Numpy in Python

*→ Spent an hour on Installing and correcting windows path of pip.

① → Like a list but more efficent storage and fast, ∴ preferred over list or set.
↑ written in C ↑

② → Also provides better ways of handling data for processing.

③ → for Jupyter → Open Source which makes data analysis very simple for you.
→ Supports over 40 languages & can share your notebook.
∴ Like Google Colab in your PC (offline).

Installation

④ → Shift + right arrow ⟶ Microsoft powershell ⟶ pip install numpy
pip install jupyter.

then type jupyter notebook to start it in that folder.
↳ project folder.

[I had some problem with pip file ; ∴ took more time].

⑤ → Shift + Enter → for specific cell number.
Direct Run can also be executed. (Kernel → Restart & Run).

Each cell is individual, can have code or text or heading.
Markdown used.

(Optional)
⑥ → Markdown has many ways to turn text into italics & bold things.

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⑦ → np.array , np.int64 [After import numpy as np].
↳ memory management

myarr1.dtype
myarr2.shape } Numpy reference in Google.
etc

2D slicing [np.array(x) [rows, columns]
Eg :- " [0:3:1, 4:7:1]]

8) Some noteworthy & frequently used are listed here

① Array Creation.

→ 5 ways.

(i) from other python structures (last page).
(ii) Intrinsic numpy array creation.
(iii) Reading arrays from disk.
(iv) Creating arrays from raw bytes } Special use only.
(v) Use of special library functions. (Can be referred online).

(ii) → Intrinsic →

.flatten. .shape.

zeros = np.zeros((2,5)) } makes an array of 2 rows & 5 column of only zeros.

len(x), random.randint( )

Similarly arange, ones, etc, identity → for ide matrix.
└ '1' matrix.
└→ rng1 = np.arange(15) } Gives 1 to 15 in array.

linspace, empty, empty_like, reshape, ravel, etc.
└→ Gives a empty array.

② Math op. → sin, cos, tanh ----- etc also present. Also matrices can be added, multiplied, etc.
(All math methods are also present).

③ Extra Numpy Axis → 1D array has 1 Axis → ∴ Axis 0
2D array has 2 Axis → ∴ [Axis 0 Axis 1]
(row) (column).
argsort, sum, etc can be used in axis.
∴ arr1.sum(axis=1).

④ ★ : attributes ← not functions ∴ no ().

[arr1.flat, → creates a iterator
arr1.T, → Transpose
arr1.ndim,
arr1.size
arr1.nbytes]

2D Slicing [0,:2][:,0:2] (extra optional)

Extra

Python Quiz and Numpy Masterclass.

① ⇒ In python there is no inbuilt func of array.
⇒ Therefore numpy is used. Can deal with n-dim array.
⇒ List is slow } Although ~~they~~ List can use as an alt to array, they are slow.
much less memory is used.
⇒ All attributes shown in theory as well as practical.

② ⇒ W3schools, Kaggle, Krish Naik, freecodecamp, javatpoint, gateway tut
The coding Train, codebasics.

☆ ③ ⇒ list(map(str, x))
↳ A iter(list, tuple, etc) → more than one can also be given.
↳ func (to be mapped on iter)
list ↳ wrapping
This is wrapping.

④ ⇒ np.ones((5,6), dtype = np.int). → seen but, by default zero & ones take float by default.
↓
full(if customise number needed).

☆ ⑤ ⇒ np.where() → most imp in projects in corporate.

⑥ ⇒ Slicing → good question ⇒ Array = [3, 4, 5, 6, 7, 8]
Slicing ⇒ Array[-6 : -3 : -1]
⇒ Prints null.

☆ ⑦ Axis = 0 → means column
Axis = 1 → means row } In Pandas ⇒ Axis 0 → row
Axis 1 → column.
to the following.

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matrix multiply ⇒ a*b ✗
a @ b ✓
a.dot(y) ✓

list = [[ ] [ ]]
np.array(list) } For list to array.