**Integer**

1. **Basic Arithmetic:**
   * How do you add, subtract, multiply, and divide two integers in Python?
   * What is the difference between integer division and floating-point division in Python?
2. **Type Conversion:**
   * How can you convert a string to an integer in Python?
   * What happens if you try to convert a string that doesn’t represent a number to an integer?
3. **Arithmetic Operations:**
   * What is the result of **7 // 2** and why?
   * How do you calculate the remainder of a division in Python?

**String**

1. **String Creation:**
   * How do you create a string in Python?
   * What is the difference between single quotes and double quotes in Python strings?
2. **String Methods:**
   * How can you convert all the characters in a string to uppercase?
   * How do you find the length of a string?
3. **String Indexing and Slicing:**
   * How do you access the first and last character of a string?
   * How do you extract a substring from a given string?

**List**

1. **List Creation:**
   * How do you create a list in Python?
   * Can a list contain elements of different data types? Provide an example.
2. **List Methods:**
   * How do you append an item to a list?
   * How can you remove an item from a list?
3. **List Indexing and Slicing:**
   * How do you access the second element in a list?
   * How do you extract a sublist from a given list?

**Tuple**

1. **Tuple Creation:**
   * How do you create a tuple in Python?
   * What is the difference between a tuple and a list?
2. **Tuple Methods:**
   * How can you concatenate two tuples?
   * How do you find the length of a tuple?
3. **Tuple Indexing:**
   * How do you access the third element in a tuple?
   * Can you change the value of an element in a tuple? Why or why not?

**Dictionary**

1. **Dictionary Creation:**
   * How do you create a dictionary in Python?
   * How can you add a new key-value pair to a dictionary?
2. **Dictionary Methods:**
   * How do you remove a key-value pair from a dictionary?
   * How do you check if a key exists in a dictionary?
3. **Accessing Dictionary Elements:**
   * How do you access the value associated with a specific key in a dictionary?
   * What happens if you try to access a key that doesn’t exist in the dictionary?

**Set**

1. **Set Creation:**
   * How do you create a set in Python?
   * Can a set contain duplicate elements? Explain with an example.
2. **Set Methods:**
   * How do you add an element to a set?
   * How can you remove an element from a set?
3. **Set Operations:**
   * How do you find the union of two sets?
   * How do you find the intersection of two sets?

**Intermediate Level**

**Integer**

1. **Advanced Arithmetic Operations:**
   * **How do you calculate the power of an integer in Python without using the \*\* operator?**
   * **What is the purpose of the divmod() function and how is it used?**
2. **Bitwise Operations:**
   * **What are bitwise operators and how do you use them with integers?**
   * **How do you perform a left shift and right shift operation on an integer?**
3. **Handling Large Integers:**
   * **How does Python handle large integers and what libraries can assist with arbitrary-precision arithmetic?**

**String**

1. **String Formatting:**
   * **What is f-string formatting and how is it different from str.format()?**
   * **How can you format a number to include commas as thousand separators?**
2. **Regular Expressions:**
   * **What is the purpose of regular expressions and how do you use the re module in Python for string pattern matching?**
   * **How do you find all occurrences of a pattern in a string using regular expressions?**
3. **String Manipulation:**
   * **How do you reverse a string in Python?**
   * **How can you remove all whitespace from a string?**

**List**

1. **List Comprehensions:**
   * **What is a list comprehension and how does it differ from a traditional for loop?**
   * **How do you create a list of squares of the first 10 integers using a list comprehension?**
2. **Advanced List Operations:**
   * **How do you sort a list of dictionaries by a specific key?**
   * **What is the difference between extend() and append() methods?**
3. **Using the map and filter Functions:**
   * **How do you use the map function to apply a function to all elements in a list?**
   * **How do you use the filter function to filter elements from a list based on a condition?**

**Tuple**

1. **Tuple Unpacking:**
   * **How do you unpack a tuple into separate variables?**
   * **What is tuple unpacking in a function argument list and how is it useful?**
2. **Nested Tuples:**
   * **How do you access elements in a nested tuple?**
   * **How do you convert a list of tuples into a dictionary?**
3. **Advanced Tuple Operations:**
   * **How do you use tuples as keys in a dictionary?**
   * **What are named tuples and how do you create them using the collections module?**

