Data Analysis and Visualization

Session - 1

Prerequisite for today's session:

Strong knowledge of Python Lists

→ 1D list, 2D list, Indexing, Slicing

Note:

Every session going forward builds on top of prev sessions.

⇒ All sessions MUST be consumed in correct sequence

S. Engg

FMCG → Sales

Mktg

IT Consulting

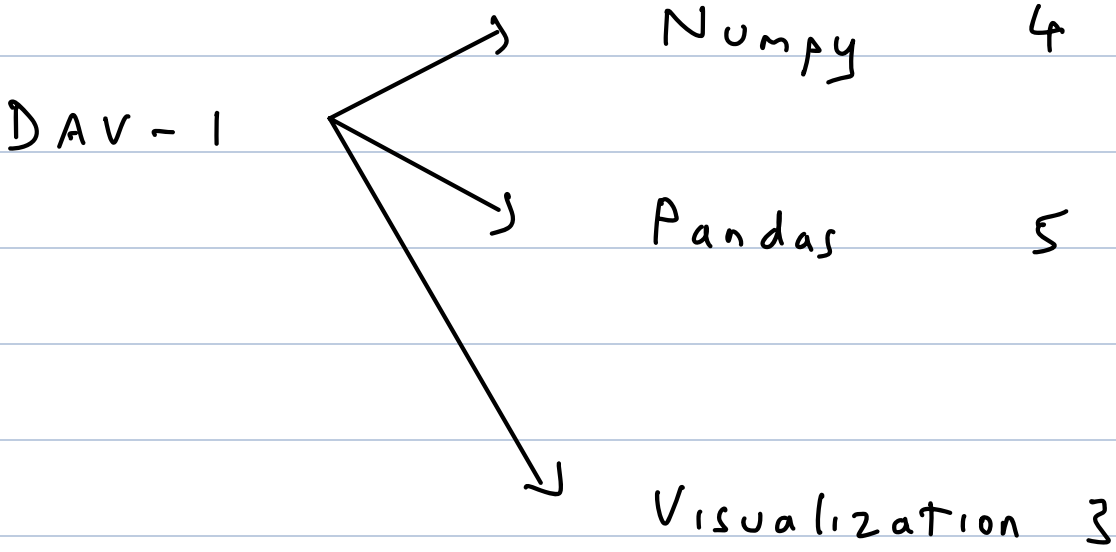
BCG → STrategy Consulting

Manager 0-1 Project

Teaching

RVCE

IIM Calcutta



Agenda for today's session:

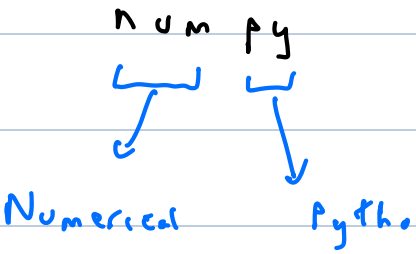
Intro to Numpy arrays

↓

Working with 1D arrays
→ "Airbnb NAS survey"

↓

Preview of things you can do much later, using Numpy


Numpy
Numerical
Pytho

Basic Python

List

$x = [12, 3, 4, 7, 7]$

$y = ['asc', True, 10.07, -126]$

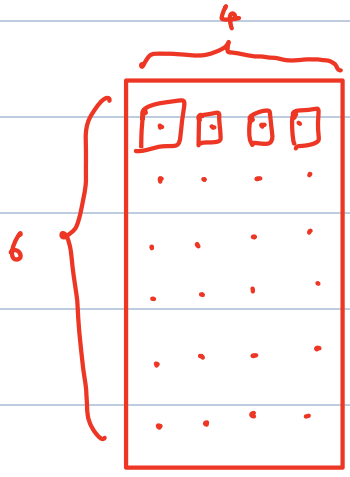
Numpy Library

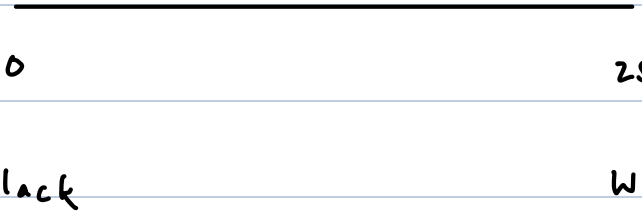
$a = [12, 3, 4, 7, 7]$

Array

→ All elements MUST be of the same data type

Optimized for → Numerical data → int, float






```
a = [ ]
for row_no in range (0, 2160 ):
    for col_no in range (0, 3840]:
```

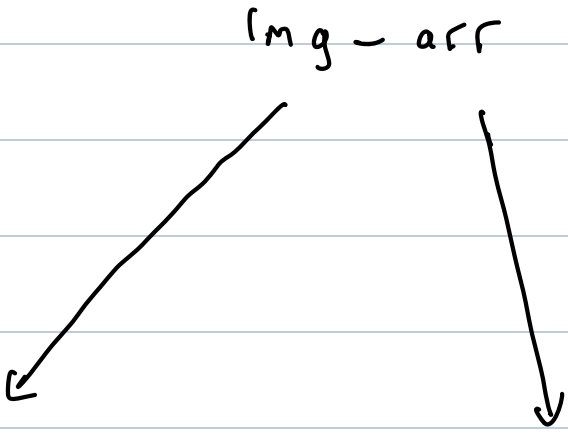
a =	0	1	2
0	172	55	74
1	93	97	64
2	..	..	..
3	..	..	..

print (a [0, 0]) → 172

print (a [1, 2]) → 64

print (a [ ] [2])

Property / Attributes



img_arr.ndim

img_arr.shape

(2160, 3840)

No of dimensions

No of rows → img_arr.shape [0]

No of cols → img_arr.shape [1]

Break!

