Python Roadmap

1. Introduction to Python
   - What is Python?
   - Why Python?
   - Installing Python
2. Basic Syntax
   - Variables and Data Types
   - Basic Operators
   - Printing to the Console
3. Control Flow
   - Conditional Statements (if, elif, else)
   - Loops (for, while)
   - Control Statements (break, continue)
4. Data Structures
   - Lists
   - Tuples
   - Dictionaries
   - Sets
5. Functions
   - Defining Functions
   - Function Arguments and Return Values
   - Scope of Variables
6. Modules and Packages
   - Importing Modules
   - Creating and Using Packages
7. File Handling
   - Reading from and Writing to Files
   - File Modes
8. Exception Handling
   - Handling Errors with try-except blocks
   - Handling Specific Exceptions

Intermediate Level:

9. Advanced Data Structures

- List Comprehensions
- Dictionary Comprehensions
- Generators and Generator Expressions

10. Object-Oriented Programming (OOP)
    - Classes and Objects
    - Inheritance
    - Polymorphism
    - Encapsulation

11. Functional Programming
    - Lambda Functions
    - Map, Filter, and Reduce
    - Recursion

12. Working with Modules
    - Writing Your Own Modules
    - Using Standard Library Modules

13. Regular Expressions
    - Pattern Matching with Regex
    - Re Module

14. Debugging and Testing
    - Debugging Techniques
    - Unit Testing with unittest module

15. Working with APIs
    - Making API Requests
    - Parsing JSON Responses

16. Database Access
    - SQL Databases (SQLite)
    - Using ORM (Object Relational Mapping)

17. Concurrency
    - Threading vs. Multiprocessing
    - Asyncio for Asynchronous Programming

Advanced Level:

18. Advanced OOP
    - Abstract Classes
    - Mixins
    - Design Patterns

19. Web Development with Python
    - Introduction to Web Frameworks (Flask, Django)
    - Creating RESTful APIs
    - Templating Engines
20. Data Science and Machine Learning
    - NumPy and Pandas for Data Manipulation
    - Introduction to Machine Learning with scikit-learn
    - Data Visualization with Matplotlib and Seaborn
21. Natural Language Processing (NLP)
    - NLTK (Natural Language Toolkit)
    - Text Processing Techniques
22. Web Scraping
    - BeautifulSoup for HTML Parsing
    - Scrapy for Web Crawling
23. Deployment
    - Deploying Python Applications
    - Containerization with Docker
    - Introduction to Cloud Services (AWS, GCP, Azure)
24. Security and Best Practices
    - Secure Coding Practices
    - Handling User Authentication and Authorization
    - Cross-Site Scripting (XSS) and SQL Injection Prevention