Learn Data Science in Python

Matrix and Data Frame

Feb 11, 2017

Welcome!

February 4	1	Setup & Basics
February 11	2	Matrix & Data Frame
February 18	3	Loop & Function
February 25	4	Statistical Methods
March 4	5	Report & Data Viz

Welcome!

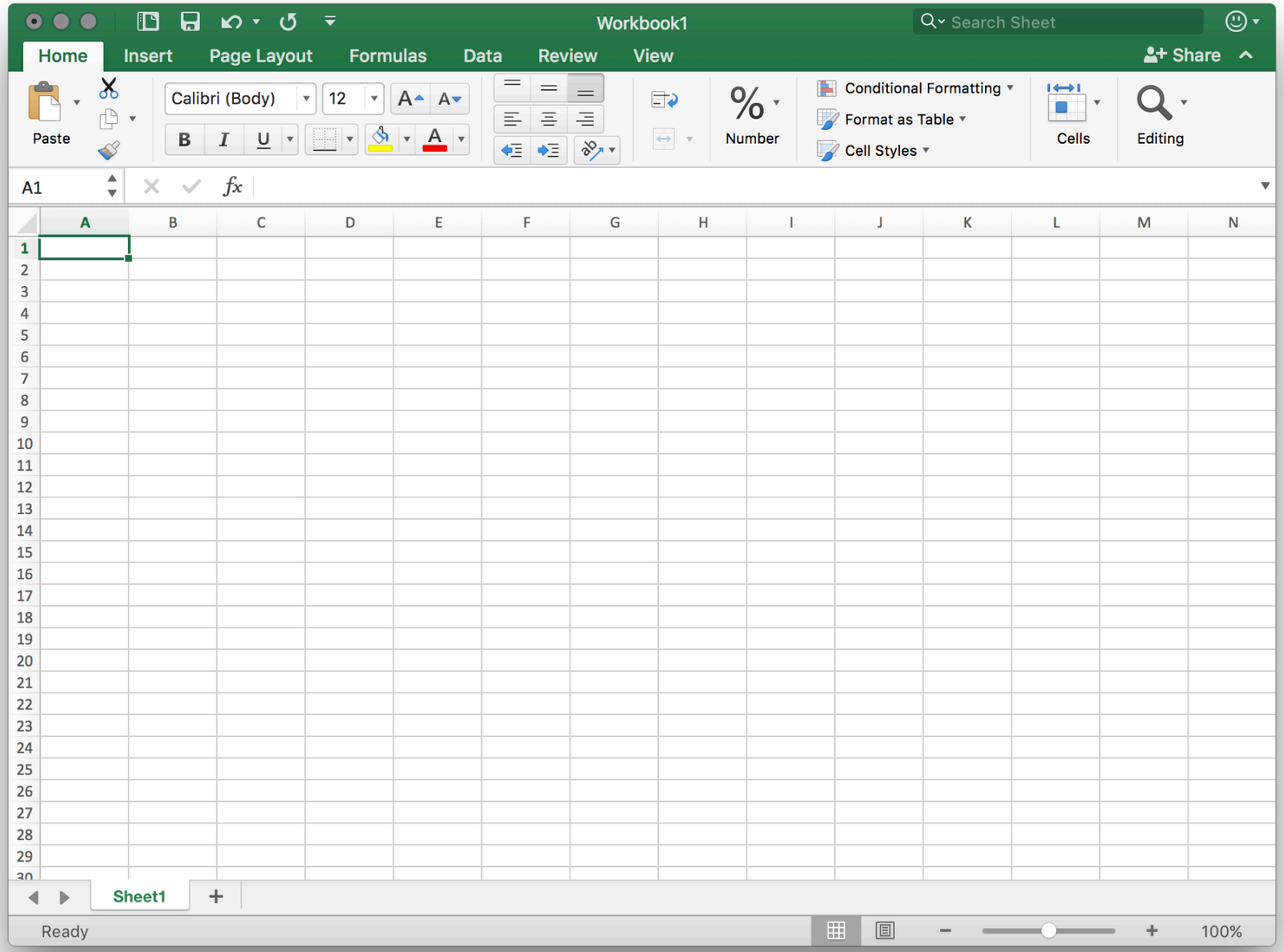
What we've learned previously:

