

Python Programming Syllabus

1. An Informal Introduction to Python

1.1. Using Python as a Calculator

- 1.1.1. Numbers
- 1.1.2. Strings
- 1.1.3. Lists

1.2. First Steps Towards Programming

2. More Control Flow Tools

2.1. if Statements

2.2. for Statements

2.3. The range() Function

2.4. break and continue Statements, and else Clauses on Loops

2.5. pass Statements

2.6. Defining Functions

2.7. More on Defining Functions

- 2.7.1. Default Argument Values
- 2.7.2. Keyword Arguments
- 2.7.3. Special parameters
 - 2.7.3.1. Positional-or-Keyword Arguments
 - 2.7.3.2. Positional-Only Parameters
 - 2.7.3.3. Keyword-Only Arguments
 - 2.7.3.4. Function Examples
- 2.7.3.5. Recap
- 2.7.4. Arbitrary Argument Lists
- 2.7.5. Unpacking Argument Lists
- 2.7.6. Lambda Expressions
- 2.7.7. Documentation Strings
- 2.7.8. Function Annotations

3. Data Structures

3.1. More on Lists

- 3.1.1. Using Lists as Stacks
- 3.1.2. Using Lists as Queues
- 3.1.3. List Comprehensions
- 3.1.4. Nested List Comprehensions

3.2. The del statement

3.3. Tuples and Sequences

3.4. Sets

3.5. Dictionaries

3.6. Looping Techniques

3.7. More on Conditions

3.8. Comparing Sequences and Other Types

4. Input and Output

4.1. Fancier Output Formatting

- 4.1.1. Formatted String Literals
- 4.1.2. The String format() Method
- 4.1.3. Manual String Formatting
- 4.1.4. Old string formatting

4.2. Reading and Writing Files

- 4.2.1. Methods of File Objects
- 4.2.2. Saving structured data with json

5. Errors and Exceptions

5.1. Syntax Errors

5.2. Exceptions

5.3. Handling Exceptions

5.4. Raising Exceptions

5.5. User-defined Exceptions

5.6. Defining Clean-up Actions

5.7. Predefined Clean-up Actions

6. Classes

6.1. A Word About Names and Objects

6.2. Python Scopes and Namespaces

- 6.2.1. Scopes and Namespaces Example

6.3. A First Look at Classes

- 6.3.1. Class Definition Syntax
- 6.3.2. Class Objects
- 6.3.3. Instance Objects
- 6.3.4. Method Objects
- 6.3.5. Class and Instance Variables

6.4. Random Remarks

6.5. Inheritance

6.5.1. Multiple Inheritance

6.6. Private Variables

6.7. Odds and Ends

6.8. Iterators

6.9. Generators

6.10. Generator Expressions

7. Data Structures

7.1 Searching

7.1.1 Linear

7.1.2 Binary

7.2 sorting

7.2.1 Bubble sort

7.2.2 insertion sort

7.2.3 selection sort

7.3 Stacks

7.4 Que

- Python Projects
 - Number Guessing
 - Hangman
 - Python Story Generator
 - Calculator
 - Tic-Tac-Toe
 - Plagiarism Checker

8. Python pandas

- 8.1. Python Pandas – Series
- 8.2. Python Pandas – DataFrame
- 8.3. Python Pandas – Panel
- 8.4. Python Pandas – Basic Functionality
- 8.5. Descriptive Statistics
- 8.6. Function Application
- 8.7. Python Pandas – Reindexing
- 8.8. Python Pandas – Iteration
- 8.9. Python Pandas – Sorting
- 8.10. Working with Text Data
- 8.11. Options & Customization
- 8.12. Indexing & Selecting Data
- 8.13. Statistical Functions
- 8.14. Python Pandas – Window Functions
- 8.15. Python Pandas – Date Functionality
- 8.16. Python Pandas – Timedelta
- 8.17. Python Pandas – Categorical Data
- 8.18. Python Pandas – Visualization
- 8.19. Python Pandas – IO Tools'

9. Python Numpy

- 9.1. NumPy – Ndarray Object
- 9.2. NumPy – Data Types
- 9.3. NumPy – Array Attributes
- 9.4. NumPy – Array Creation Routines
- 9.5. NumPy – Array from Existing Data
- 9.6. Array From Numerical Ranges
- 9.7. NumPy – Indexing & Slicing
- 9.8. NumPy – Advanced Indexing

- 9.9. NumPy – Broadcasting
 - 9.10. NumPy – Iterating Over Array
 - 9.11. NumPy – Array Manipulation
 - 9.12. NumPy – Binary Operators
 - 9.13. NumPy – String Functions
 - 9.14. NumPy – Mathematical Functions
 - 9.15. NumPy – Arithmetic Operations
 - 9.16. NumPy – Statistical Functions
 - 9.17. Sort, Search & Counting Functions
 - 9.18. NumPy – Byte Swapping
 - 9.19. NumPy – Copies & Views
 - 9.20. NumPy – Matrix Library
 - 9.21. NumPy – Linear Algebra
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- 10. Visualization
 - 10.1. Matplotlib
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- Data Science Projects
 - Handling Missing data
 - Manipulation of the data
 - Creating the data with numpy
 - Visualizing the data by using different libraries