Lesson 1: Introduction to Python for Data Science

Welcome to your first lesson on Python for Data Science. We'll explore Python's origins, its role in data science, and why it's the top choice for professionals.

Setting Up Your Environment

Anaconda Distribution

Easy installation and package management for Python data science.

Jupyter Notebooks

Interactive coding tool to write and run your Python code step-by-step.

Google Colab

A free online alternative to run Python code without setup.

Python Basics: Variables

Variable Definition

Containers to store data values in Python.

Naming Rules

Use letters, numbers, underscores; avoid starting with numbers.

Assignment

Use = to assign or reassign variable values.

Examples

x = 5, name = "Alice", pi = 3.14159

Python Basics: Data Types

Numeric Types

Integers (int) and floating-point numbers (float) represent numbers.

Text and Boolean

Strings (str) hold text; booleans store True or False values.

Sequences

Lists and tuples store ordered collections of items.

Working with Data Types

1

Type Conversion

Convert data types with int(), float(), str() to fit needs.

2

Basic Operations

Perform math and combine strings using + operator.
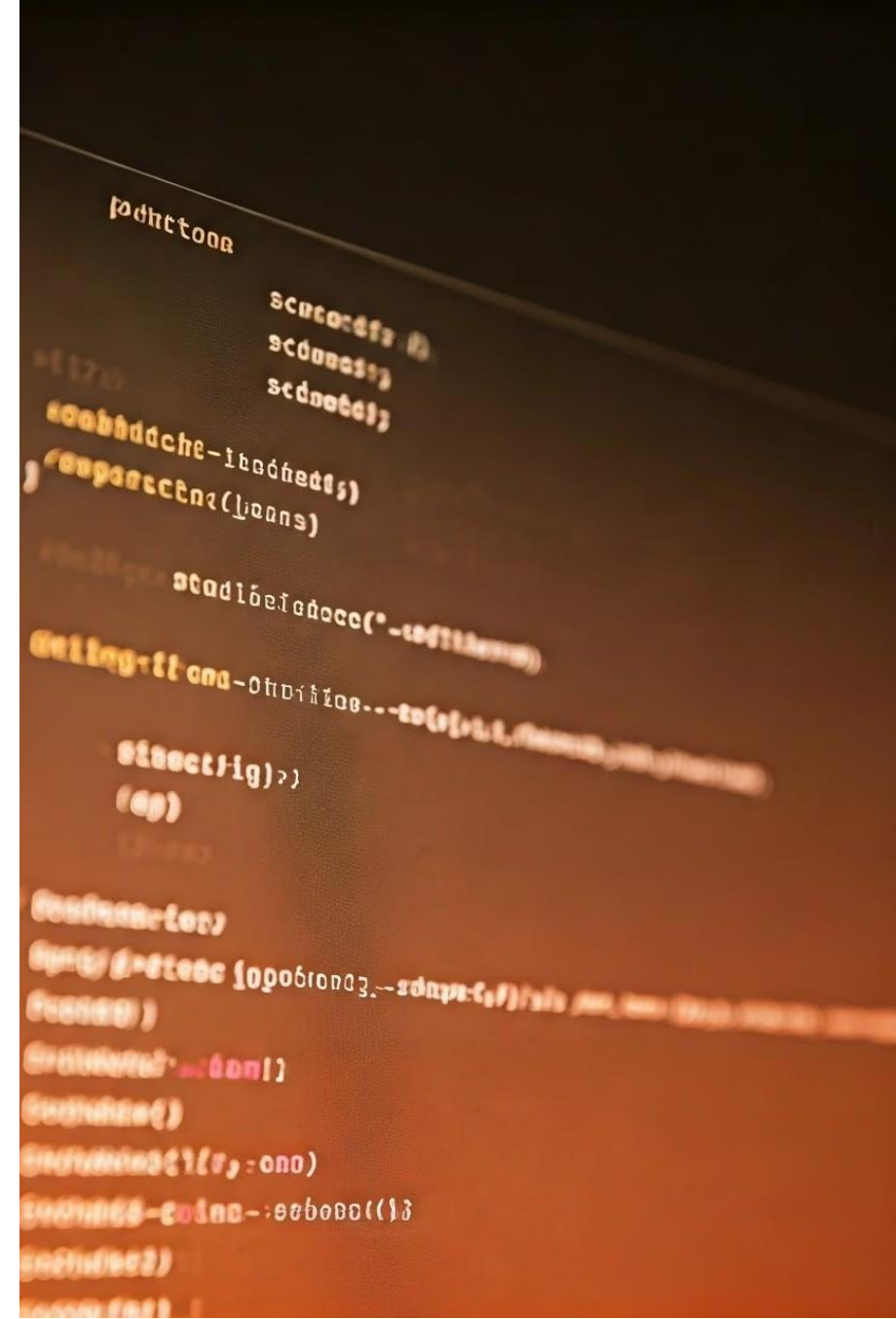
3

Examples

Calculate 5 + 3.2 and concatenate "Hello" + " World".

