List Manipulation

Q1. Which symbol is used to create a list in Python?

A) ( )
B) [ ]
C) { }
D) < >

Q2. A list in Python is:

A) Immutable
B) Mutable
C) Constant
D) None of these

Q3. What is the index of the first element in a list?

A) 1
B) -1
C) 0
D) 2

Q4. What is the index of the last element in a list?

A) 0
B) -1
C) 1
D) -2

Q5. Which operator is used to join two lists?

A) *
B) +
C) -
D) /

Q6. Which operator is used to repeat a list?

A) +
B) -
C) *
D) /

Q7. Which method adds an element at the end of a list?

A) insert()
B) append()
C) remove()
D) pop()

Q8. Which method inserts an element at a specified position?

A) append()
B) insert()
C) sort()
D) reverse()

Q9. Which method removes a specified value from a list?

A) delete()
B) remove()
C) insert()
D) sort()

Q10. Which method removes the last element by default?

A) append()
B) insert()
C) pop()
D) sort()

Q11. Which method sorts a list in ascending order by default?

A) reverse()
B) sort()
C) append()
D) count()

Q12. Which method reverses the order of list elements?

A) sort()
B) reverse()
C) remove()
D) clear()

Q13. Which method removes all elements from a list?

A) delete()
B) pop()
C) clear()
D) remove()

Q14. Which function returns the number of elements in a list?

A) count()
B) len()
C) sum()
D) max()

Q15. Which function returns the largest element of a numerical list?

A) min()
B) max()
C) sum()
D) len()

Q16. Which method creates a shallow copy of a list?

A) copy()
B) append()
C) insert()
D) remove()

Q17. What is the output of the following code?

L = [10, 20, 30, 40]print(L[2])

A) 10
B) 20
C) 30
D) 40

Q18. What is the output?

L = [10, 20, 30]L.append(40)print(L)

A) [10, 20, 30]
B) [40, 10, 20, 30]
C) [10, 20, 30, 40]
D) Error

Q19. What is the output?

L = [40, 10, 30, 20]L.sort()print(L)

A) [40, 30, 20, 10]
B) [10, 20, 30, 40]
C) [40, 10, 30, 20]
D) Error

Short Questions

Q1. What is a list in Python?
Ans: A list is an ordered and mutable collection of elements enclosed in square brackets [ ].

Q2. What is list indexing?
Ans: Indexing is used to access individual elements of a list. The index starts from 0.

Q3. What is negative indexing?
Ans: Negative indexing accesses elements from the end of a list, starting with -1.

Q4. What is list slicing?
Ans: Slicing is used to access a portion of a list.

Example:

L = [10, 20, 30, 40]print(L[1:3]) # [20, 30]

Q5. What is the use of append()?
Ans: The append() method adds an element at the end of a list.

Q6. What is the use of insert()?
Ans: The insert() method adds an element at a specified position in a list.

Q7. What is the difference between append() and insert()?
Ans:

- append() adds an element at the end.
- insert() adds an element at a specified position.

Q8. What is the use of remove()?
Ans: The remove() method deletes the first occurrence of a specified value from a list.

Q9. What is the use of pop()?
Ans: The pop() method removes and returns an element from a list. By default, it removes the last element.

Q10. What is the difference between remove() and pop()?
Ans:

- remove() deletes an element by its value.
- pop() deletes an element by its index.

Q11. What is the use of sort()?
Ans: The sort() method arranges list elements in ascending order by default.

Q12. What is the use of reverse()?
Ans: The reverse() method reverses the order of elements in a list.

Q13. What is the use of len()?
Ans: The len() function returns the number of elements in a list.

Q14. What is the use of max() and min()?
Ans:

- max() returns the largest element.
- min() returns the smallest element.

Q15. How can you create a true copy of a list?
Ans: A separate shallow copy of a list can be created using copy() or slicing [:].

L1 = [10, 20, 30]L2 = L1.copy()

Q16. What is the difference between a list and a tuple?
Ans:

- **List:** Mutable and enclosed in [ ].
- **Tuple:** Immutable and generally enclosed in ( ).

