

Python Roadmap

Topic Names

- ❖ Basic Syntax and Structure
- ❖ Control Flow
- ❖ Functions
- ❖ Data Structures & Algorithms
- ❖ Modules and Packages
- ❖ File Handling
- ❖ Error Handling
- ❖ Object-Oriented Programming (OOP)
- ❖ Working with Data
- ❖ Advanced Concepts
- ❖ Libraries and Frameworks
- ❖ Testing and Debugging
- ❖ Version Control
- ❖ Best Practices

Learn Python

1. Basic Syntax and Structure:

- ❖ Variables and Data Types
- ❖ Operators (arithmetic, comparison, logical, etc.)
- ❖ Comments and Docstrings

2. Control Flow:

- ❖ Conditional Statements (if, elif, else)
- ❖ Loops (for, while)
- ❖ Loop Control (break, continue, pass)

3. Functions:

- ❖ Defining and Calling Functions
- ❖ Arguments and Parameters
- ❖ Return Values
- ❖ Lambda Functions
- ❖ Scope (local, global)

4. Data Structures & Algorithm:

- ❖ Lists
- ❖ Tuples
- ❖ Dictionaries
- ❖ Sets
- ❖ List Comprehensions
- ❖ Dictionary Comprehensions
- ❖ Time Complexity
- ❖ Space Complexity
- ❖ Sorting algorithms
- ❖ Linked list
- ❖ Stack
- ❖ Queue

5. Modules and Packages:

- ❖ Importing Modules
- ❖ Standard Library Modules
- ❖ Time Complexity
- ❖ Space Complexity
- ❖ Sorting algorithms
- ❖ Linked list

- ❖ Stack
- ❖ Queue
- ❖ Installing and Using Third-Party Packages (pip)

6. File Handling:

- ❖ Reading and Writing Files
- ❖ Working with File Paths

7. Error Handling:

- ❖ Exceptions (try, except, finally)
- ❖ Raising Exceptions
- ❖ Custom Exceptions

8. Object-Oriented Programming (OOP):

- ❖ Classes and Objects
- ❖ Methods and Attributes
- ❖ Inheritance
- ❖ Polymorphism
- ❖ Encapsulation

9. Working with Data:

- ❖ Strings (manipulation and formatting)
- ❖ Regular Expressions
- ❖ Dates and Times

10. Advanced Concepts:

- ❖ Decorators
- ❖ Generators and Iterators
- ❖ Context Managers
- ❖ Metaclasses

11. Libraries and Frameworks:

- ❖ Common Libraries (e.g., NumPy, pandas, matplotlib)
- ❖ Web Development (Flask, Django)
- ❖ Web Scraping (BeautifulSoup, Selenium, Scrapy)
- ❖ Data Science and Machine Learning (scikit-learn, TensorFlow, PyTorch)

12. Testing and Debugging:

- ❖ Writing Tests (unittest, pytest)
- ❖ Debugging Tools and Techniques

13. Version Control:

- ❖ Using Git for Version Control

14. Best Practices:

- ❖ Code Style (PEP 8)
- ❖ Writing Clean and Readable Code
- ❖ Documentation