How to assign variables

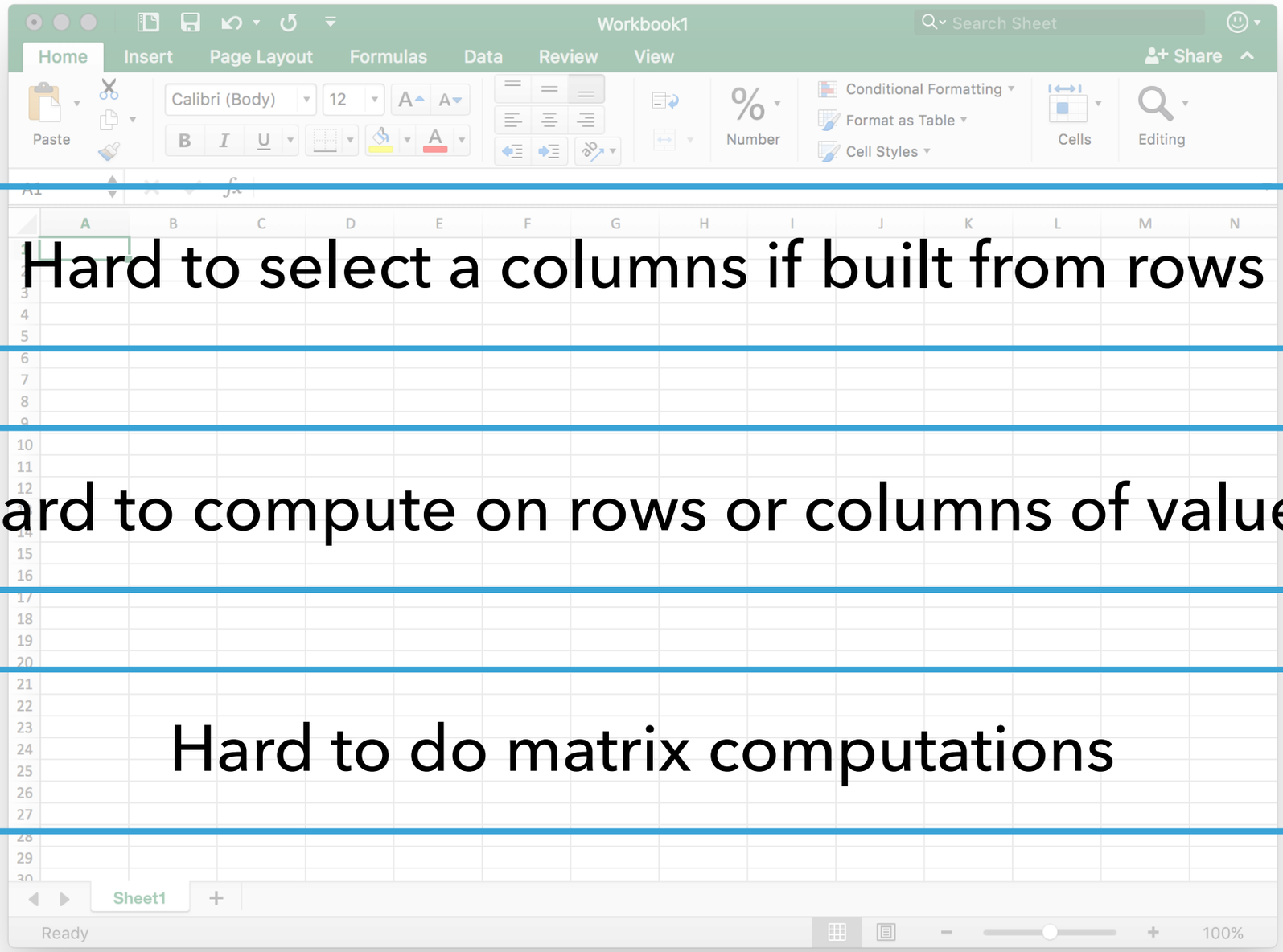
How to calculate numbers

How to manipulate strings and lists

How Far Ahead?



How Far Ahead?

