

INF1511 Unit 1 Visual Programming I

Environment Set Up & Data Operations

Dr Patricia Gouws
Primary Lecturer
for INF1511



Define tomorrow.

UNISA


college of
science, engineering
and technology

Unit 1 Describe the programming concepts for computing including performing arithmetic operations

- Python and its features are explained
- Python is installed on different platforms
- Python can be interacted with through Command Line Mode
- Program is written in Python.
- Comments, continuation lines and printing messages.
- Arithmetic operations are performed.

Overview

- **Environment.** Set up of programming environment.
- **Resources.** The use of Unisa library. Python basics.
- **Theory** of data and data operations in programming.
- **Assessment** of learning in this unit.
- **Practical** application (and demonstration) of data and data operations in programming.

Environment

- Please read the read-me-first document.
- On the internet, find ANACONDA installation.
- Install ANACONDA
- You are welcome to use any Python programming environment (HOWEVER only Anaconda is used in the teaching and learning and is supported in INF1511).

Resources

Python Books See Safari Additional Books

Python

1 - 10 of 12082 search results for "Python"

All

Books

Videos

Learning Paths

Playlists

Audiobooks

Topics

Sort By Relevance



BOOK

Fluent Python, 2nd Edition

By Luciano Ramalho
PYTHON

★★★★★ 46 reviews

O'Reilly Media, Inc. April 2022

Don't waste time bending **Python** to fit patterns you learned in other languages. Discover and apply idiomatic **Python** 3 features beyond your past experience. Author Luciano Ramalho guides you through **Python**'s core language features and libraries and teaches you how to make your code shorter, faster, and more readable. **Python**'s simplicity lets you become productive quickly, but often this means you aren't using everything it has to offer. With the updated edition of this hands-on guide, you'll learn...



BOOK

Python Crash Course, 2nd Edition

By Eric Matthes
PYTHON

★★★★★ 50 reviews

No Starch Press May 2019

Python Crash Course, 2nd Edition teaches beginners the essentials of **Python** quickly so that they can build practical programs and develop powerful programming techniques. Uses **Python** 3 This is the second edition of the best selling **Python** book in the world. **Python** Crash Course, 2nd Edition is a straightforward introduction to the core of **Python** programming. Author Eric Matthes dispenses with the sort of tedious, unnecessary information that can get in the way of learning how to program, choosin...

