Accessing parts of 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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- **Rows and columns of arrays**

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- **Individual elements of single dimensional and multi-dimensional arrays**
- **Rows and columns of arrays**
- **Elements of an array, using slicing and striding**

System Specifications

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- `IPython 5.1.0`

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

Sample Arrays

```
A = array([1, 2, 3, 4, 5])

C = array([[1, 2, 3, 4, 5],
           [6, 7, 8, 9, 10],
           [11, 12, 13, 14, 15],
           [16, 17, 18, 19, 20],
           [21, 22, 23, 24, 25]])
```

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Negative Indexing

- **Python programming supports negative indexing of arrays**
- **This means the index value of**
    - **-1 gives the last element**
    - **-2 gives the second to last element of an array**

Slicing function

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- **Slicing syntax is [start:stop]**

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- **Striding uses the step value to jump between the elements in an array**
- **Striding syntax is [start:stop:step]**

Obtain the following elements one by one from `array C`

- `[7, 8]`
- `[1,6,11,16]`
- `[6,11,16,2]`

Obtain the elements
`[[8,9],[13,-14]]` from array C

Obtain the following elements from array C

- `[[2, 5], [17, 20]]`
- `[[2, 3, 4], [2, 2, 2]]`

- `C[::3, 1::3]`
- `C[::4, 1:4]`

Summary

- **Manipulate single and multi dimensional arrays**
- **Access and change individual elements by using their index numbers**

Summary

- **Access and change rows and columns of arrays by specifying the row and column numbers**
- **Slice and stride on arrays**

1. **A = array([12,15,18,21])**

   How do we access the element 18 from the given array A?

2. ```
B = array([[10, 11, 12, 13],
           [20, 21, 22, 23],
           [30, 31, 32, 33],
           [40, 41, 42, 43]])
```

   **How do we obtain the elements, [[21, 22], [31, 32]] from the given array B?**

1. `A[ 2 ]`

2. `B[1:3, 1:3]`

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- **We give honorarium and certificate to those who do this**

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**http://tbc-python.fossee.in/**

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

# THANK YOU!

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