Short Questions

Q1. Explain any three characteristics of a Python list.

Answer:

1. **Ordered:** List elements are stored in a specific order.
2. **Mutable:** List elements can be changed after creation.
3. **Allows duplicates:** A list can contain repeated values.

Example:

L = [10, 20, 20, 30]print(L)

Q2. Explain the append(), insert() and remove() methods with examples.

Answer:

1. append() – Adds an element at the end.

L = [10, 20, 30]L.append(40)print(L)# Output: [10, 20, 30, 40]

2. insert() – Inserts an element at a specified index.

L = [10, 20, 30]L.insert(1, 50)print(L)# Output: [10, 50, 20, 30]

3. remove() – Removes the first occurrence of a specified value.

L = [10, 20, 30]L.remove(20)print(L)# Output: [10, 30]

Q3. Explain positive indexing and negative indexing with examples.

Answer:

Positive indexing: Starts from 0 and accesses elements from left to right.

Negative indexing: Starts from -1 and accesses elements from right to left.

Example:

```
L = [10, 20, 30, 40]
print(L[0])
print(L[-1])
```

Output:

```
10
40
```

Q4. Explain list slicing with an example.

Answer:

List slicing is used to access a specific portion of a list.

Syntax: list[start:stop:step]

The stop index is excluded.

Example:

```
L = [10, 20, 30, 40, 50]
print(L[1:4])
print(L[:3])
print(L[::-1])
```

Output:

```
[20, 30, 40]
[10, 20, 30]
```

[50, 40, 30, 20, 10]

Q5. Differentiate between remove(), pop() and del.

Answer:

remove()	pop()	del
Removes an element by value.	Removes an element by index.	Deletes an element or slice by index.
Removes the first matching value.	Removes the last element by default.	Can delete the entire list variable.
Example: L.remove(20)	Example: L.pop(1)	Example: del L[1]

Q6. Write a Python program to append, insert, update and delete elements from a list.

Answer:

```
L = [10, 20, 30, 40]
print("Original List:", L)
L.append(50)
print("After Append:", L)
L.insert(1, 15)
print("After Insert:", L)
L[2] = 25
print("After Update:", L)
L.remove(30)
print("After Delete:", L)
```

Output:

```
Original List: [10, 20, 30, 40]
After Append: [10, 20, 30, 40, 50]
After Insert: [10, 15, 20, 30, 40, 50]
After Update: [10, 15, 25, 30, 40, 50]
After Delete: [10, 15, 25, 40, 50]
```

Q7. Write a Python program to find the maximum, minimum, sum and length of a list.

Answer:

```
L = [10, 20, 30, 40, 50]
print("List:", L)
print("Maximum:", max(L))
print("Minimum:", min(L))
print("Sum:", sum(L))
print("Length:", len(L))
```

Output:

List: [10, 20, 30, 40, 50]
Maximum: 50
Minimum: 10
Sum: 150
Length: 5

Q8. Write a Python program to sort a list in ascending and descending order.

Answer:

```
L = [40, 10, 50, 20, 30]
print("Original List:", L)
L.sort()
print("Ascending Order:", L)
L.sort(reverse=True)
print("Descending Order:", L)
```

Output:

Original List: [40, 10, 50, 20, 30]
Ascending Order: [10, 20, 30, 40, 50]
Descending Order: [50, 40, 30, 20, 10]

Q9. Explain any five list methods with examples.

Answer:

Method	Description	Example
append()	Adds an element at the end.	L.append(50)
insert()	Inserts an element at a specified index.	L.insert(1, 25)
remove()	Removes a specified value.	L.remove(20)
sort()	Sorts a list in ascending order.	L.sort()
reverse()	Reverses the order of elements.	L.reverse()

Example:

```
L = [30, 10, 20]
L.append(40)
L.insert(1, 15)
L.remove(10)
L.sort()
L.reverse()
print(L)
```

Output:

[40, 30, 20, 15]