Course	
Term	
Week	
Date	
Chapter. Topic	7_5. Two Dimensional Lists

Two-Dimensional Lists

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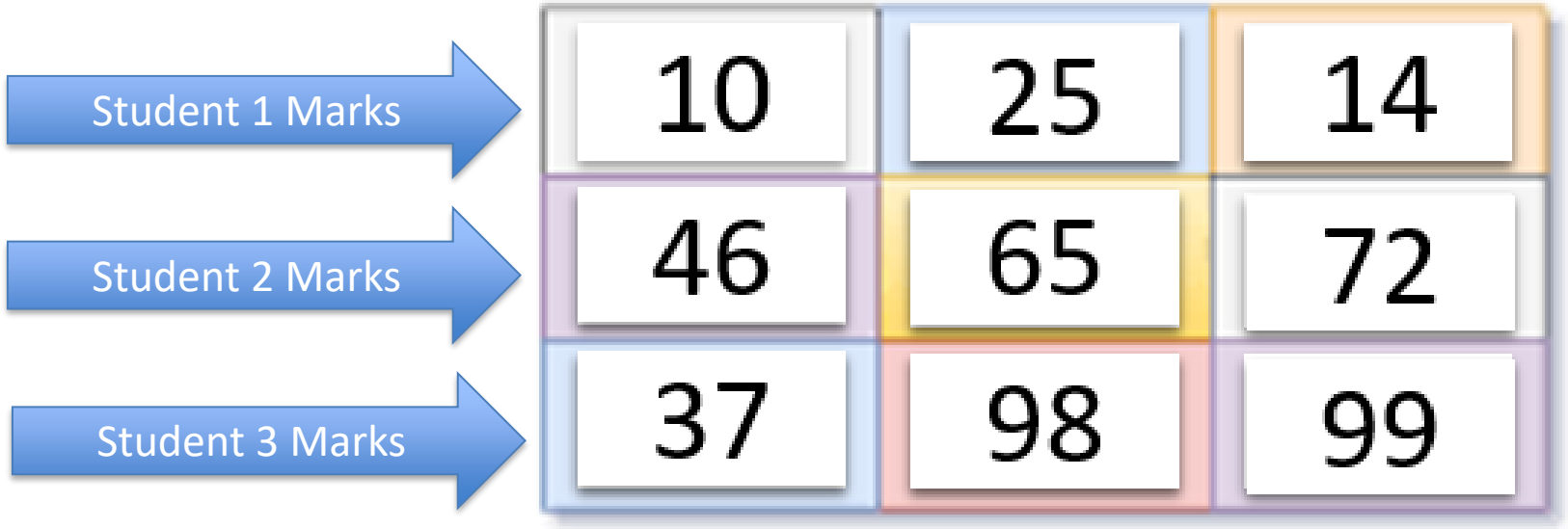
Overview