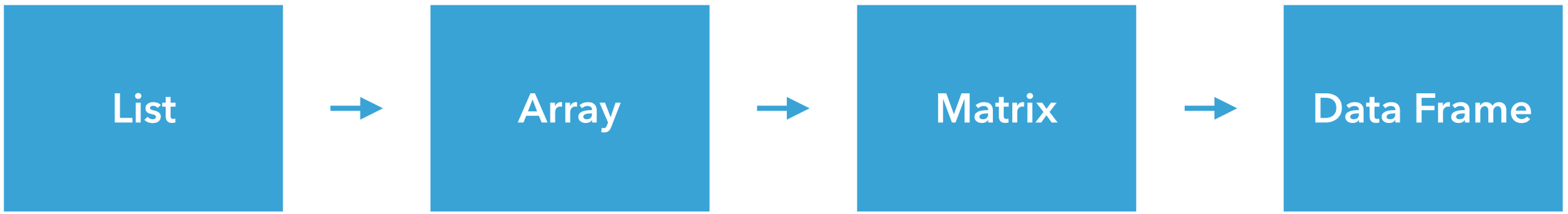


Hard to select a columns if built from rows

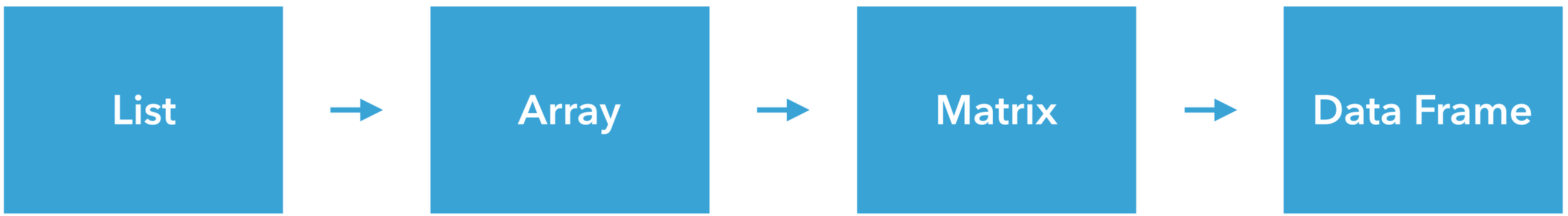
Hard to compute on rows or columns of values

Hard to do matrix computations

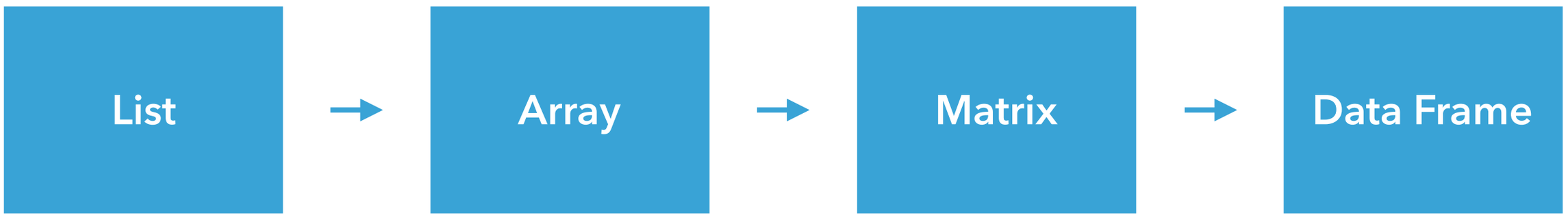
Let's Move On



Let's Move On


List
Array
Matrix
Data Frame
N-dimension
N-dimension
2-dimension
2-dimension

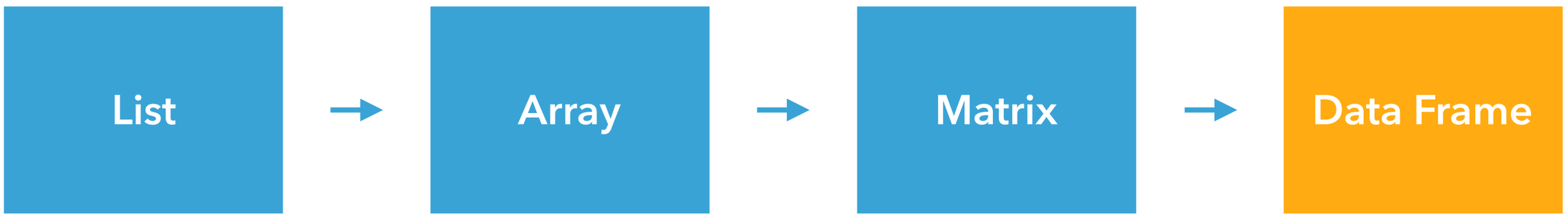
Let's Move On


List
Array
Matrix
Data Frame
N-dimension
N-dimension
2-dimension
2-dimension
Row & Column
Row & Column
Row & Column

Let's Move On

List	Array	Matrix	Data Frame
N-dimension	N-dimension	2-dimension	2-dimension
	Row & Column	Row & Column	Row & Column
Any type	Numerical	Numerical	Any type

Let's Move On


List
Array
Matrix
Data Frame
N-dimension
N-dimension
2-dimension
2-dimension
Row & Column
Row & Column
Row & Column
Any type
Numerical
Numerical
Any type

Array & Matrix

After converting a list with numeric values to a array or matrix, we can do the indexing and calculations in terms of columns or rows.

