**Python Basics**

1. What is Python? What are its key features?
2. What are Python's applications?
3. What are Python's key advantages over other languages?
4. What is the difference between Python 2 and Python 3?
5. Is Python an interpreted or compiled language?
6. What are Python's data types?
7. What are Python's built-in data structures?
8. What are Python's mutable and immutable types? Give examples.
9. Explain the difference between list and tuple.
10. What is Python's PEP 8?

**Control Flow and Loops**

1. What are Python's conditional statements?
2. How do for and while loops work in Python?
3. Explain the use of the break, continue, and pass statements.
4. What is the difference between return and yield?

**Functions and Modules**

1. How do you define a function in Python?
2. What are default arguments and keyword arguments in Python functions?
3. What is the difference between \*args and \*\*kwargs?
4. Explain Python's lambda functions.
5. How do you import modules in Python?
6. What are Python's built-in modules?
7. How is a Python package different from a module?

**Object-Oriented Programming (OOP)**

1. What is OOP, and how is it implemented in Python?
2. Explain the concepts of class and object with examples.
3. What are Python's constructors and destructors?
4. What is inheritance in Python? How is it implemented?
5. What is the difference between single, multiple, and multilevel inheritance?
6. What is method overriding?
7. What are Python's magic methods (e.g., \_\_init\_\_, \_\_str\_\_)?

**File Handling**

1. How do you open and close files in Python?
2. Explain the difference between read(), readline(), and readlines().
3. How do you write data to a file in Python?
4. How do you handle exceptions during file handling?

**Error Handling**

1. What are Python exceptions?
2. How do you handle exceptions using try, except, and finally?
3. How do you raise an exception in Python?

**Data Structures**

1. What is the difference between set and frozenset in Python?
2. Explain Python's dictionary and its use cases.
3. How do you sort a list in Python? What are the different sorting methods?
4. What are list comprehensions? Provide an example.
5. What is the difference between shallow copy and deep copy?

**Advanced Topics**

1. What is Python's GIL (Global Interpreter Lock)?
2. What are Python's decorators, and how are they used?
3. What is the difference between is and == in Python?
4. What are Python's generators?
5. Explain the with statement and its use in resource management.
6. What is Python's @staticmethod and @classmethod?
7. How does Python handle memory management?
8. What is the difference between a thread and a process in Python?
9. What are Python's comprehensions, and how are they different from loops?
10. What is Python's None keyword?

**NumPy Interview Questions**

1. What is NumPy, and why is it used?
2. Explain the difference between a Python list and a NumPy array.
3. How do you create a NumPy array? Provide examples.
4. What is the shape, size, and ndim attributes of a NumPy array?
5. How do you perform element-wise addition, subtraction, and multiplication on arrays?
6. Explain the use of numpy.linspace() and numpy.arange().
7. How can you reshape a NumPy array? Give examples.
8. What is broadcasting in NumPy? How does it work?
9. How do you calculate the mean, median, and standard deviation of a NumPy array?
10. Explain the use of numpy.zeros(), numpy.ones(), and numpy.eye().
11. How do you perform matrix multiplication in NumPy?
12. What is the purpose of numpy.random? Provide examples of its usage.
13. How do you filter elements of a NumPy array using conditions?
14. Explain the difference between a shallow copy and a deep copy in NumPy.
15. How do you save and load NumPy arrays?

**Pandas Interview Questions**

1. What is Pandas, and why is it widely used in data analysis?
2. What are the primary data structures in Pandas?
3. How do you create a DataFrame in Pandas? Provide examples.
4. What is the difference between iloc and loc in Pandas?
5. How do you handle missing data in a DataFrame?
6. Explain the use of the groupby function in Pandas.
7. What is the difference between merge(), join(), and concat()?
8. How do you sort a DataFrame by column or row values?
9. How do you filter rows in a DataFrame based on a condition?
10. How can you add or remove columns and rows in a DataFrame?
11. Explain the difference between a Series and a DataFrame.
12. How do you calculate summary statistics (mean, median, mode) in Pandas?
13. What is the purpose of the apply() function? How is it different from map()?
14. How do you handle duplicates in a DataFrame?
15. What is the difference between pivot() and pivot\_table()?

**Matplotlib Interview Questions**

1. What is Matplotlib, and why is it used?
2. Explain the difference between plt.plot() and plt.scatter().
3. How do you create a bar chart and a histogram using Matplotlib?
4. What are the common elements of a plot in Matplotlib (title, labels, legend)?
5. How do you add a title, x-axis label, and y-axis label to a plot?
6. Explain the difference between subplot() and subplots().
7. How do you create a multi-line plot in Matplotlib?
8. How do you change the figure size and resolution of a plot?
9. What is the purpose of the tight\_layout() function?
10. How can you customize the line style, color, and markers in Matplotlib?
11. How do you save a plot as an image file in Matplotlib?
12. Explain the use of plt.annotate() to add annotations to a plot.
13. How do you create a pie chart in Matplotlib?
14. What is the difference between plt.show() and plt.savefig()?
15. How do you add gridlines to a Matplotlib plot?

**Seaborn Interview Questions**

1. What is Seaborn, and how does it differ from Matplotlib?
2. How do you create a scatter plot in Seaborn?
3. What is the purpose of the hue parameter in Seaborn plots?
4. How do you create a box plot and a violin plot in Seaborn?
5. Explain the use of pairplot() in Seaborn.
6. What is the difference between heatmap() and clustermap() in Seaborn?
7. How do you create a histogram and KDE plot using Seaborn?
8. What is the purpose of the FacetGrid class in Seaborn?
9. How can you combine Matplotlib and Seaborn for advanced visualizations?
10. What are the themes provided by Seaborn? How do you change them?
11. How do you create a regression plot using Seaborn?
12. Explain the difference between sns.catplot() and sns.relplot().
13. How do you add titles and labels to Seaborn plots?
14. How can you customize the color palette in Seaborn?
15. What is the difference between sns.lineplot() and sns.pointplot()?