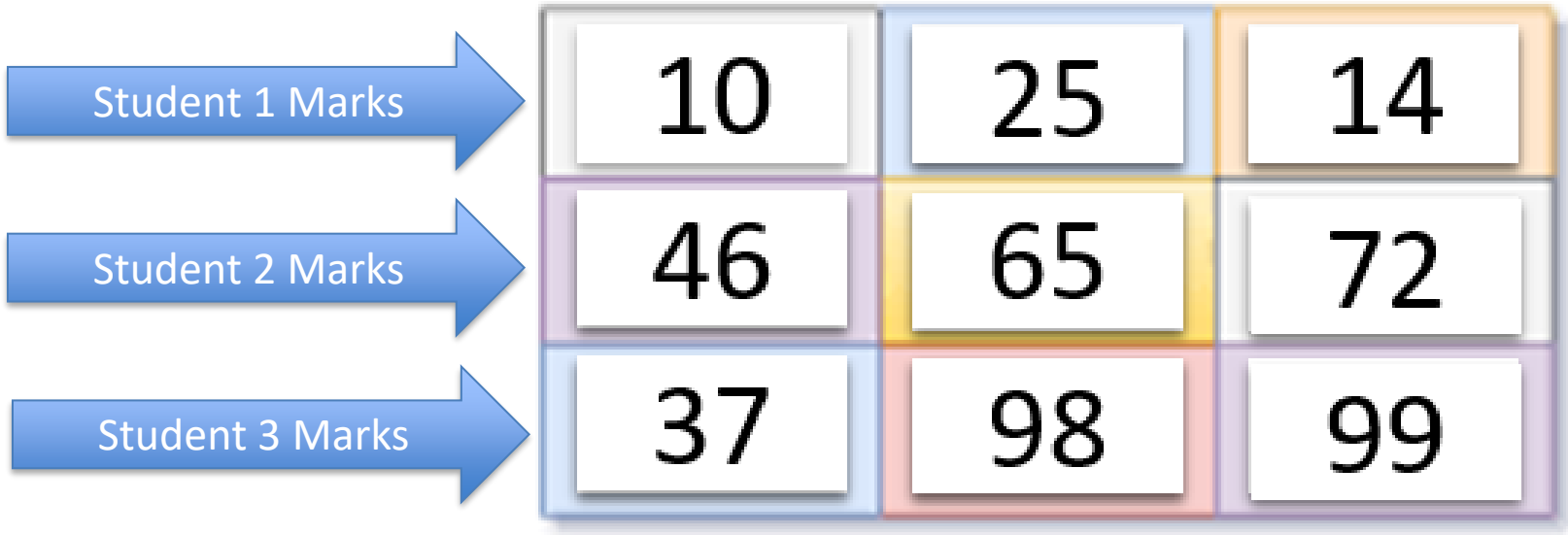
- Introduction
- 2-D Lists (List of Lists)
- Row-Major Traversal
- Column-Major Traversal

2-D Lists: An introduction



- What is the average score (of all students and all tests)?
- What is the average score of each student?
- What is the average score of the class in test 1?
- How to represent this data in python? How to solve it in python?