NumPy

Python + NumPy

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- Array and Matrix
- Useful statistical tools
- A solid foundation for other pkgs

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`numpy.ndarray`

2D

`numpy.matrix`

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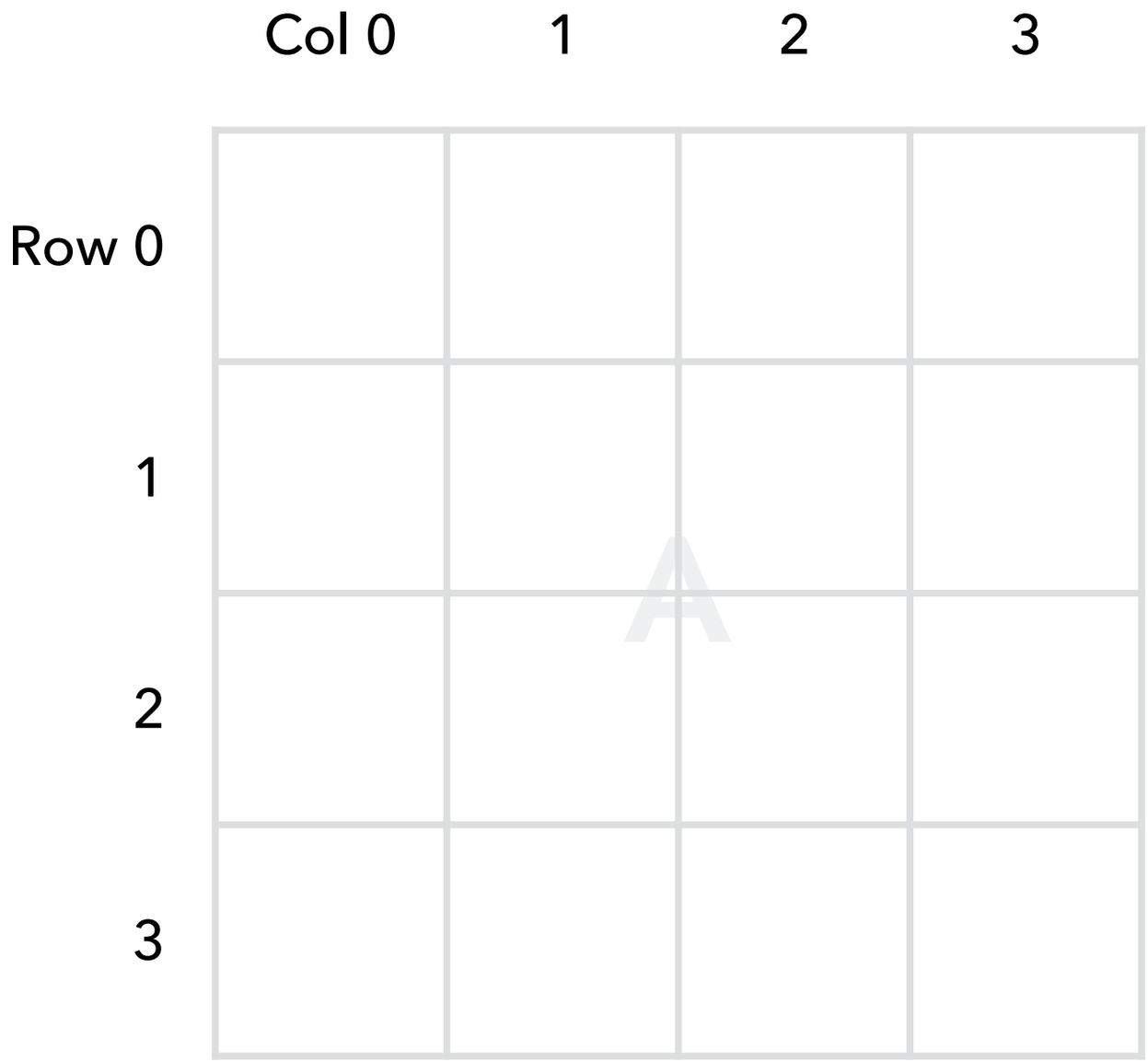
`numpy.ndarray`

