Python Functions – Questions (1–15)

1. What is a function in Python and why do we use it?

2. What are the advantages of using functions in Python?

3. Explain the DRY principle and its connection to functions.

4. Write a simple function greet() that prints "Hello, Python!".

5. What is a docstring and how is it used in Python functions?

6. Write a function add(a, b) that returns the sum of two numbers.

7. Explain the difference between positional and keyword arguments with examples.

8. Write a function student_info(name, age, grade) and call it using keyword arguments.

9. How do default parameters work in functions? Give an example.

10. Write a function that returns multiple values (e.g., sum and product of two numbers).

11. What is the difference between local and global variables?

12. Demonstrate modifying a global variable inside a function using the global keyword.

13. Explain the scope and lifetime of local variables.

14. Can a function call another function in Python? Provide an example.

15. What happens if a function does not have a return statement?

Lambda Functions – Questions (16–25)

16. What is a lambda function in Python?

17. Write a lambda function to square a number.

18. Can a lambda function have multiple statements? Explain.

19. Write a lambda function to add two numbers.

20. Explain why lambda functions are also called anonymous functions.

21. Use a lambda function with map() to double the numbers [1,2,3,4].

22. Use a lambda function with filter() to select only even numbers from [1,2,3,4,5].

23. Use a lambda function with reduce() to calculate the product of [1,2,3,4].

24. Combine map and filter with lambda to double only even numbers in a list.

25. Explain a practical use case for lambda functions in Python.

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map, filter, reduce – Questions (26–35)

26. What does the map() function do in Python?

27. What does the filter() function do in Python?

28. What does the reduce() function do in Python?

29. Write an example using map() to square numbers in a list.

30. Write an example using filter() to get numbers greater than 5.

31. Write an example using reduce() to sum all elements in a list.

32. Explain the difference between map() and filter().

33. Use reduce() to find the maximum number in [12,7,25,3,18].

34. Use filter() to select names longer than 3 characters from a list.

35. Combine map, filter, reduce to sum the squares of even numbers in [1,2,3,4,5,6].

Recursive Functions – Questions (36–42)

36. What is recursion in Python?

37. Why is a base case important in a recursive function?

38. Write a recursive function to calculate the factorial of a number.

39. Write a recursive function to calculate the sum of numbers from 1 to n.

40. Write a recursive function to compute the nth Fibonacci number.

41. Explain one advantage and one disadvantage of recursion.

42. What happens if a recursive function does not have a base case?