Python for Network & System Engineers

A specialist course in Sydney

Audience: This is a course for network and systems engineers, devops staff, and hardware engineers

Outcome: By the end of the course, you will have all the knowledge you need to write and interact with Python code for a variety of purposes, with a particular focus on controlling machines, automating various system processes, and interacting with APIs. You will understand the elegance and power of Python and have had experience using several important modules in the Python standard library, including for parsing text and log files, matching strings with regular expressions, data compression, and scripting tasks via SSH connections. You will also have learned about accessing and creating web APIs and some best practices in Python for writing maintainable code.

Duration: 3 days

Dates: 8-10 October 2018

Venue: Level 4, 60 Clarence Street, Sydney CBD

Format: Each topic is a mixture of hands-on exercises and expert instruction.

Instructors: Henry Walshaw, Dr Robert Layton, and/or Dr Edward Schofield

Prerequisites: No prior experience with Python is assumed.

Course Outline

Day 1: Python basics

Day 1 shows you how to use Python for general programming tasks, including tips and tricks for making this easy:

Morning

- Setting up your Python development environment (IDE, Jupyter notebook)
- Packages and modules
- Python syntax and concepts: an introduction through examples
- Functions and their arguments
- Essential data types: strings, tuples, lists, bytes; tips and tricks
- String methods; input and output of text data

Afternoon

- Dictionaries and their applications
- Worked example: consuming web APIs
- Raising and handling exceptions

Day 2: Handling, Analysing, and Presenting Data in Python

Day 2 will give you a comprehensive introduction to reading and writing the most important data formats; slicing, dicing and analysing data in powerful ways, and exploratory data visualisation.

- Reading and writing essential data formats: JSON, CSV, Excel, SQL
- Indexing and filtering data in *Pandas*
- Data fusion: joining & merging datasets
- Summarisation with “group by” operations; pivot tables; hierarchical indices; reshaping data
- Handling dates, times, and time-series
- Interactive visualisation and data exploration with *Altair*

Day 3: Real-world programming

Day 3 gives you a tour of the amazing standard library and important 3rd-party tools for consuming and creating web APIs and automating various systems-level tasks with Python:

- Parsing log files with regular expressions
- Accessing web APIs with the requests package in more depth
- Intro to creating web APIs with Flask
- Templating with Jinja2; automatically creating configuration files (e.g. YAML)
- Network automation via SSH with Fabric
- Python developer tools and debugging tools
- Best practices; tips and tricks

Supplemental materials

We will supply you with printed course notes and a USB stick containing electronic versions of the course notes as *Jupyter* notebooks, solutions to the programming exercises, several written tutorials, and reference documentation on Python and the third-party packages covered in the course.

Instructor bios

The trainer will be selected from:

Henry Walshaw

Henry has almost 15 years of experience in Python application development and has trained hundreds of people in how to use Python from organisations including AGL, the Bureau of Meteorology, CSIRO, ESRI, the NSW Department of Finance, National Australia Bank, Shell, and Telstra.

Henry's core technical expertise relates to the development and analysis of large scale spatial datasets (primarily using Python), and communicating this understanding to both subject matter experts and the general public.

Before joining Python Charmers, Henry worked in both government and industry — at Geoscience Australia, the Victorian Department of Sustainability and Environment, and the Environmental Protection Agency (EPA); as a consultant with Sinclair Knight Merz (SKM), a manager at we-do-IT, and as CTO of a startup. He holds a Bachelors in Computational Science.

Edward Schofield

Ed has consulted to or trained over 1500 people in Python and data analytics from dozens of organisations, including AGL, the Australian Federal Police, A*STAR, Barclays, Cisco, CSIRO, Dolby, Defence Science and Technology, Macquarie Bank, Shell, Telstra, Toyota, and Verizon. Ed is the co-chair of the Python for Data Science miniconf for PyCon AU, co-organises the Python user group in Melbourne, and regularly presents at conferences related to Python and data analytics in Australia and internationally. He is a former release manager of *SciPy* and the author of the *future* package.

Ed holds a PhD in machine learning from Imperial College London, with application to speech and image recognition technologies. He also holds BA and MA (Hons) degrees in maths and computer science from Cambridge University. He has 20+ years of experience in programming, teaching, and public speaking.

Robert Layton

Robert is the author of the book "Data Mining in Python", published by O'Reilly. He provides analysis, consultancy, research and development work to businesses primarily using Python. Robert has worked with government, financial and security sectors, in both a consultancy and academic role. He is also a Research Fellow at the Internet Commerce Security Laboratory, Federation University Australia.

Robert is a regular contributor to the Python-based *scikit-learn* open source project for machine learning and writes regularly on data mining for a number of outlets. He has presented regularly at a number of international conferences in Python, data analysis, and its applications. He is also the author of the website http://learningtensorflow.com.

Other information

Personal help: Your trainer(s) will be available after the course each day for you to ask any one-on-one questions you like — whether about the course material and exercises or about specific problems you face in your work and how to use Python to solve them.

Timing: The course will run from 9:00 to roughly 17:00 each day, with breaks of 1 hour for lunch and 15 minutes each for morning and afternoon tea.

Computer: An internet-connected computer will be provided for you for the training.

Testimonials

Testimonials from participants of similar courses are available at pythoncharmers.com/testimonials.

Questions?

You are welcome to contact us if you have any questions before the course. You can reach us at info@pythoncharmers.com.

About Python Charmers

Python Charmers is the leading provider of Python training in the Asia-Pacific region, based in Australia and Singapore. Python Charmers specialises in teaching programming for data scientists, scientists, engineers, computer scientists, and quants in the Python language. Python Charmers' delighted training clients include the ABC, Australian Federal Police, Barclays, Bureau of Meteorology, Cisco, CSIRO, Dolby, EPA Victoria, Geoscience Australia, NSW Department of Finance, Primary Health Care, Shell, Telstra, Toyota Technical Centre, Verizon, and Woolworths.

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