Resume at 10:11 AM IST

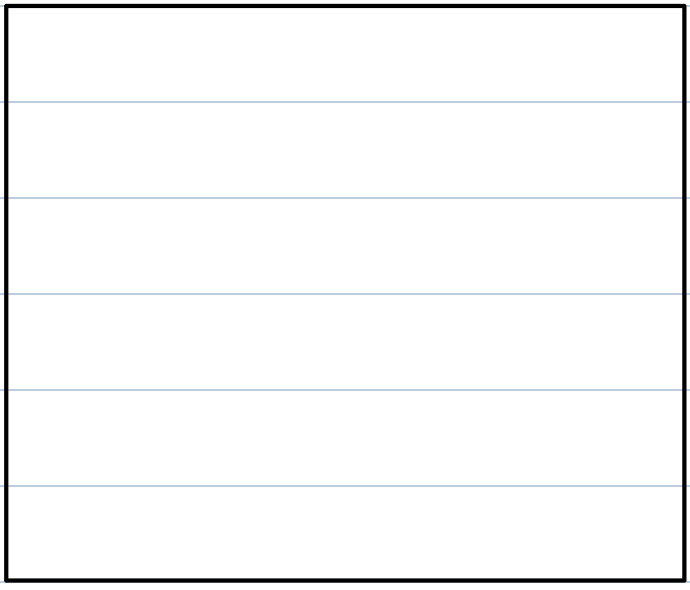
Types of Lists / Arrays

1D array

→ Airbnb survey data

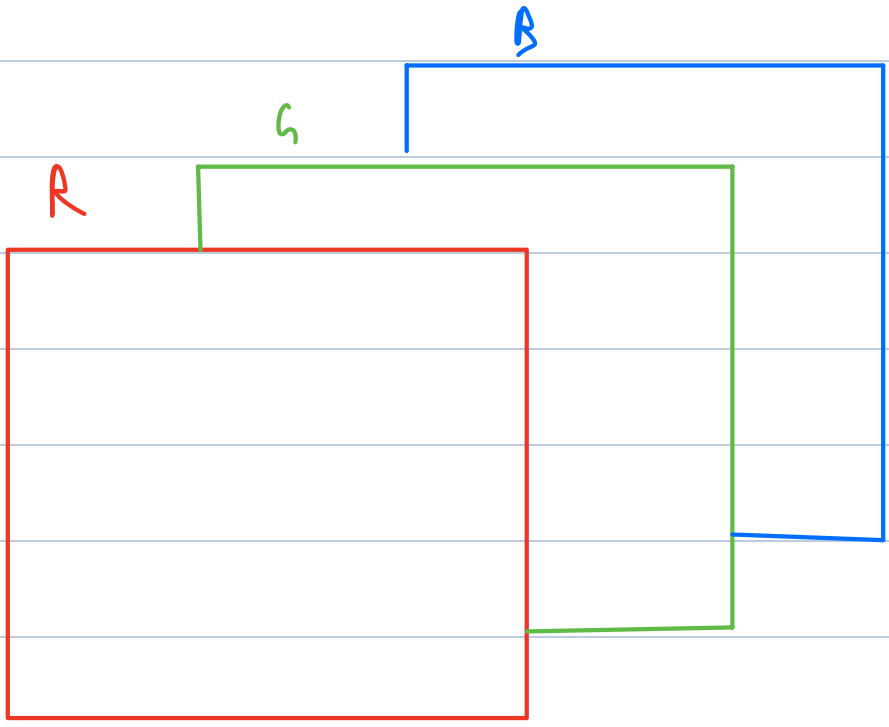
2D array

→ Black & White pictures

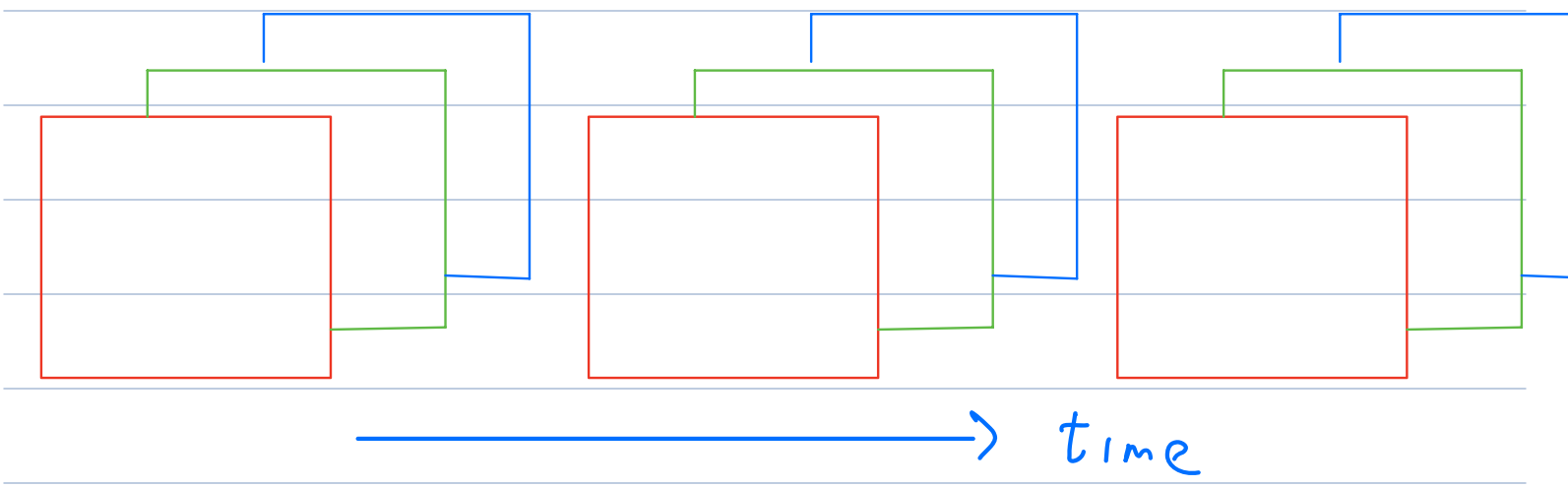


[□, □, □, □]

3D array



4D array



100 → 175

240 → 255

254 → 255

Agenda:

Comfortable with 1D arrays

Creation