2-D Lists = List of Lists




```
py_marks = [   [10, 25, 24],
               [26, 65, 72],
               [37, 98, 99]
           ]
```

List of Lists
aka 2-D list

2-D Lists = List of Lists

10	25	14
46	65	72
37	98	99

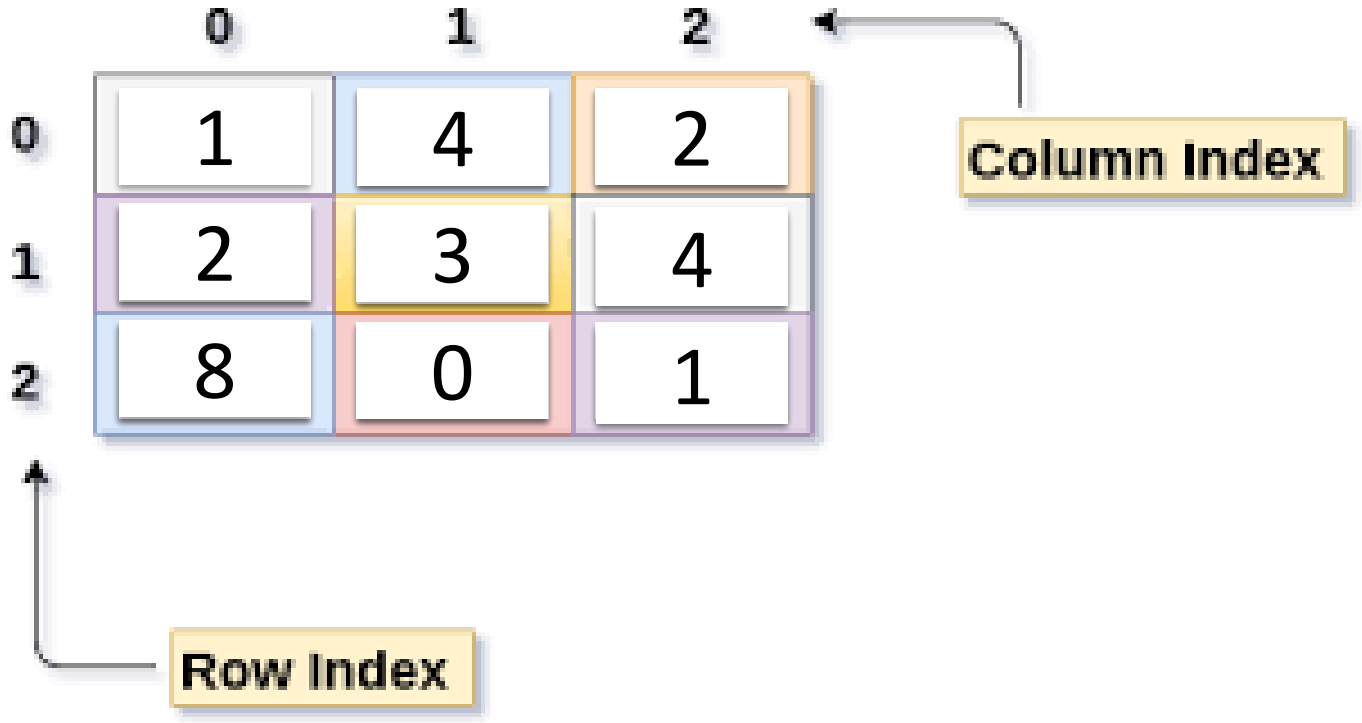
```
py_marks= [ [10, 25, 24], [26, 65, 72], [37, 98, 99] ]
```