2D

`numpy.matrix`

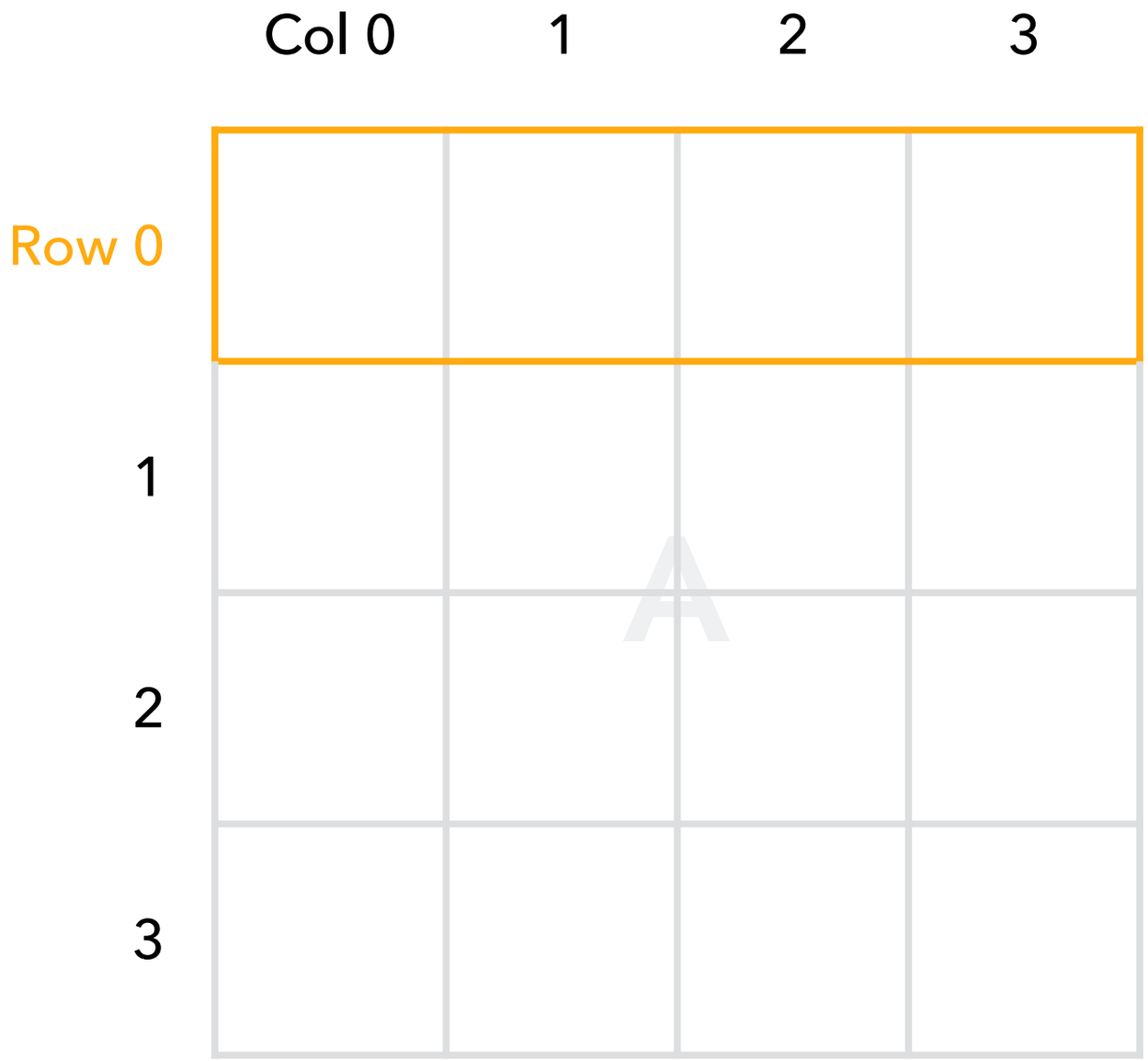
- Matrix calculation
- Subset an array/matrix by using row and column
- Basic manipulation

