Basic Concepts & Syntax

1. Write examples of `int`, `float`, `str`, and `bool` data types.
2. Write a program to take the user's name as input and print a welcome message.
3. Write a program to add two numbers entered by the user.
4. Write a program to swap two numbers.
5. Write a program to calculate the area of a Circle, Rectangle.

Conditional Statements

8. Write a program to check whether a number is even or odd.
9. Write a program to check whether a number is positive, negative, or zero.
10. Write a program to find the largest of three numbers.
11. Write a program to check if a person is eligible to vote (age ≥ 18).
12. Write a simple calculator program using if-else.

Loops

13. Write a program to print numbers from 1 to 10.
14. Write a program to print even numbers from 1 to 100.
15. Write a program to print the multiplication table of a number.
16. Write a program to find the sum of numbers from 1 to n.
17. Write a program to calculate the factorial of a number.
18. Write a program to reverse a number using a loop.

Strings

19. Write a program to reverse a string.
20. Write a program to check whether a string is a palindrome.
21. Write a program to count vowels in a string.
22. Write a program to convert uppercase letters to lowercase.
23. Write a program to find the length of a string without using `len()`.

Lists

24. Write a program to find the maximum number in a list.
25. Write a program to calculate the sum of elements in a list.
26. Write a program to remove duplicate elements from a list.
27. Write a program to sort a list in ascending order.
28. Write a program to take 5 numbers from the user and store them in a list.
29. Write a program to find the second largest element in a list.

Functions

1. Write a function to check whether a number is prime.
2. Write a recursive function to calculate factorial.

3. Write a function to print the Fibonacci series up to n terms.
4. Write a function to check whether a string is a palindrome.
5. Write a function with a default argument.
6. Write a function to calculate the power of a number.

Lists & List Comprehension

7. Write a program to find common elements between two lists.
8. Write a program using list comprehension to create a list of squares from 1 to 10.
9. Write a program to flatten a nested list.
10. Write a program to remove all even numbers from a list.
11. Write a program to count occurrences of an element in a list.

Tuples & Dictionaries

12. What is the difference between a list and a tuple?
13. Write a program to create a dictionary of 5 students with their marks.
14. Write a program to find the student with the highest marks from a dictionary.
15. Write a program to merge two dictionaries.
16. Write a program to count the frequency of characters in a string using a dictionary.

File Handling

17. Write a program to create and write data into a file.
18. Write a program to read a file and count the number of words.
19. Write a program to append data to an existing file.
20. Write a program to copy content from one file to another.

Number Based Questions

1. Write a program to check whether a number is an **Armstrong number**.
2. Write a program to check whether a number is a **Palindrome number**.
3. Write a program to reverse a number.
4. Write a program to check whether a number is a **Strong number**.
5. Write a program to check whether a number is a **Perfect number**.
6. Write a program to print all Armstrong numbers between 1 and 1000.
7. Write a program to find the sum of digits of a number.
8. Write a program to find the largest digit in a number.
9. Write a program to count the number of digits in a number without using `len()`.

Prime & Series Based Questions

11. Write a program to check whether a number is prime.
12. Print all prime numbers between 1 and 100.
13. Print Fibonacci series up to n terms.
14. Find the nth Fibonacci number.
15. Find GCD and LCM of two numbers.

16. Write a program to generate Pascal's Triangle.

Pattern Printing Questions (Very Important for Interviews)

Star Patterns

17.

```
*
* *
* * *
* * * *
* * * * *
```

18.

```
* * * * *
* * * *
* * *
* *
*
```

19.

```
        *
      * * *
    * * * * *
  * * * * * * *
* * * * * * * * *
```

20.

```
* * * * *
*       *
*       *
*       *
* * * * *
```

21. Print Floyd's Triangle.
22. Print number pyramid pattern.
23. Print diamond star pattern.
24. Print hollow pyramid pattern.

String Based Interview Questions

25. Reverse a string without using slicing.
26. Check if two strings are anagrams.
27. Find the first non-repeating character in a string.
28. Count frequency of each character.
29. Remove duplicate characters from a string.
30. Find the longest word in a sentence.

List & Array Based Questions

31. Find second largest element in a list.
32. Find missing number in a list of 1 to n.
33. Move all zeros to the end of the list.
34. Find duplicate elements in a list.
35. Find intersection of two lists.
36. Sort a list without using `sort()`.

Logical / Tricky Interview Questions

38. Swap two numbers without using third variable.
39. Find factorial using recursion.
40. Check whether a number is a power of 2.
41. Count number of words in a sentence.
42. Find whether a string contains only digits.
43. Implement a simple ATM system using loops.
44. Implement a simple login system with 3 attempts.
45. Create a menu-driven program using while loop.
46. Find the most frequent element in a list.
47. Check if a list is palindrome.
48. Create a simple number guessing game.

OOP Practical Interview Questions

49. Create a Bank class with deposit and withdraw methods.
50. Create a Student class and calculate average marks.
51. Demonstrate inheritance using Vehicle and Car class.
52. Create a class to manage a simple library system.
53. Implement encapsulation with private variables.