We can also write 2_D lists as a single line.
For simple lists, we can follow this approach.

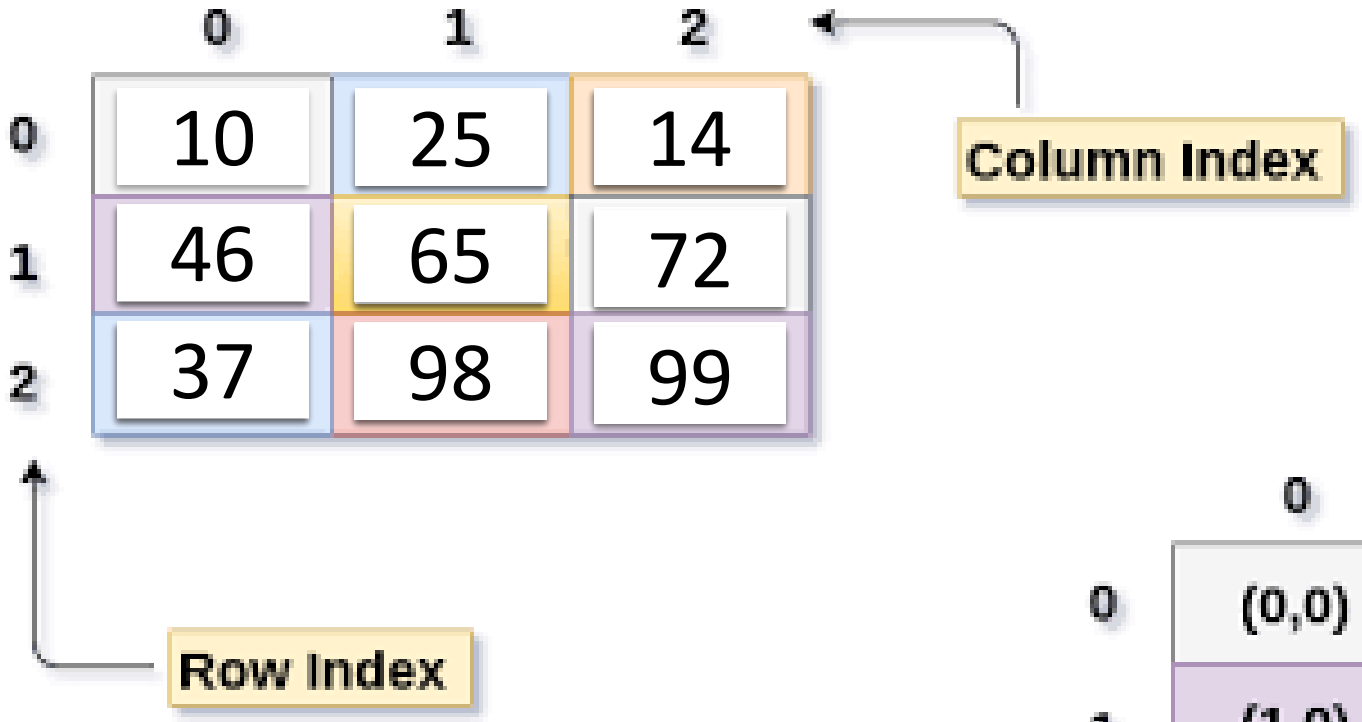
2-D Lists = List of Lists

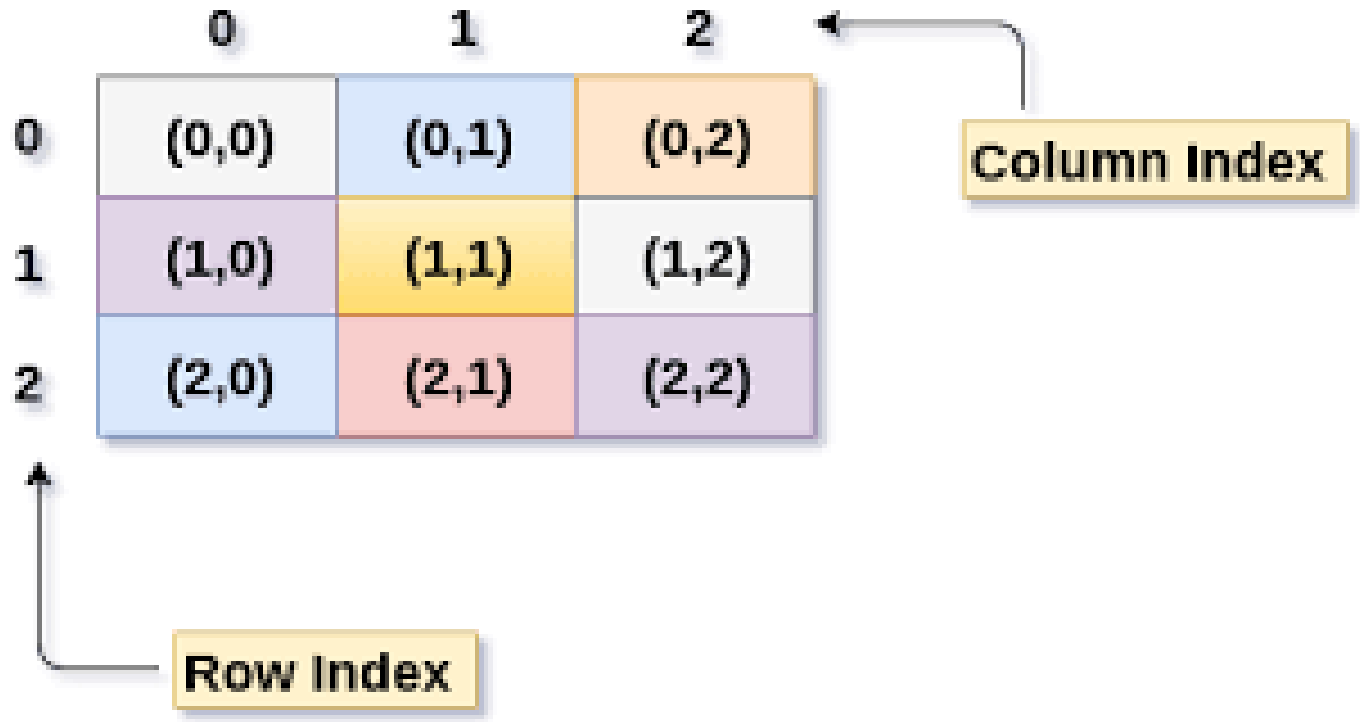
py_marks= [[1, 4, 2], [2, 3, 4], [8, 0, 1]]