Index, Slice, Subset




```
A[row,col]
```

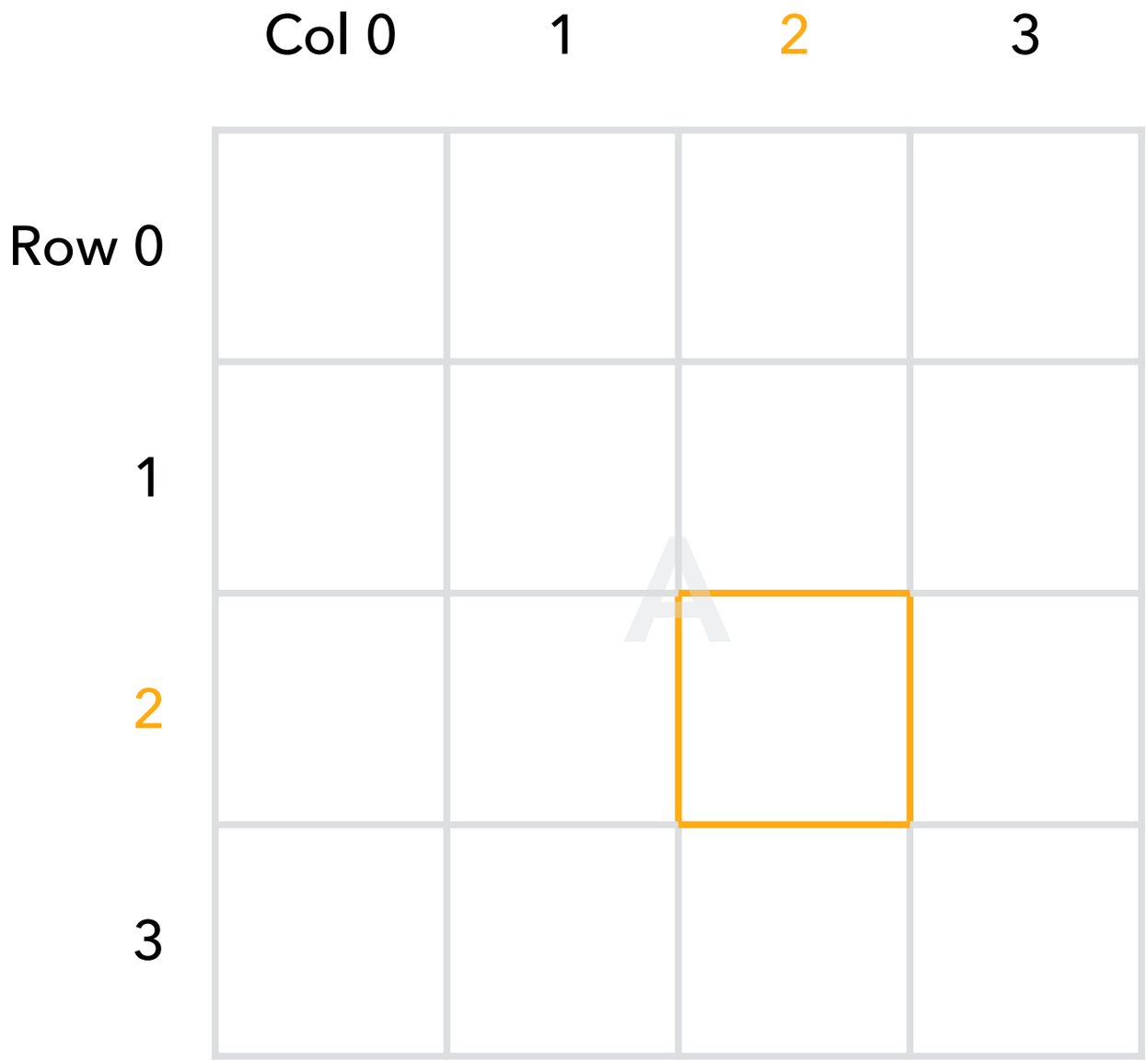
Index, Slice, Subset




```
A[row,col]
```

```
A[0]
```

Index, Slice, Subset

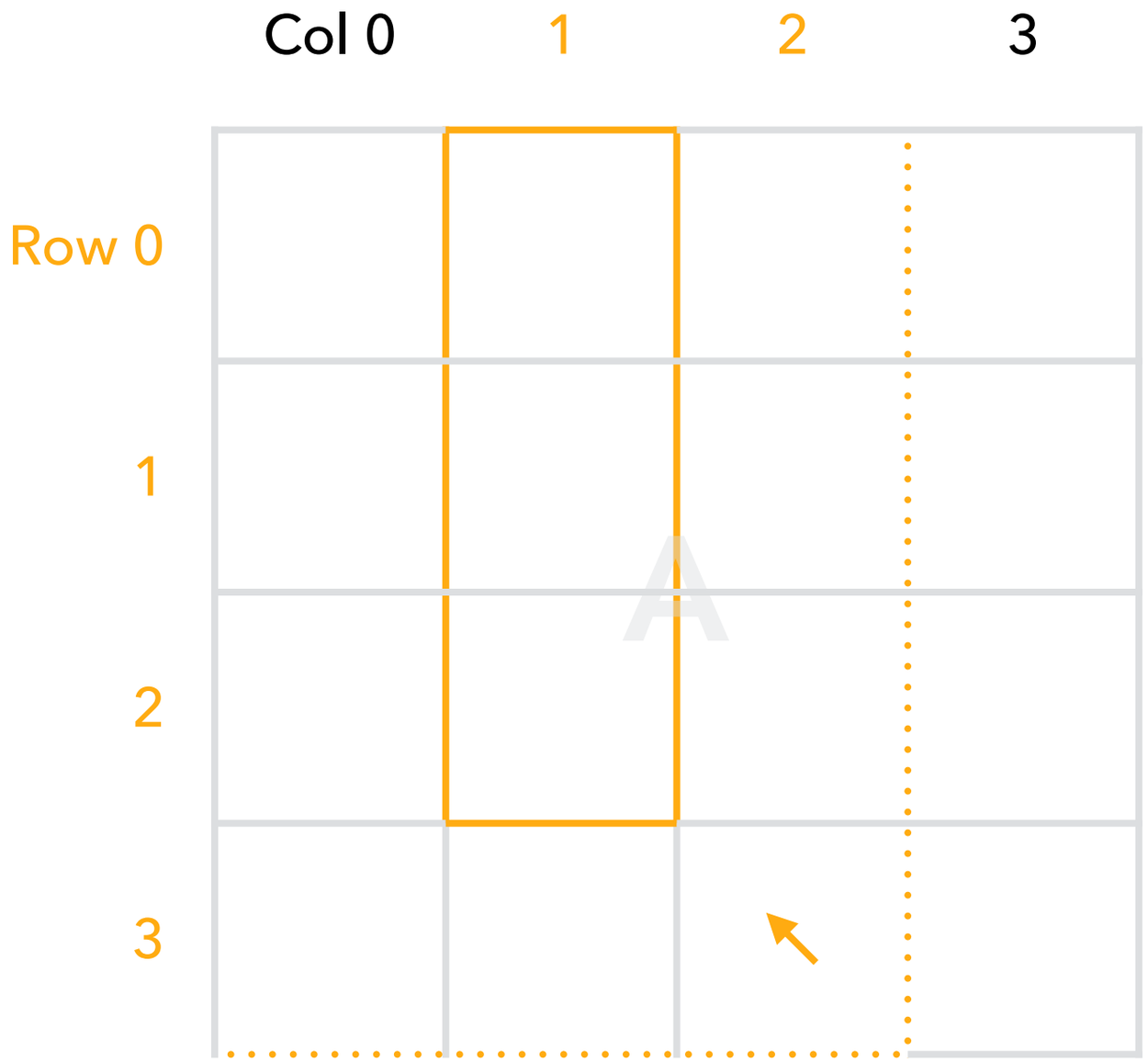



```
A[row,col]
```

```
A[0]
```

```
A[2,2]
```

