Python List Data Type Concepts Interview Questions

1. **What is list in Python?**
    - A list is a collection data type in Python that is ordered, mutable, and allows duplicate elements. It is defined using square brackets [].
2. **How to create and get the length of Python List?**
    - Create: `my_list = [1, 2, 3]`
    - Length: `len(my_list)`
3. **How do you create homogeneous elements list in Python?**
    - `homogeneous_list = [1, 2, 3, 4, 5]` (all integers)
4. **How do you create a heterogeneous elements list in Python?**
    - `heterogeneous_list = [1, "hello", 3.14, True]`
5. **How do you access the elements from a list in Python?**
    - By indexing: `my_list[0]`, `my_list[-1]`
6. **How do you check the length of a list in Python?**
    - Using `len(my_list)`
7. **What is use of list slicing in Python?**
    - To access a subset of the list: `my_list[1:4]`, `my_list[::-1]`
8. **How can you concatenate two lists in Python?**
    - `list1 + list2`
9. **What is list packing & unpacking? Can you give me some examples?**
    - Packing: `my_list = [1, 2, 3]`

- Unpacking: `a, b, c = my_list`

10. **How to convert other type objects into list type?**
    - `list("abc")`, `list((1, 2, 3))`
11. **How to create an empty list object in Python?**
    - `empty_list = []` or `empty_list = list()`
12. **Is list mutable or immutable type object? Why?**
    - Mutable, because we can change its elements after creation.
13. **Does list allow duplicate values and unique indexing?**
    - Yes, it allows duplicates and uses unique indexing.
14. **How do you access individual elements from a list object?**
    - Using index: `my_list[2]`
15. **Can you change the list values?**
    - Yes, using assignment: `my_list[0] = 10`
16. **How to delete or remove items from list object?**
    - `del my_list[1]`, `my_list.remove(value)`, `my_list.pop(index)`
17. **How to Create and Access a nested list?**
    - `nested = [[1, 2], [3, 4]]`, `nested[0][1]`
18. **How to access items of list in a reverse order?**
    - `my_list[::-1]`
19. **How to check if Items are present/exist in List?**
    - Using `in`: `if item in my_list:`

Python List Data Type Methods Interview Questions

1. **What is list in Python?**
    - A built-in data structure to store ordered and mutable collections.
2. **How to get the length or number of elements of a Python list?**
    - `len(my_list)`
3. **How to access Python list items?**
    - By indexing and slicing.
4. **How to check if an item or value is present in a Python list?**
    - Using `in`: `value in my_list`
5. **How to add elements or items to a Python list?**
    - `append()`, `insert()`, `extend()`
6. **How to remove elements or items from a Python list?**
    - `remove()`, `pop()`, `del`
7. **How to find the maximum element in a list?**
    - `max(my_list)`
8. **How to find the minimum element in a list?**
    - `min(my_list)`
9. **How to find the sum of all elements in a list?**
    - `sum(my_list)`
10. **How to count the occurrences of an element in a list?**
    - `my_list.count(value)`

11. **How to find the index of the first occurrence of an element in a list?**
    - `my_list.index(value)`
12. **How to create a new list containing only the even numbers from the original list?**
    - `[x for x in my_list if x % 2 == 0]`
13. **How to sort a list in ascending order?**
    - `my_list.sort()` or `sorted(my_list)`
14. **How to sort a list in descending order?**
    - `my_list.sort(reverse=True)` or `sorted(my_list, reverse=True)`
15. **Explain the difference between the append() and extend() methods in Python lists.**
    - `append()` adds a single element, `extend()` adds multiple elements.
16. **How do you add an element to the end of a list in Python?**
    - `my_list.append(value)`
17. **How can you insert an element at a specific index in a list?**
    - `my_list.insert(index, value)`
18. **Discuss the purpose of the remove() and pop() methods in Python lists.**
    - `remove(value)` removes the first occurrence; `pop(index)` removes and returns the item.
19. **What is the purpose of the count() method in Python lists?**
    - Returns the number of times a value appears: `my_list.count(value)`
20. **How can you reverse the order of elements in a list?**
    - `my_list.reverse()` or `my_list[::-1]`

21. **Explain the purpose of the clear() method in Python lists.**

    - `clear()` removes all items from the list: `my_list.clear()`