Getting started with arrays

Spoken Tutorial Project
http://spoken-tutorial.org
National Mission on Education through ICT

http://sakshat.ac.in

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Learning Objectives

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- **Perform basic array operations**

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- Create an identity matrix

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- Perform basic array operations
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- Use the method zeros

System Specifications

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- `Python 3.4.3`
- `IPython 5.1.0`

Pre-requisite

- **You should know how to use lists**

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- **If not, see the relevant Python tutorials on http://spoken-tutorial.org**

- **Arrays are homogeneous data structures**

Overview of Arrays

- Arrays are **homogeneous** data structures
- **All elements in it must be of same data type**

arange method

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- **To arrange the elements in an array we use arange method**

arange method

- **To arrange the elements in an array we use arange method**
- **Syntax:**
  arange([start,] stop,[step,] dtype=None)

reshape method

- **We will use reshape method to change the shape of an array**

reshape method

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- **Syntax:**
  object.reshape(rows, columns)

shape of an array

► **To find the shape of an array we can use the method shape**

shape of an array

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- It returns a tuple of the shape of an array

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- **It returns a tuple of the shape of an array**

- **A tuple is nothing but an ordered list of elements**

Find out the shape of the other arrays a1 and ar which we have created

identity method

▶ **It is a square matrix of order (n,n) with ones on the main diagonal and all other elements as zeros.**

`identity` method

- It is a square matrix of order (n,n) with ones on the main diagonal and all other elements as zeros.
- **Syntax:** **identity(n)**

zeros method

zeros method

- **It creates an m X n matrix with all elements as 0**

zeros method

- It creates an **m X n** matrix with all elements as **0**
- **Syntax:** zeros((m, n))

Learning exercise

Explore the below functions:

- ► `zeros_like`

- ► `ones`

- ► `ones_like`

Summary

- Create an array using the **array()** function

- Perform some basic operations on arrays like addition and multiplication

Summary

- **Use methods like -**
  - **shape**
  - **arange**
  - **reshape**
  - **identity**
  - **zeros**

Evaluation

x = np.array([1, 2, 3], [5, 6, 7]) is a valid statement

- ▶ True
- ▶ False

- **False**

- **The correct way is**
  x = np.array([[1, 2, 3], [5, 6, 7]])

Forum to answer questions

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▶ **Choose the minute and second where you have the question.**

▶ **Explain your question briefly.**

▶ **Someone from the FOSSEE team will answer them. Please visit http://forums.spoken-tutorial.org/**

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- **More information on this Mission is available at:**
  http://spoken-tutorial. org/NMEICT-Intro

THANK YOU!

For more Information, visit our website http://fossee.in/