Index, Slice, Subset



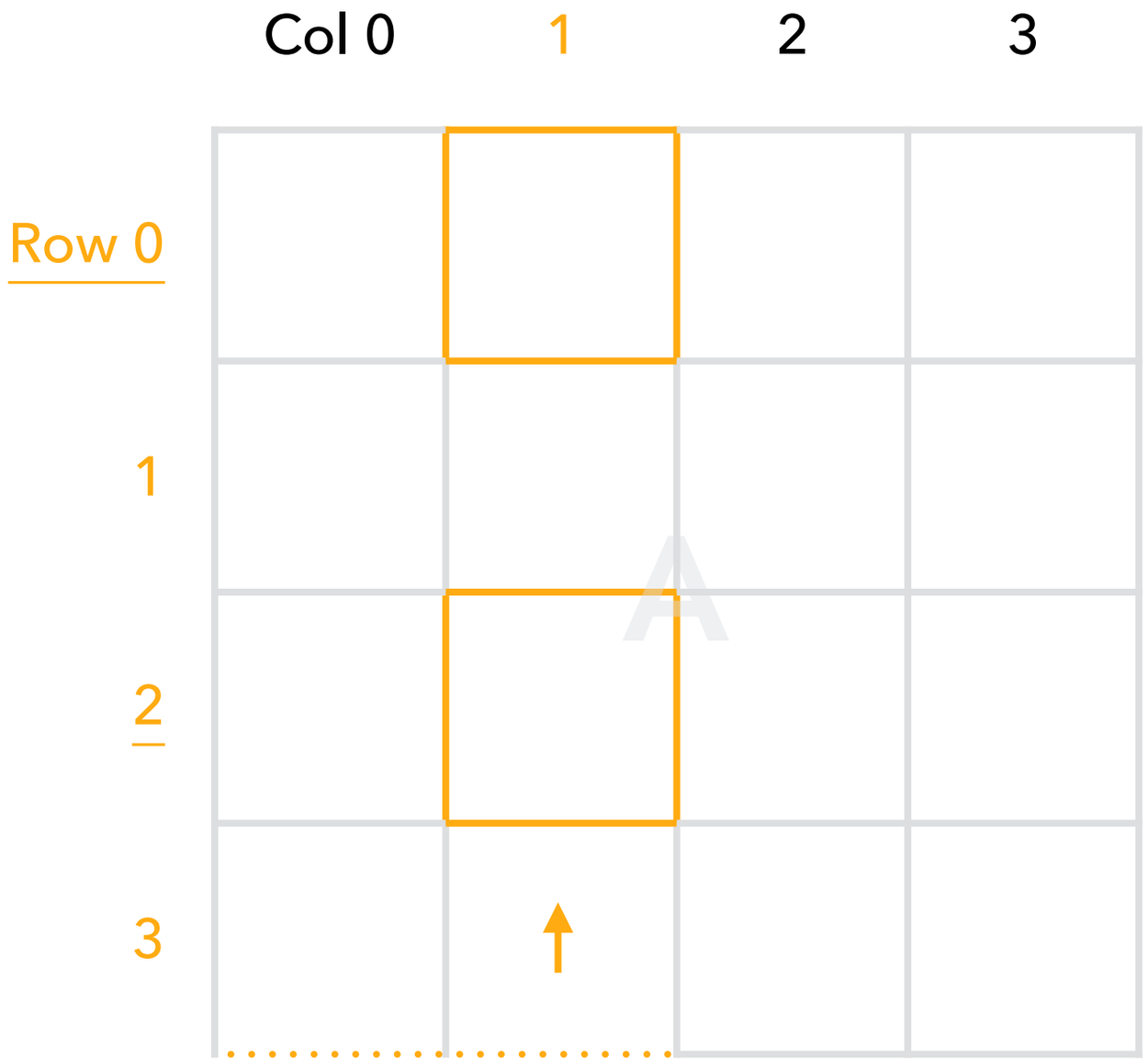

```
A[row,col]
```

```
A[0]
```

```
A[2,2]
```

```
A[0:3,1:2]
```

