

Using Python Modules

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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- ▶ **Execute python scripts from command line**



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- ▶ Execute python scripts from command line
- ▶ Use **import** in scripts



Learning Objectives

- ▶ Execute python scripts from command line
- ▶ Use **import** in scripts
- ▶ **Import numpy and matplotlib.pyplot modules**



System Specifications



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► Ubuntu Linux 16.04



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- ▶ **Ubuntu Linux 16.04**
- ▶ **Python 3.4.3**



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- ▶ **IPython 5.1.0**
- ▶ **Gedit text editor**



Pre-requisite

To practise this tutorial, you should know how to -



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To practise this tutorial, you should know how to -

► **use plot interactively**



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To practise this tutorial, you should know how to -

- ▶ use plot interactively
- ▶ **embellish and save a plot**



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



What is a module?



What is a module?

- ▶ **A module is a file containing Python definitions and statements**



What is a module?

- ▶ A module is a file containing Python definitions and statements
- ▶ Modules are used to break down large programs into small manageable and organized files



What is a module?

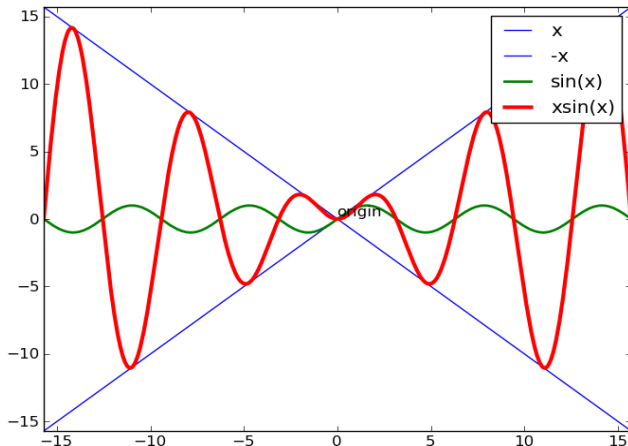


What is a module?

- **Definitions from a module can be imported into other modules or to the main module**



Four plot problem



Import Functions



Import Functions

```
from numpy import linspace, pi, sin
```



Import Functions

`from numpy import linspace, pi, sin`

instead of



Import Functions

`from numpy import linspace, pi, sin`

instead of

`from numpy import *`



Import Functions



Import Functions

```
from matplotlib.pyplot
```



Import Functions

`from matplotlib.pyplot`

instead of



Import Functions

`from matplotlib.pyplot`

instead of

`from matplotlib.pyplot import *`



Import Functions

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- ▶ If we use asterisk to import from a particular module, all the functions will be imported



Import Functions

- ▶ It is always good to use function names instead of asterisk
- ▶ If we use asterisk to import from a particular module, all the functions will be imported
- ▶ It replaces some existing functions with the same name in namespace



Exercise

- ▶ Write a python script to plot a sine wave from -2π to 2π



Python Standard Library

Python has a very rich standard library of modules.



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► **Math: `math`, `random`**



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Python Standard Library

Python has a very rich standard library of modules.

- ▶ Math: `math`, `random`
- ▶ Internet access: `urllib2`, `smtplib`
- ▶ System and Command line arguments: `sys`



Python standard library

Few more libraries



Python standard library

Few more libraries

► **Operating system interface: os**



Python standard library

Few more libraries

- ▶ Operating system interface: `os`
- ▶ Regular expressions: `re`



Python standard library

Few more libraries

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More information



Python standard library

Few more libraries

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More information

- ▶ <http://docs.python.org/library>



Summary

- ▶ **Run scripts from command line**
- ▶ **Import modules by specifying the module name followed by an asterisk**



Summary

- ▶ **Import only the required functions from modules by specifying the function name**
- ▶ **Use python standard library**



Evaluation

1. Which among the below is the most correct ?

- ▶ `from matplotlib.pyplot
import plot`
- ▶ `from numpy import plot`
- ▶ `from matplotlib import plot`
- ▶ `from scipy import plot`



Evaluation

2. Functions `xlim()` and `ylim()` can be imported to the current namespace as,

- ▶ `from matplotlib.pyplot`
`import xlim, ylim`
- ▶ `import matplotlib`
- ▶ `from numpy import xlim, ylim`
- ▶ `import numpy`



Solutions

1. `from matplotlib.pyplot
import plot`
2. `from matplotlib.pyplot
import xlim, ylim`



Forum to answer questions

- ▶ **Do you have questions in THIS Spoken Tutorial?**
- ▶ **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/>



Forum to answer questions

- ▶ Questions not related to the Spoken Tutorial?
- ▶ Do you have general / technical questions on the Software?
- ▶ Please visit the FOSSEE Forum
<http://forums.fossee.in/>
- ▶ Choose the Software and post your question.



Textbook Companion Project

- ▶ The FOSSEE team coordinates coding of solved examples of popular books
- ▶ We give honorarium and certificate to those who do this

For more details, please visit this site:

<http://tbc-python.fossee.in/>



Acknowledgements

- ▶ **Spoken Tutorial Project is a part of the Talk to a Teacher project**
- ▶ **It is supported by the National Mission on Education through ICT, MHRD, Government of India**
- ▶ **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/>

