30 Real-World Python Problems (Functions, Recursion, Lambda)

Function-Based Problems

1. Temperature Converter - Convert Celsius to Fahrenheit and vice versa using functions.

2. Bill Splitter - Function that splits the bill equally among people.

3. Email Validator - Validate if an input string is a valid email.

4. Discount Calculator - Apply discount based on category.

5. Simple Interest Calculator - Compute interest using principal, rate, and time.

6. Tax Bracket Finder - Determine tax bracket based on income.

7. Username Generator - Generate username from full name.

8. Days in Month - Return days in a month using input.

9. Palindrome Checker - Check if a word is a palindrome.

10. Password Strength Checker - Return strength level of a password.

Recursion-Based Problems

11. Factorial Calculator - Calculate factorial using recursion.

12. Fibonacci Sequence Generator - Generate Fibonacci numbers recursively.

13. Sum of Digits - Sum digits of a number recursively.

14. Reverse a String - Reverse a string using recursion.

15. Count Vowels - Count vowels in a string recursively.

16. Binary to Decimal Converter - Convert binary to decimal recursively.

17. GCD - Find GCD using recursive Euclidean algorithm.

18. Sum of Odd Numbers - Sum first n odd numbers using recursion.

19. Prime Check - Check if a number is prime recursively.

20. Nested List Sum - Sum all values in a nested list using recursion.

Lambda Function Problems

21. Sort List by Last Character - Sort strings using lambda on last char.

22. Filter Even Numbers - Use lambda and filter to find even numbers.

23. Map to Square Elements - Square elements using map and lambda.

24. Custom Sort by Length - Sort strings by length using lambda.

25. Find Max Length Word - Use lambda to get longest word in list.

26. Sort Dictionary by Values - Sort a dictionary by values using lambda.

27. Capitalize List - Capitalize all strings using lambda and map.

28. Total Cost with GST - Apply 18% GST to prices using lambda.

29. Remove Negatives - Filter out negatives using lambda.

30. Temperature Classification - Classify temperatures using lambda.