1. Write a program to check if a given number is odd or even.
    - Input: 7
    - Output: odd

2. Write a program to check if a given number is prime.
    - Input: 13
    - Output: True
3. Write a function to find the factorial of a number.
    - Input: 5
    - Output: 120
4. Write a program to reverse a string.
    - Input: "hello"
    - Output: "olleh"
5. Write a function that counts the number of vowels in a string.
    - Input: "python"
    - Output: 1
6. Write a program to find the largest element in a list.
    - Input: [5, 10, 3, 8, 2]
    - Output: 10
7. Write a function to check if a string is a palindrome.
    - Input: "racecar"
    - Output: True
8. Write a program to calculate the sum of digits in a number.
    - Input: 12345
    - Output: 15
9. Write a function to remove duplicate elements from a list.
    - Input: [1, 2, 2, 3, 4, 4, 5]
    - Output: [1, 2, 3, 4, 5]
10. Write a program to check if two strings are anagrams.
    - Input: "listen", "silent"
    - Output: True
11. Write a function to calculate the Fibonacci sequence up to a given number.
    - Input: 8
    - Output: [0, 1, 1, 2, 3, 5, 8]
12. Write a program to sort a list in ascending order.
    - Input: [9, 2, 7, 4, 1]
    - Output: [1, 2, 4, 7, 9]

13. Write a function to find the median of a list.
    - Input: [3, 1, 7, 5, 2]
    - Output: 3
14. Write a program to check if a given string is a valid email address.
    - Input: "example@example.com"
    - Output: True
15. Write a function to calculate the area of a triangle.
    - Input: base = 4, height = 5
    - Output: 10.0
16. Write a program to find the common elements between two lists.
    - Input: [1, 2, 3, 4], [3, 4, 5, 6]
    - Output: [3, 4]
17. Write a function to check if a number is a power of two.
    - Input: 16
    - Output: True
18. Write a program to find the second-largest element in a list.
    - Input: [5, 10, 3, 8, 2]
    - Output: 8
19. Write a function to remove all whitespace characters from a string.
    - Input: "Hello World"
    - Output: "HelloWorld"
20. Write a program to count the occurrence of each character in a string.
    - Input: "hello"
    - Output: {'h': 1, 'e': 1, 'l': 2, 'o': 1}
21. Write a function to check if a list is sorted in ascending order.
    - Input: [1, 2, 3, 4, 5]
    - Output: True
22. Write a program to find the GCD (Greatest Common Divisor) of two numbers.
    - Input: 36, 48
    - Output: 12
23. Write a function to check if a number is a palindrome.
    - Input: 121
    - Output: True
24. Write a program to calculate the average of a list of numbers.
    - Input: [2, 4, 6, 8]
    - Output: 5.0

25. Write a function to find the maximum occurring character in a string.
    - Input: "hello"
    - Output: 'l'
26. Write a program to convert a decimal number to binary.
    - Input: 10
    - Output: "1010"
27. Write a function to check if a string is a pangram.
    - Input: "The quick brown fox jumps over the lazy dog."
    - Output: True
28. Write a program to check if a given year is a leap year.
    - Input: 2024
    - Output: True
29. Write a function to calculate the area of a circle.
    - Input: radius = 5
    - Output: 78.53981633974483
30. Write a program to remove all the vowels from a string.
    - Input: "Hello World"
    - Output: "Hll Wrld"
31. Write a function to find the LCM (Least Common Multiple) of two numbers.
    - Input: 4, 6
    - Output: 12
32. Write a program to find the sum of all even numbers in a list.
    - Input: [1, 2, 3, 4, 5, 6]
    - Output: 12
33. Write a function to reverse the order of words in a sentence.
    - Input: "Hello World"
    - Output: "World Hello"
34. Write a program to check if a given string is a palindrome.
    - Input: "madam"
    - Output: True
35. Write a function to find the number of words in a string.
    - Input: "Hello, how are you?"
    - Output: 4
36. Write a program to find the factorial of a number using recursion.
    - Input: 5
    - Output: 120
37. Write a function to check if a number is a perfect square.

- Input: 25
- Output: True

38. Write a program to find the length of the longest word in a sentence.
    - Input: "The quick brown fox"
    - Output: 5
39. Write a function to check if a string is a valid URL.
    - Input: "https://www.example.com"
    - Output: True
40. Write a program to calculate the sum of all odd numbers in a list.
    - Input: [1, 2, 3, 4, 5, 6]
    - Output: 9
41. Write a function to remove the nth occurrence of a given element from a list.
    - Input: [1, 2, 3, 2, 4, 2], 2
    - Output: [1, 3, 2, 4, 2]
42. Write a program to check if a given string is a valid IPv4 address.
    - Input: "192.168.0.1"
    - Output: True
43. Write a function to calculate the power of a number using recursion.
    - Input: base = 2, exponent = 3
    - Output: 8
44. Write a program to find the mode of a list of numbers.
    - Input: [1, 2, 3, 2, 4, 3, 3]
    - Output: 3
45. Write a function to check if a string is a valid palindrome ignoring non-alphanumeric characters.
    - Input: "A man, a plan, a canal, Panama!"
    - Output: True
46. Write a program to generate the first N prime numbers.
    - Input: 5
    - Output: [2, 3, 5, 7, 11]
47. Write a function to rotate a list by K positions to the left.
    - Input: [1, 2, 3, 4, 5], K = 2
    - Output: [3, 4, 5, 1, 2]
48. Write a program to find the maximum subarray sum in a given list.
    - Input: [-2, 1, -3, 4, -1, 2, 1, -5, 4]
    - Output: 6
49. Write a function to check if a string is a valid JSON.

- Input: '{"name": "John", "age": 30}'
- Output: True

50. Write a program to find the sum of the digits of a factorial.
    - Input: 5
    - Output: 3
51. Write a function to remove all duplicate characters from a string.
    - Input: "hello"
    - Output: "helo"

These examples cover a variety of concepts and will help you practice and strengthen your problem-solving skills in Python.