

# 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.

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# **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.

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# 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.