

Python for Beginners: Games and Code-Alongs

FA-0800 · 3 days

Software Development

Introduction

Build Python programming foundations with exercises, quizzes, games and guided code-alongs. Practise variables, arithmetic, strings, decisions, collections, loops and functions while creating small interactive programs.

The three-day course provides a basis for further Python study. It does not teach machine learning, image/video processing or advanced game development; those are possible later learning paths.

Learning outcomes

- Set up a selected Python environment and run and edit scripts.
- Use variables, numbers, strings and comparisons in simple programs.
- Work with lists and dictionaries and control execution using conditions and loops.
- Define functions and use scope, argument passing and basic unpacking.
- Combine these concepts in small game, simulator and text-processing exercises.

Prerequisites

No prior Python experience is required. Basic computer and file-handling skills and access to a selected Python 3 environment are useful.

Training outline

1. Getting started with programming

- Logic
- Algorithm
- Programming world
- Getting Started
- Installing Python
- IDEs
- Environment options: local Python with IDLE or another editor, Jupyter notebooks, or hosted Colab

2. Variables and scripts

- Variables vs Objects
- Scripting it in IDE's
- Updating Scripts
- Variables Quiz
- Coding Exercise: Creating Variables

3. Numbers and arithmetic

- Basic Numbers in Python
- Basic Arithmetic, Floats and Modulo
- Ordering Operations using (Brackets!)
- PROJECT: Game - Part 1
- PROJECT: Continuing with our Game - Part 2
- Fun with the Python math Module
- Python numbers quiz
- Coding Exercise: Basic Algebra Coding Challenge
- Coding Exercise: Overwriting Variables

4. Strings and text projects

- The ABCs - How to use Strings to handle text in Python
- Hello World!
- Coding Exercise: Hello World!

- Coding Exercise: Fixing Broken Strings
- PROJECT: Hello You! - Part 1 - Project
- PROJECT: Hello You! - Part 2 - Collecting Data
- PROJECT: Hello You! - Part 3 - String Formatting
- Coding Exercise: How old are you?
- Coding Exercise: Tell us about yourself!
- Cool String Methods
- PROJECT: Email Slicer - Part 1 - What are Slices?
- PROJECT: Email Slicer - Part 2 - Automated Slices
- Quiz: Slices Quiz
- Coding Exercise: Slicer Exercise
- PROJECT 3: Email Slicer - Part 3 - Making the Slicer!

5. Conditions and logic

- Logic and Conditional Flow
- Booleans & Comparison Operators
- Quiz: Comparison Operators Quiz
- if Statements
- Coding Exercise: If Statements Challenge
- Python Logical Operators - Part 1 - not + and
- Python Logical Operators - Part 2 - or operator
- Quiz: Logical Operators Quiz

6. Lists and dictionaries

- Python Data structures
- What are Lists?
- PROJECT - Fun gaming system
- More ways to add items to lists
- Dictionaries Part 1 - What are Dictionaries?
- Dictionaries Part 2 — build a small in-memory data store
- PROJECT - Cinema Simulator!

7. Loops and comprehensions

- Loops In Python

- While Loops
- PROJECT: Funny Simulator
- For Loops
- List Comprehensions
- Project — simple coder and text-transformation exercise

8. Functions and a tic-tac-toe project

- What are Functions?
- Coding Exercise: Function Creation Challenge
- Variable Scope
- Keyword arguments and default parameter values
- Function parameters
- Packing & Unpacking using *args and **kwargs
- PROJECT - Tic Tac Toe Game!