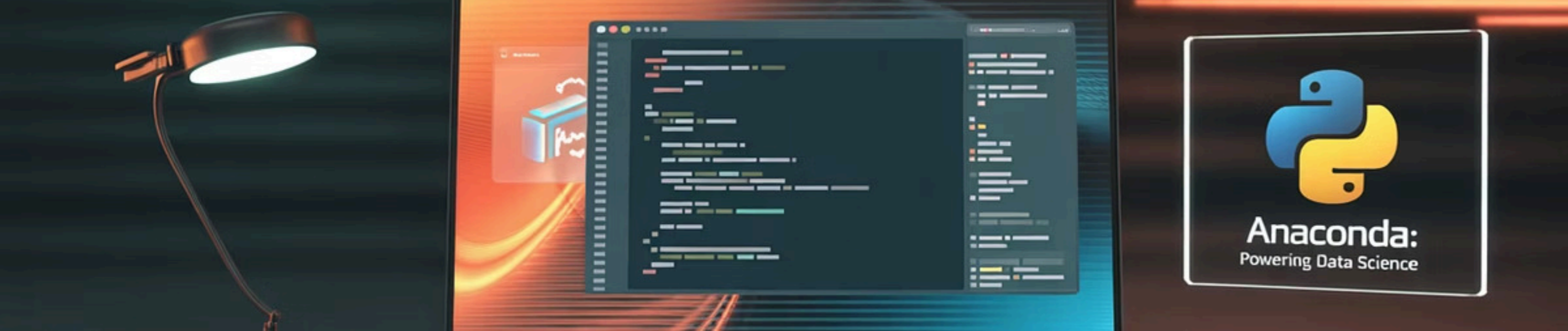


Python for Beginners: Your First Steps in Data Science

Welcome to your data science journey! This course introduces Python programming fundamentals and essential data science concepts for complete beginners.





Getting Started with Python

Install Anaconda

Download the Anaconda distribution. It bundles Python with essential data science tools.

Set Up Jupyter

Launch Jupyter Notebook for an interactive coding environment with rich documentation features.

Configure VS Code

Install VS Code as an alternative IDE with powerful extensions for Python development.

Python Fundamentals

Variables & Data Types

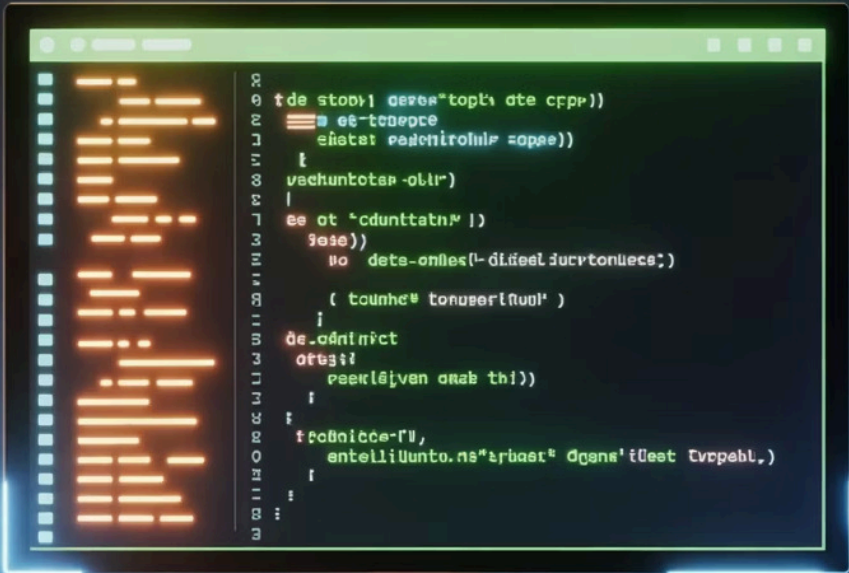
Store information in variables. Python has integers, floats, strings, and booleans.

```
age = 25      # integer
height = 5.9  # float
name = "Alex" # string
is_student = True # boolean
```

Input & Output

Collect user data with `input()`. Display results with `print()`.

```
name = input("Enter your name: ")
print("Hello, " + name + "!")
```



Control Flow in Python

Conditionals

```
if score >= 90:  
    print("A grade")  
elif score >= 80:  
    print("B grade")  
else:  
    print("Keep studying")
```

Loops

```
for i in range(5):  
    print(i) # Prints 0,1,2,3,4  
  
while count > 0:  
    print(count)  
    count -= 1
```

Control flow determines how your program runs. Loops repeat code. Conditionals make decisions.

Why Python Dominates Data Science

Rich Libraries

NumPy, Pandas, and Matplotlib provide ready-made tools for data manipulation and visualization.

Community

Extensive documentation and support from millions of developers worldwide.



ML Integration

Scikit-learn and TensorFlow make machine learning accessible to beginners.

Readability

Clean syntax makes code easier to write, read, and maintain.

The Data Science Lifecycle



Your First Python Lab



Create Calculator Functions

Write functions for addition, subtraction, multiplication, and division.



Build User Interface

Add input prompts to collect numbers and operation choice.



Add Control Flow

Use if-statements to select the right operation based on user input.



Test Your Program

Run your code with different inputs to verify it works correctly.

This hands-on exercise combines all the concepts you've learned this week.