Py_marks[1][2] = 4



2-D List = List of Lists





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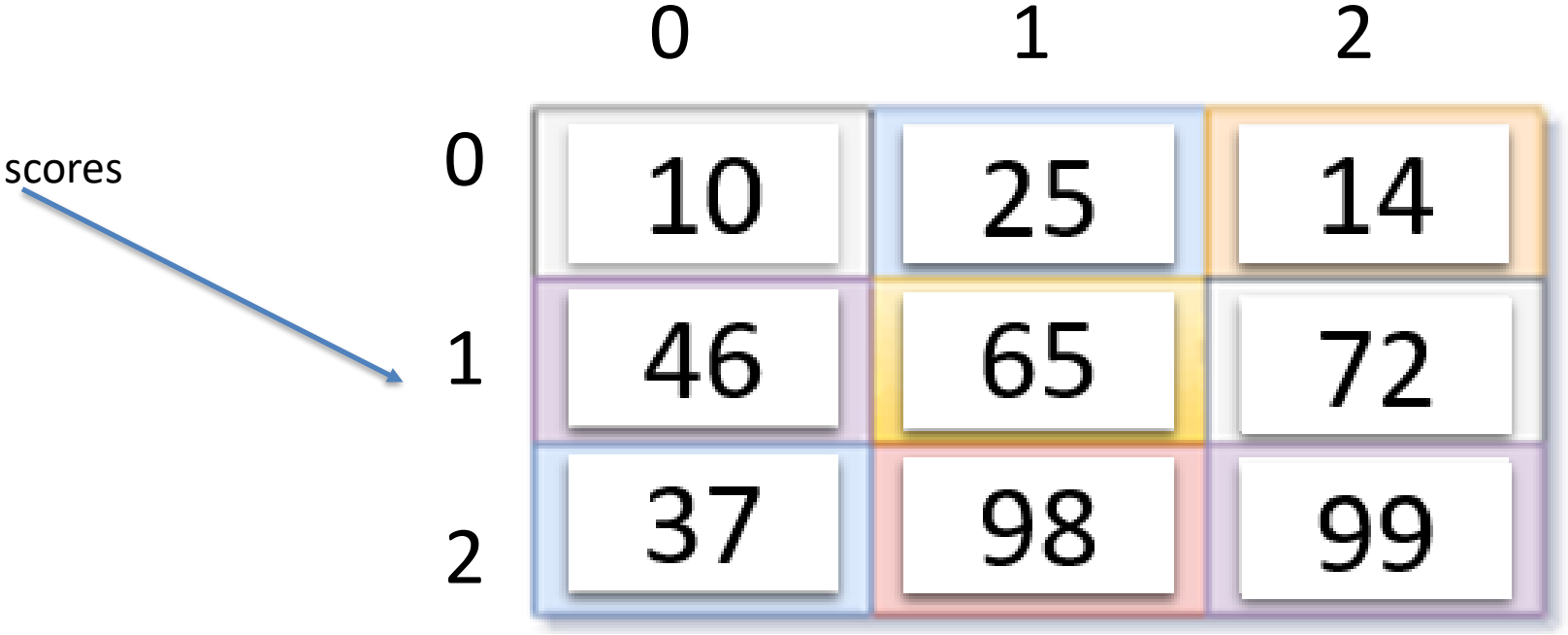
Subscript Notation for 2-dimensional lists



	Column 0	Column 1	Column 2
Row 0	scores[0][0]	scores[0][1]	scores[0][2]
Row 1	scores[1][0]	scores[1][1]	scores[1][2]
Row 2	scores[2][0]	scores[2][1]	scores[2][2]

