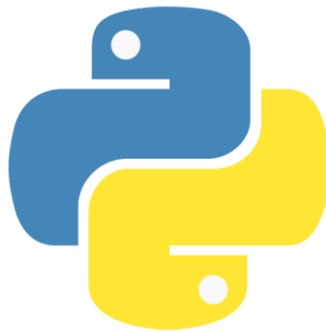




PROGRAMMING FUNDAMENTALS

Using Python



AUGUST 13, 2025

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Outline for Python Basics

1. Introduction & Setup

- What is Python & why it's popular
 - Installing Python
 - Setting up an IDE (VS Code, PyCharm, Jupyter)
 - Running Python scripts and interactive shell
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2. Python Basics

- Syntax & indentation rules
 - Variables and data types (int, float, str, bool)
 - Basic math & assignment operators (+, -, *, /, %, **, //)
 - Taking input (input()) & printing output (print())
 - Comments (#, """ """)
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3. Control Flow

- if, elif, else statements
 - Comparison & logical operators
 - Loops:
 - for
 - while
 - break, continue, pass
 - Using range() in loops
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4. Data Structures

- **Lists** – creation, indexing, slicing, methods (append, remove, etc.)
 - **Tuples** – immutable sequences
 - **Sets** – unique elements, set operations
 - **Dictionaries** – key-value pairs, accessing & updating data
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5. Functions

- Defining & calling functions
 - Parameters & return values
 - Default & keyword arguments
 - Variable scope (local vs global)
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6. Strings

- Creating & accessing strings
 - String slicing & indexing
 - Common methods (.upper(), .lower(), .strip(), .replace(), .split())
 - String concatenation & repetition
 - String formatting (f-strings, .format())
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7. File Handling

- Opening files (open() modes: r, w, a, rb, wb)
 - Reading files (read(), readline(), readlines())
 - Writing files (write(), writelines())
 - Closing files (close())
 - Using with statement for automatic closing
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