**Dictionary**

1. **Dictionary Comprehensions:**
   * **What is a dictionary comprehension and how does it differ from a list comprehension?**
   * **How do you create a dictionary comprehension to swap keys and values?**
2. **Advanced Dictionary Methods:**
   * **How do you use the get() method with a default value?**
   * **How do you merge two dictionaries in Python 3.9 and later?**
3. **Working with Default Dictionaries:**
   * **What is a defaultdict and how is it different from a regular dictionary?**
   * **How do you use a defaultdict to group elements in a list by a common attribute?**

**Set**

1. **Advanced Set Operations:**
   * **How do you find the symmetric difference between two sets?**
   * **How do you check if one set is a subset or superset of another set?**
2. **Set Comprehensions:**
   * **What is a set comprehension and how is it different from a list comprehension?**
   * **How do you create a set comprehension to filter unique elements from a list?**
3. **Using Sets for Efficient Computations:**
   * **How can sets be used to remove duplicates from a list?**
   * **How do you use sets to find common elements in multiple lists?**

**More questions**

**List**

1. **List Creation and Basic Operations:**
   * How do you create an empty list?
   * How do you create a list with the elements **1, 2, 3**?
2. **List Indexing:**
   * How do you access the first element of a list?
   * How do you access the last element of a list?
3. **List Methods:**
   * How do you add an element to the end of a list?
   * How do you remove the first occurrence of an element from a list?
4. **Basic List Slicing:**
   * How do you get the first three elements of a list?
   * How do you get all elements of a list except the first one?

**Tuple**

1. **Tuple Creation and Basic Operations:**
   * How do you create an empty tuple?
   * How do you create a tuple with the elements **1, 2, 3**?
2. **Tuple Indexing:**
   * How do you access the first element of a tuple?
   * How do you access the last element of a tuple?
3. **Tuple Methods:**
   * Can you add elements to a tuple? Why or why not?
   * How do you find the index of an element in a tuple?
4. **Basic Tuple Slicing:**
   * How do you get the first three elements of a tuple?
   * How do you get all elements of a tuple except the first one?

**Dictionary**

1. **Dictionary Creation and Basic Operations:**
   * How do you create an empty dictionary?
   * How do you create a dictionary with the keys **'a'** and **'b'** and values **1** and **2**?
2. **Accessing Dictionary Elements:**
   * How do you access the value associated with the key **'a'** in a dictionary?
   * What happens if you try to access a key that doesn't exist in a dictionary?
3. **Dictionary Methods:**
   * How do you add a new key-value pair to a dictionary?
   * How do you remove a key-value pair from a dictionary?
4. **Dictionary Keys and Values:**
   * How do you get a list of all keys in a dictionary?
   * How do you get a list of all values in a dictionary?

**List Slicing**

1. **Basic Slicing:**
   * Given the list **my\_list = [10, 20, 30, 40, 50]**, how do you get a new list containing the first three elements?
   * How do you get the last two elements of **my\_list**?
2. **Step Slicing:**
   * Given the list **my\_list = [10, 20, 30, 40, 50]**, how do you get every second element?
   * How do you reverse the list using slicing?
3. **Range Slicing:**
   * How do you get the elements from index 1 to 3 in **my\_list**?
   * Given **my\_list = [10, 20, 30, 40, 50, 60]**, how do you get elements from the beginning of the list up to (but not including) index 4?
4. **Negative Indexing:**
   * How do you get the last three elements using negative indices?
   * How do you get all elements except the last one using slicing?

**Tuple Slicing**

1. **Basic Slicing:**
   * Given the tuple **my\_tuple = (10, 20, 30, 40, 50)**, how do you get a new tuple containing the first three elements?
   * How do you get the last two elements of **my\_tuple**?
2. **Step Slicing:**
   * Given the tuple **my\_tuple = (10, 20, 30, 40, 50)**, how do you get every second element?
   * How do you reverse the tuple using slicing?
3. **Range Slicing:**
   * How do you get the elements from index 1 to 3 in **my\_tuple**?
   * Given **my\_tuple = (10, 20, 30, 40, 50, 60)**, how do you get elements from the beginning of the tuple up to (but not including) index 4?
4. **Negative Indexing:**
   * How do you get the last three elements using negative indices?
   * How do you get all elements except the last one using slicing?