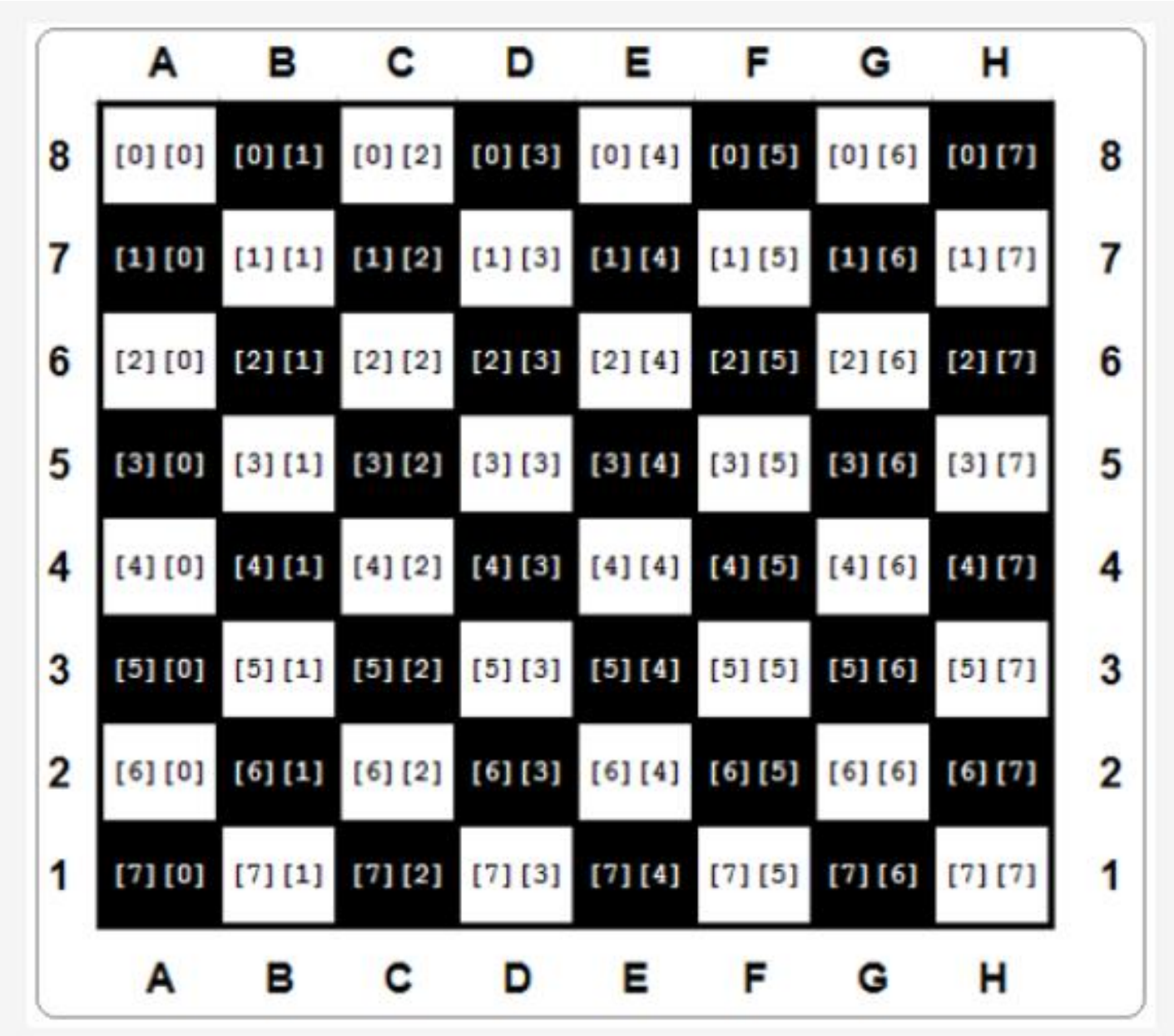
Dimensions (width & height) can be different

