

30-Day Python Challenge

Week 1: Python Basics

- Day 1: Introduction & Setup - Variables, print(), comments
- Day 2: Data Types - int, float, str, bool, type conversion
- Day 3: Operators - Arithmetic, comparison, logical, bitwise
- Day 4: Strings - Slicing, methods, formatting
- Day 5: Lists - Indexing, slicing, methods, list comprehension
- Day 6: Tuples & Sets - Immutable types, uniqueness, basic operations
- Day 7: Dictionaries - Keys/values, methods, looping

Week 2: Control Flow & Functions

- Day 8: if, else, elif - Conditional logic
- Day 9: Loops - for, while, break, continue, pass
- Day 10: Functions (basics) - def, arguments, return values
- Day 11: Functions (advanced) - *args, **kwargs, lambda, scope
- Day 12: Recursion - Recursive function examples
- Day 13: Exception Handling - try, except, finally, custom errors
- Day 14: Built-in Functions & Modules - map(), filter(), zip(), enumerate()

Week 3: Intermediate Python

- Day 15: File I/O - Read/write .txt and .csv files
- Day 16: List Comprehensions & Generators - Generator expressions, yield
- Day 17: Dates & Time - datetime, time, formatting
- Day 18: Standard Libraries - os, sys, math, random
- Day 19: OOP (Classes & Objects) - __init__, attributes, methods
- Day 20: OOP (Inheritance & Polymorphism) - super(), overriding
- Day 21: OOP (Dunder Methods) - __str__, __len__, etc.

Week 4: Advanced Topics + Final Project

- Day 22: Regular Expressions - re.match, search, findall
- Day 23: Lambda, Map, Filter, Reduce - Functional programming
- Day 24: Decorators & Closures - Function wrappers

Day 25: Working with JSON - json.load, json.dump

Day 26: Virtual Environments & pip - venv, installing packages

Day 27: Testing with unittest - Writing and running tests

Day 28: Introduction to APIs - requests, API response parsing

Day 29: Web Scraping - BeautifulSoup, basic scraping

Day 30: Final Project - Combine topics into a mini project