Index, Slice, Subset




```
A[row,col]
```

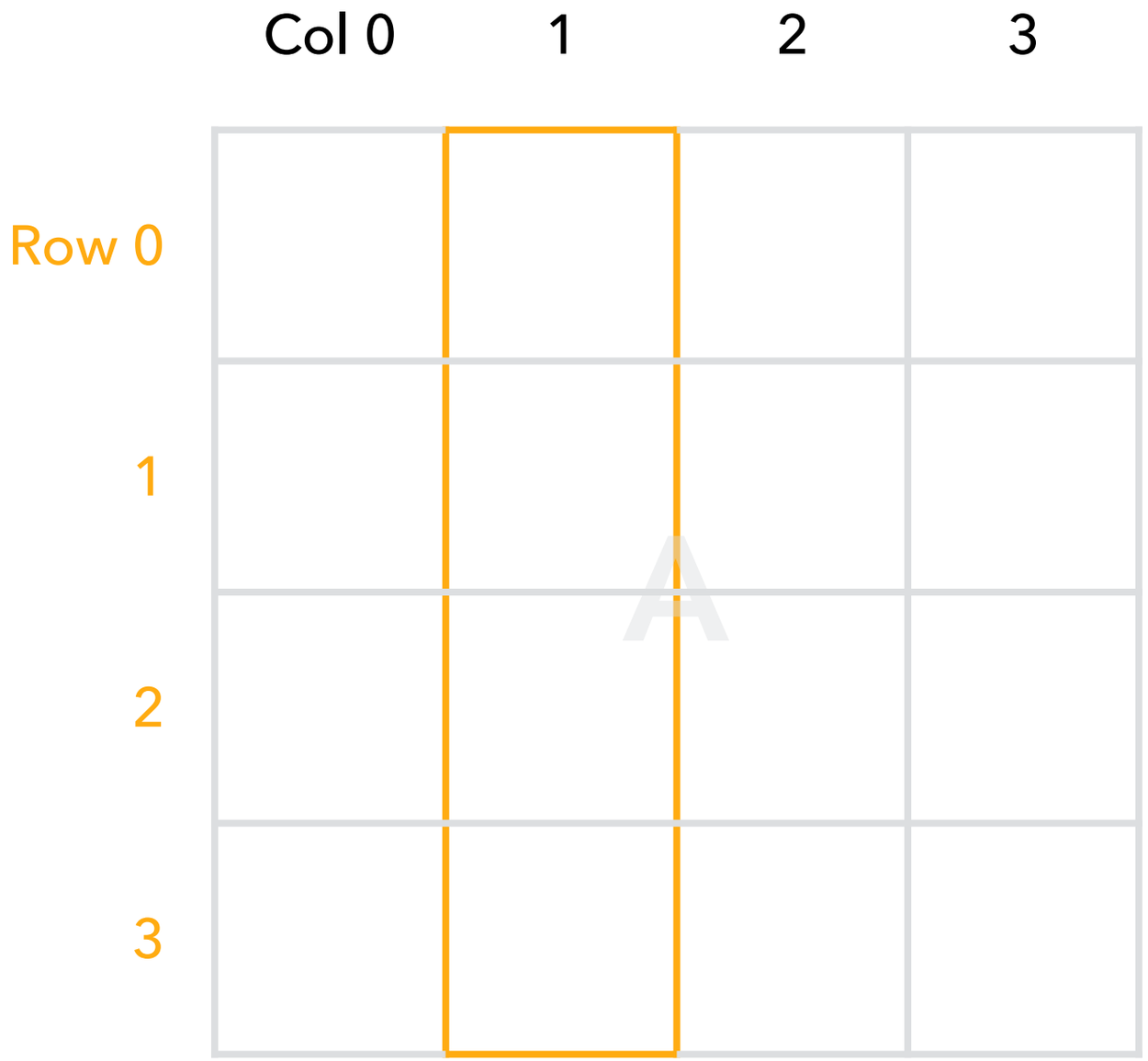
```
A[0]
```

```
A[2,2]
```

```
A[0:3,1:2]
```

```
A[0:3:2,1]
```

Index, Slice, Subset



`A[row,col]`

`A[0]`

`A[2,2]`

`A[0:3,1:2]`

`A[0:3:2,1]`

`A[:,1]`