100 Python Programs to Master Python Development

1. Swap two variables
2. Check if a number is even or odd
3. Find factorial using recursion
4. List comprehension to square numbers
5. Use lambda to sort a list of tuples by second item
6. Use map to convert strings to integers
7. Use filter to get even numbers from a list
8. Use reduce to compute product of a list
9. Demonstrate *args and **kwargs
10. Create a custom exception
11. Use a context manager to open a file
12. Read and write to a text file
13. Read a CSV file using csv module
14. Parse JSON data from a file
15. Use os to list files in a directory
16. Use shutil to copy a file
17. Use pathlib to create a new folder
18. Use glob to match file patterns
19. Use argparse to read command line arguments
20. Use logging to log messages to a file
21. Use unittest to test a simple function
22. Use pytest-style assert for testing
23. Use pdb to set a breakpoint
24. Create a virtual environment using venv
25. Generate requirements.txt file using pip

26. Install a package using pip
27. Use requests to call an API
28. Scrape a webpage using BeautifulSoup
29. Automate browser using Selenium
30. Build a simple Flask route
31. Return JSON from a Flask route
32. Build a REST API using FastAPI
33. Use NumPy to create an array
34. Reshape a NumPy array
35. Perform matrix multiplication using NumPy
36. Use Pandas to load a CSV
37. Filter rows in Pandas DataFrame
38. Plot a bar chart using Matplotlib
39. Plot a heatmap using Seaborn
40. Interactive plot with Plotly
41. Train a linear regression model using scikit-learn
42. Evaluate model accuracy using scikit-learn
43. Save and load model with joblib
44. Create a neural network using Keras
45. Train model with PyTorch
46. Use HuggingFace transformers for sentiment analysis
47. Tokenize text using spaCy
48. POS tagging with NLTK
49. Load image and apply filter with OpenCV
50. Detect edges in image using OpenCV
51. Show progress with tqdm
52. Save model using pickle

53. Load JSON data from URL

54. Store data in SQLite with sqlite3

55. Query SQLite database using Pandas

56. Connect and insert document into MongoDB using pymongo

57. Demonstrate multithreading

58. Demonstrate multiprocessing

59. Use async/await to run asynchronous task

60. Profile function performance using timeit

61. Compare memory size of list vs generator

62. Create a CLI tool using click

63. Package a module using setup.py

64. Create Dockerfile for a Flask app

65. Run Docker container

66. Use OOP: class, init, method

67. Inheritance and method override

68. Abstract base class with abc module

69. Use dataclasses for model definition

70. Define and use namedtuple

71. Demonstrate mutable vs immutable

72. Write EAFP-style file read

73. Demonstrate duck typing

74. Use zip and enumerate

75. Use counter from collections

76. Use defaultdict

77. Use deque for queue

78. Sort a dictionary by value

79. Convert list to set and find intersection

80. Create a decorator to time function

81. Memoization using lru_cache

82. Create a simple GUI using tkinter

83. Use regex to validate email

84. Schedule tasks using schedule module

85. Send email using smtplib

86. Upload file to cloud using boto3 (AWS S3)

87. Scrape data and save to Excel using openpyxl

88. Generate PDF using ReportLab

89. Encrypt and decrypt string using cryptography

90. Build a chatbot with basic logic

91. Translate text using googletrans

92. Use pyttsx3 for text to speech

93. Use speech_recognition to convert speech to text

94. Detect face in image using OpenCV

95. Track Salah time using prayer-times API

96. Visualize decision tree using graphviz

97. Predict housing prices with ML

98. Streamlit dashboard for model

99. Upload project to GitHub

100. Use GitHub Actions for CI/CD