	0	1	2	3
0	10	25	14	73
1	46	65	72	53
2	37	98	99	15

Consider this 2-Dimensional List (3x4)

- How many rows? _____
- How many columns? _____
- How many total elements? _____
- What is the length of the list? _____

Dimensions (width & height) can be different



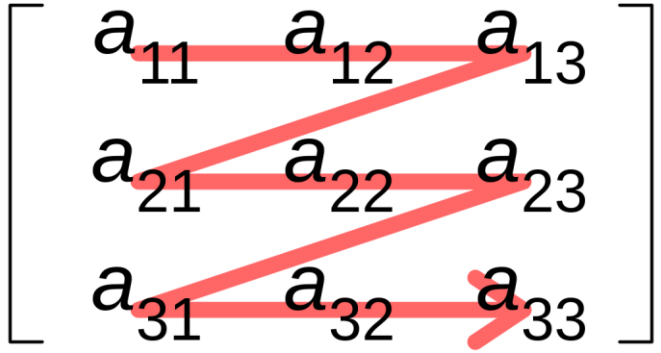
Row-Major Traversal

	0	1	2	3
0	10	25	14	73
1	46	65	72	53
2	37	98	99	15

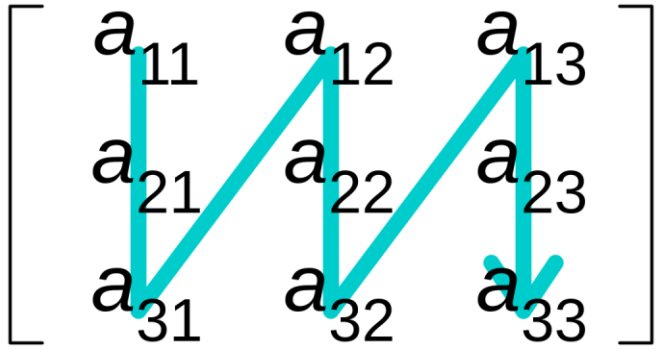
Left to right and top to bottom

10, 25, 14, 73, 46, 65, 72, 53, 37, 98, 99, 15

Row-major order



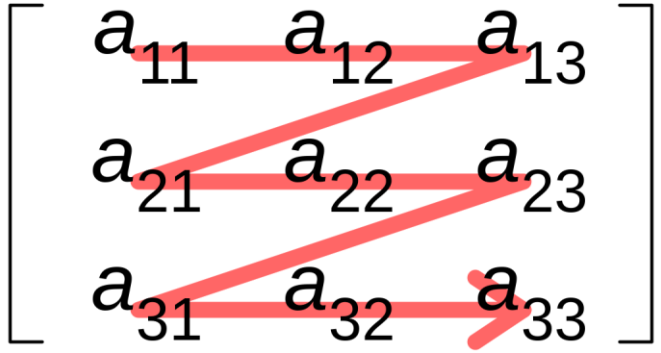
Column-major order



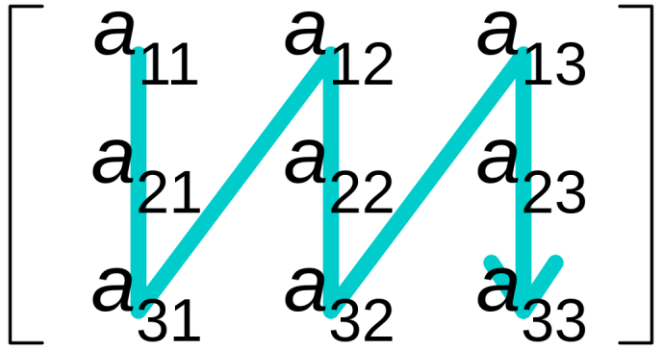
Column-Major Traversal

	0	1	2	3
0	10	25	14	73
1	46	65	72	53
2	37	98	99	15

Row-major order



Column-major order



10, 46, 37, 25, 65, 98, 14, 72, 99, 73, 53, 15

Summary

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- Row-Major Traversal
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Thank You. धन्यवाद