4

Lists & Tuples

Create sequences and access data by indexing or slicing.

Python for Data Science: Key Libraries

NumPy
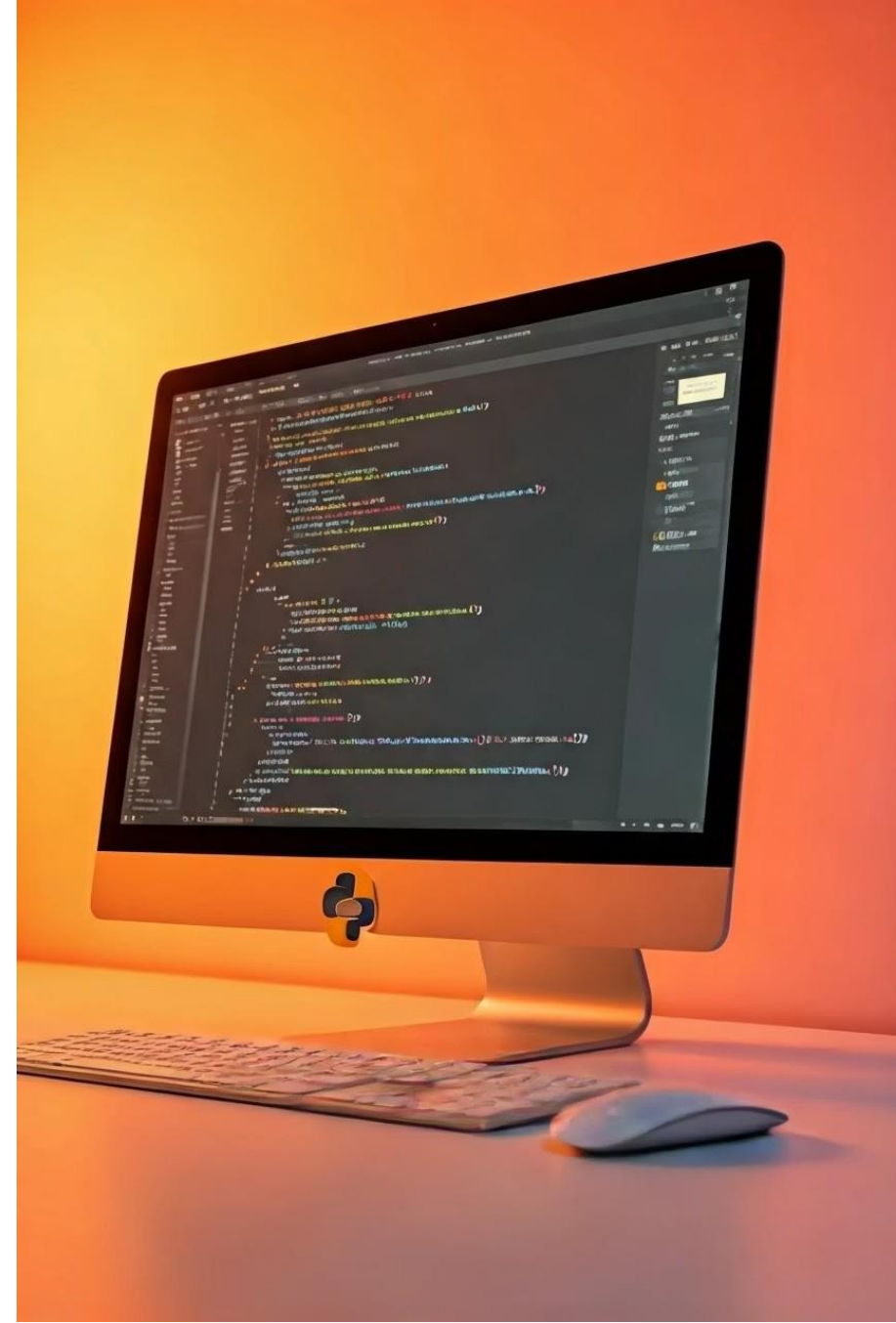
Efficient numerical operations with arrays.

Pandas

Easy data manipulation using DataFrames.

Matplotlib

Create visual graphs and charts from data.

Example: Analyzing Data with Pandas

Create DataFrame

Build from dictionaries containing data.

Load CSV

Import data files easily for analysis.

Data Overview

Use .head(), .info(), and .describe() for quick insights.

Filter & Aggregate

Apply filters and summarize your dataset.

Conclusion and Next Steps

Recap

Covered Python basics, variables, and data types.

Libraries

Introduced essential tools like NumPy and Pandas.

Coming Up

Next lesson focuses on data manipulation and analysis.

Resources

Access tutorials and practice exercises to build skills.