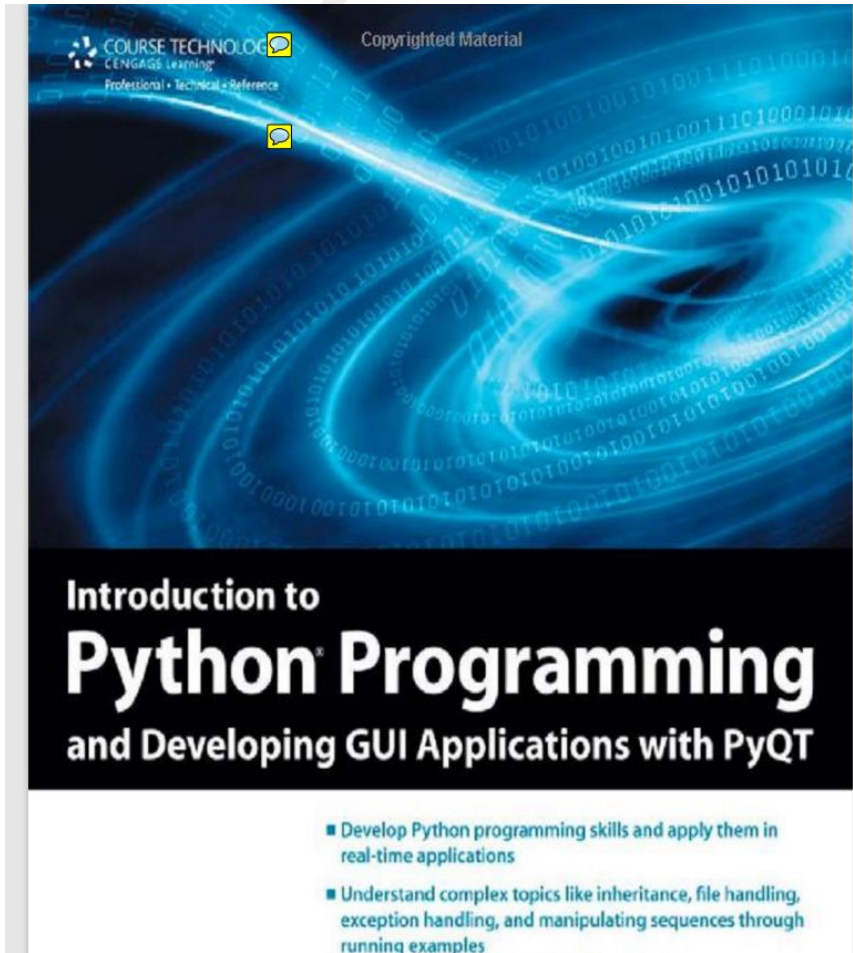


PLAYLIST

Three Ways To Learn Python

By Tim O'Reilly

Additional resources (theory)



Theory – What is programming?

- **Problem solving.** There is a problem.
- A system. Input, process and output.
- Where shall we start?
- Programming principles.
- Programming language used to solve a problem by applying the programming principles.
- Perseverance, practise, practise, ...persistence

Theory – the elements

- The literals
- The variables
- The keywords

Naming and using variables easier to read and understand

- Letters, numbers and underscores. Cannot start with a number.
- Use underscores NOT spaces.
- NO keywords.
- Meaningful names.
- Upper and lower case.

Which are ok variable names?

- 1_myname
- Hername_1
- name surname
- name_surname
- print
- The_length_of_the_surname
- l_n

Programming elements - Comments

- Comments ensure that code is more readable (by humans 😊).
- Useful, re-useable.
- Developing good programming habits – start today. Programming gets complicated, and programming teams get VERY large! Errors get expensive!
- Lots of comments, lots of back-ups ...

Theory – Data, Data types and Operations (store data and use data)

1. Integers: 1,2,3,
2. Real (floating): 4.2 78.989
3. Boolean: True / False
4. Complex numbers (real and imaginary part)
5. Strings: 'December' 'Mary' (quotes, immutable (cannot modify existing string))
6. Lists (ordered sequence), tuples (ordered, immutable), sets (unordered) and dictionaries
7. Operations: what you DO with the data.
8. **Number data types.** Add, Subtract, Multiply and Divide.
9. **String data types.** Partition, join, find, 'add', subset.

Theory - Programming elements - Variables

- Variables – are assigned, hold data values.
- Names of variables made up of letters, numbers and underscores.
- The names CANNOT start with a number (1_Num)
- The names CANNOT be keywords. (Keywords (30 in Python ... and else elif exec ...)
- Names must be the same case.
- Names must be short and meaningful.
- Spelling!!!!

What is Python? Just a language ...

- Easy to learn
- Easy to read
- Uses white space
- Includes libraries
- Can be integrated
- Can be interpreted
- Memory management, exception handling
- Used for web-development, robotics, data science

Theory - The Zen of Python (please read all)

- Beautiful is better than ugly.
- Simple is better than complex.
- Complex is better than complicated.
- Readability counts.
- NOW is better than never!

Assessment for Unit 1 (MAY 2023)

- **Theory MCQ quiz.** Multiple attempts.
- **Practical Programming activities** on Jupyter Notebook page. Practise! Complete Assignment 1.
- **Practical MCQ quiz Assignment 1.** One attempt.

Summary Unit 1 INF1511

- This unit introduces and explains the concept of programming using Python software. This includes the components that are used to develop a program to capture input and to display output.
- **Objectives - you should be able to:**
 - To identify different implementations of Python.
 - To describe unique features of Python programming language.
 - To be aware of Python installations.
 - To list and implement the data types.
 - To apply concepts to solve problems using data operations for numbers.
- **Key Terms:** integers, literals, variables, print, comment

Practical application

- DEMONSTRATION OF DATA TYPES AND DATA OPERATIONS.
- Using the ANACONDA programming environment.



Thank you

Define tomorrow.

UNISA

