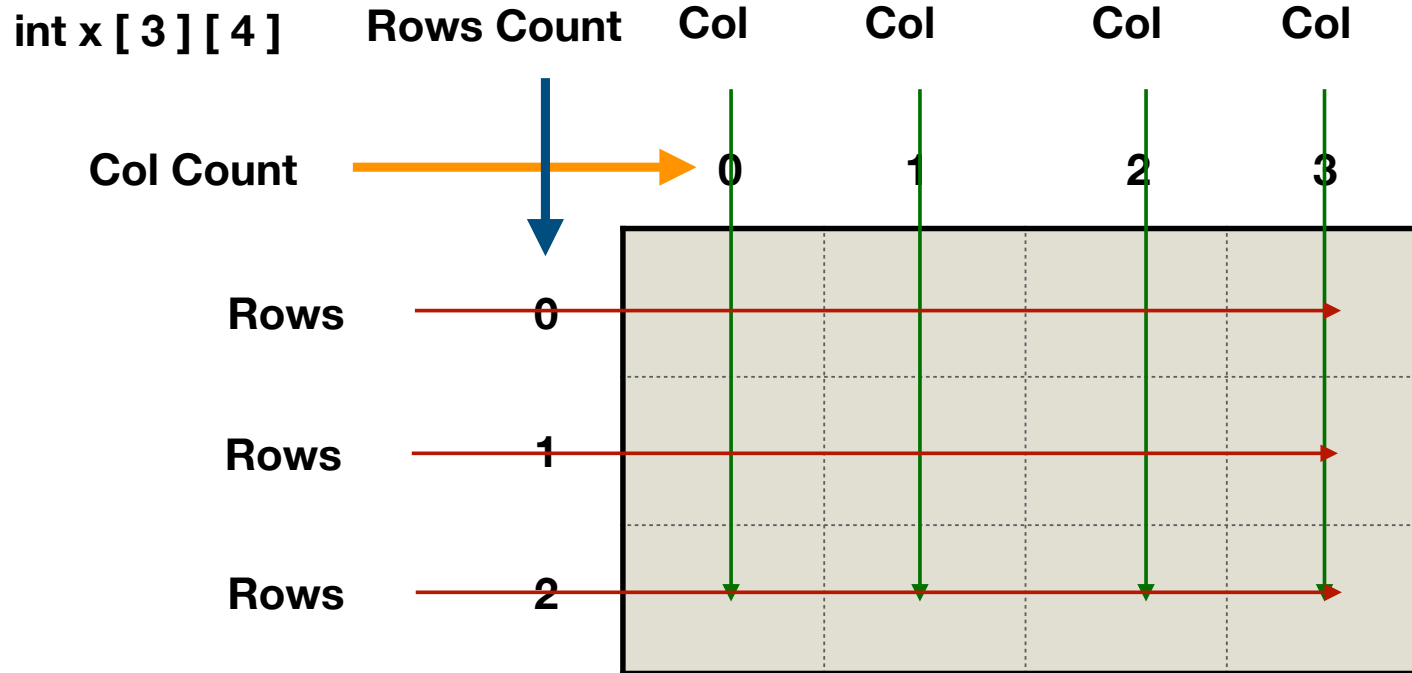
1

2



Hello world

Multidimensional Arrays



Hello world

Multidimensional Arrays



Operations in MATRIX

Print the MATRIX

	0	1	2	3
0				
1				
2				

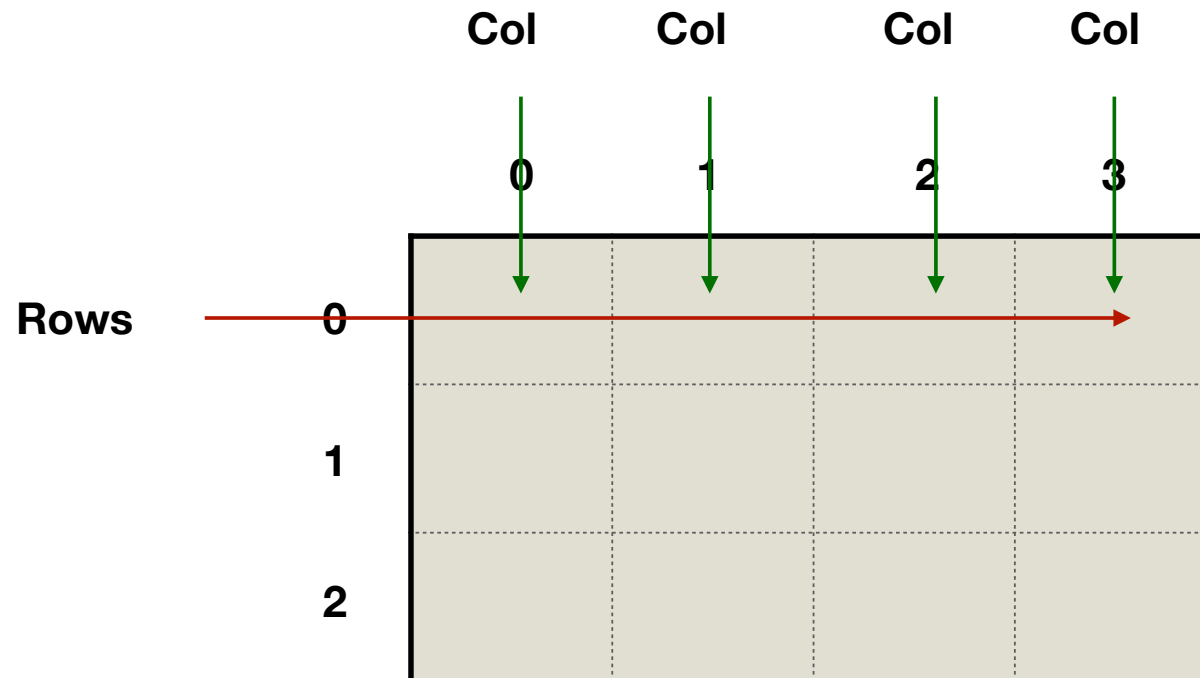
Hello world

Multidimensional Arrays



Operations in MATRIX

Print the MATRIX



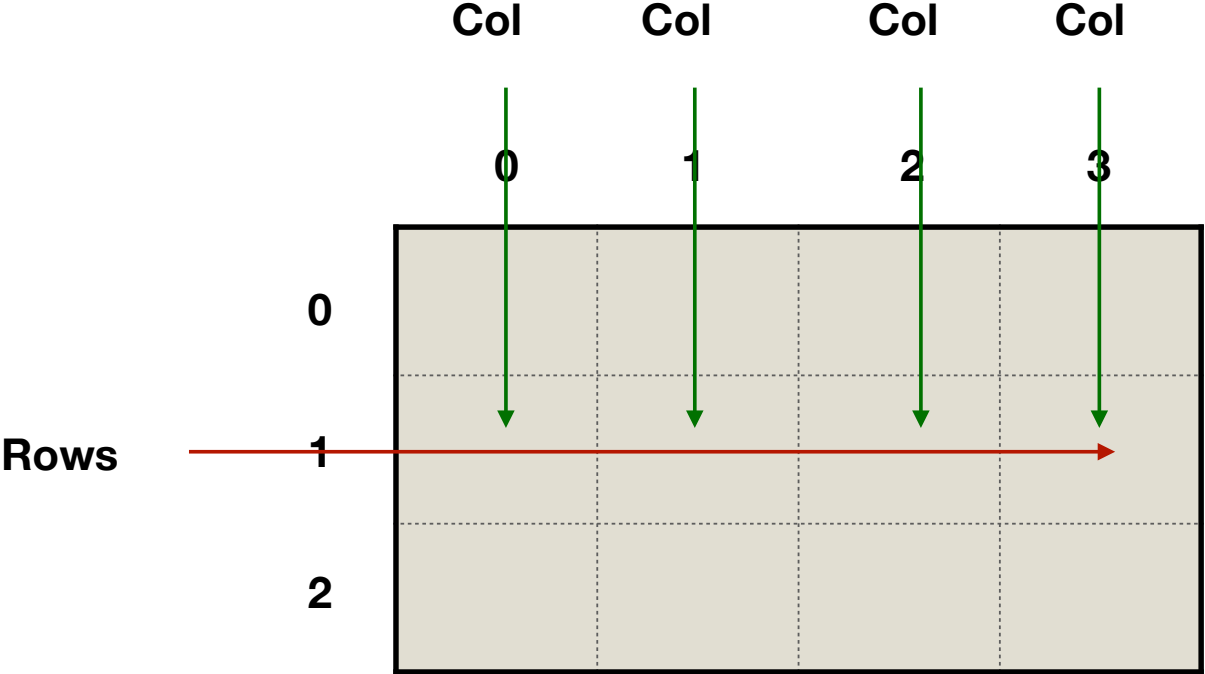
Hello world

Multidimensional Arrays



