09. Python Modules

3ikakke

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- Requests module

- Datetime module

- Installing packages

- Useful resources

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Objectives

- Understand modules

- Understand how to import modules and module components

- Understand installation of packages

- See examples of a few modules

Modules

- Plugins/Packages that provide additional functionality to python

- This is where python begins to shine and exceeds most other languages because of its massive ecosystem

- How do I handle...
  - Date and Time?

  - Web requests?

– Basic Maths?

   – Statistics?

   – Data?

   – Machine Learning?

- The list goes on!

- Out of the box python has modules
- You can get additional modules by installing them from the internet and they are free!

Importing modules

- Modules are not part of the basic construct of python

- For modules to be used they have to be imported

```python
import math

math.exp(1)
math.log(100)
math.log10(100)
```

```python
import math as mathematics

mathematics.sin(90)
mathematics.ceil(4.23)
mathematics.floor(4.23)
```

```python
from math import ceil
ceil(3.123)
```

```python
from math import ceil, floor, log, exp
ceil(3.123)
floor(3.123)
log(1)
exp(2.718)
```

```python
from math import ceil, floor, log as ln, log10 as log, exp
ceil(3.123)
floor(3.123)
ln(5)
log(100)
exp(4)
```

Requests module

```python
import requests

r = requests.get('http://country.io/names.json')
print(r.json())
countries = r.json()
countries = dict(countries)
```

```python
[country for country in countries.items()]
#the rest is left to your imagination
```

Datetime module

```python
from datetime import datetime, timedelta

print(datetime.now())
today = datetime.now()

print(datetime.strftime(today, '%Y-%m-%d'))

age = datetime.now() - datetime(1980, 12, 5)
age = age/365.25
age = floor(age)
print(age)
```

Installing packages

- Apart from the modules built into python there are endless options for handling different things

- Example multidimensional arrays (NumPy)

- Handling data (pandas)

- Statistics (scipy)

- Machine learnig (sklearn)

- And a lot more!

Installing packages (contd)

- Usually done from the command line

```
pip install numpy
pip install pandas
pip install scipy
pip install matplotlib
pip install seaborn
```

Installing packages (contd)

- After installing they can be called much the same as inbuilt modules

- You just need to install once and that's it!

```python
import numpy as np
import pandas as pd
```

Useful resources

- Python documentation

- W3 Schools

- Stackoverflow

Review Objectives

- Understand modules

- Understand how to import modules and module components

- Understand installation of packages

- See examples of a few modules

Gist of the day

- Get the pdf version of todays conversation

- Get the gist

- The Jupyter Notebook will be uploaded

Q&A
Thanks!