Indexing

Slicing

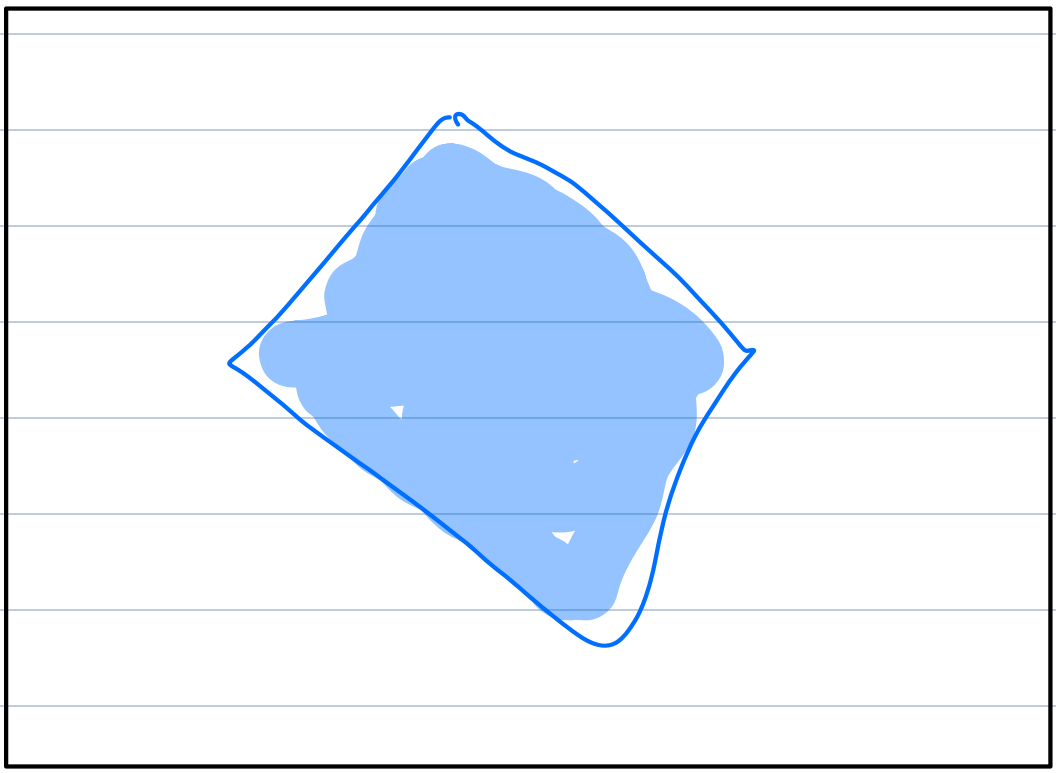
Filtering

shape → (5, 3)

size → 15

```
a = [10, 20, 30, 40, 50]

for i in range(5):
    a[i] = a[i] + 1
```



(4, 3)

a [:]

```
[
    [ 10,   20,   30 ]
    [ 15,   -5,   -8 ]
    [  0,    9,   85 ]
    [100,  105,  102 ]
]
```

$a[1] = [\ 15, \quad -5, \quad -8\ ]$

$a[1][2] = -8$

$a[1, 2] = -8$