Operations in MATRIX

Print the MATRIX



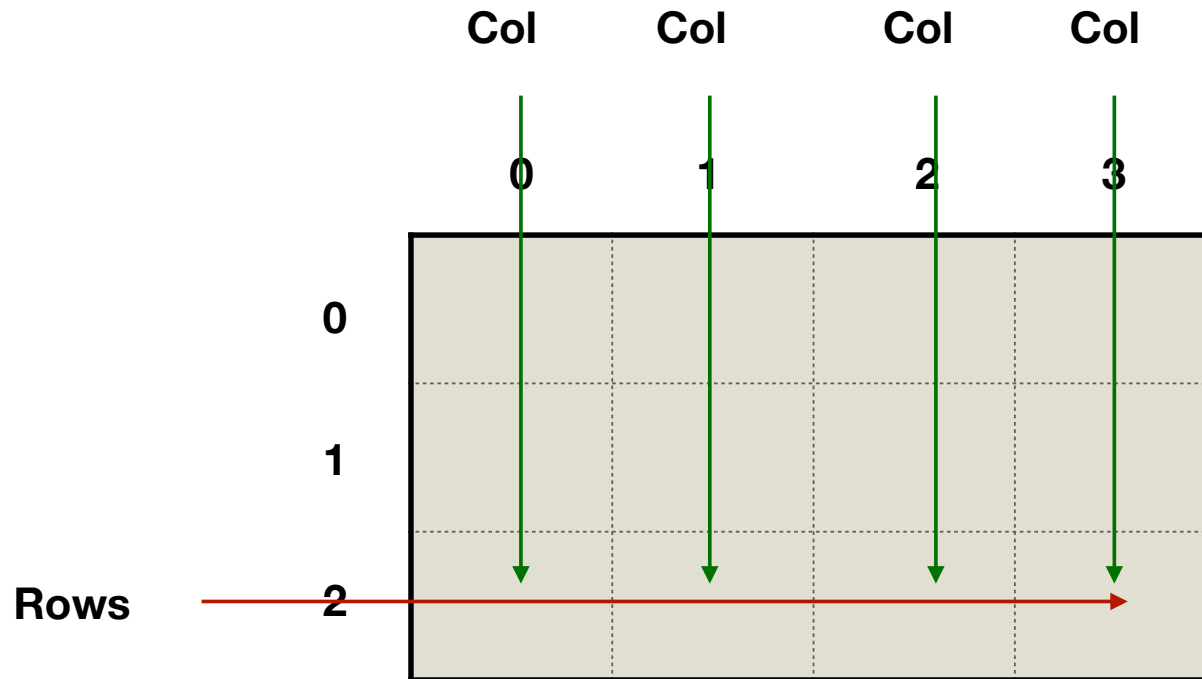
Hello world

Multidimensional Arrays



Operations in MATRIX

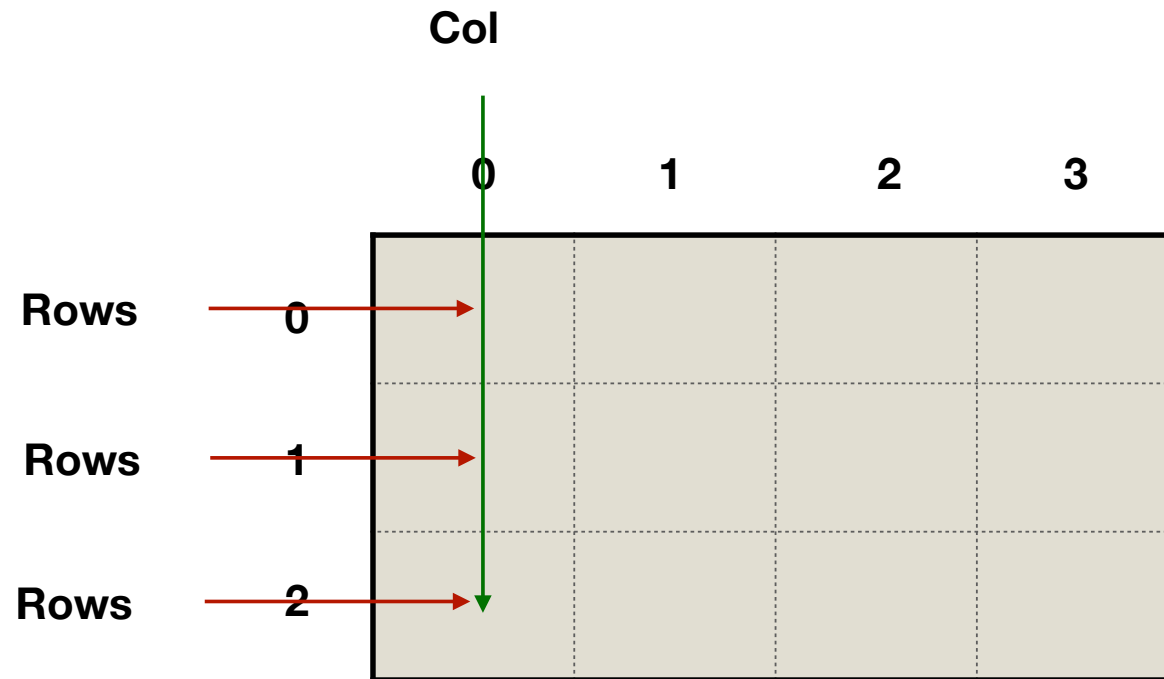
Print the MATRIX



Hello world

Multidimensional Arrays

Now, You can ask me, we can also start with a column



Hello world

Multidimensional Arrays



Now, You can ask me, we can also start with a column

	0	1	2	3
0	4	5	-7	1
1	0	3	8	12
2	7	3	12	5

4, 5, -7 , 1, 0 , 3, 8, 12, 7, 3, 12, 5

Hello world

Multidimensional Arrays



Now, You can ask me, we can also start with a column

		Col			
		0	1	2	3
Rows	0	4	5	-7	1
Rows	1	0	3	8	12
Rows	2	7	3	12	5

4, 0, 7, 5, 3, 3,

Hello world

Multidimensional Arrays



Now, You can ask me, we can also start with a column

Matrix [3] [4] =

	0	1	2	3
0	4	5	-7	1
1	0	3	8	12
2	7	3	12	5

Matrix [n] [m]

```
Int row_size = matrix.size( ) ;
```

```
Int col_size = matrix[0].size( ) ;
```

Hello world

Multidimensional Arrays

Now, You can ask me, we can also start with a column

Matrix [3] [4] =

	0	1	2	3
0	4	5	-7	1
1	0	3	8	12
2	7	3	12	5

1	2	3	4	5
---	---	---	---	---

Matrix [1] [5]

```
Int row_size = matrix.size( ) ;
```

```
Int col_size = matrix[0].size( ) ;
```

Hello world