Demo Question

1. Write a program to convert temperature from Celsius to Fahrenheit.
2. Create a program that calculates the total price of items including 18% tax.
3. Write a program that swaps the values of two variables without using a third variable.
4. Create a program that calculates BMI (weight/height²) and displays the result.
5. Write a program that splits a full name into first name and last name.
6. Create a currency converter from USD to INR.
7. Write a program that calculates simple interest (PRT/100).
8. Create a program that converts seconds into hours, minutes, and seconds.
9. Write a program to calculate the area and perimeter of a rectangle.
10. Create a program that formats a phone number (from 1234567890 to 123-456-789.
11. Write a program that checks if a number is even or odd using modulus operator.
12. Create a program that determines if a year is a leap year.
13. Write a program that checks if a number is divisible by both 3 and 5.
14. Create a program to calculate the remainder when dividing 47 by 8.
15. Write a program that uses bitwise operators to check if a number is power of two.
16. Create a grading system (A: 90-100, B: 80-89, etc.) based on marks.
17. Write a program to find the largest of three numbers.
18. Create a simple calculator (+, -, *, /) that takes operator input.
19. Write a program that determines if a triangle is valid (sum of two sides > third).
20. Create a program that calculates electricity bill with slabs.
21. Write a program to check if a string is a palindrome.
22. Create a login system that checks username and password.
23. Write a program that determines the quadrant of a point (x, y).
24. Create a program that calculates discount: 20% if purchase > $5000, else 10%.
25. Write a program to determine if a character is vowel or consonant.

26. Write a program to print multiplication table for a given number.
27. Create a program to find the factorial of a number.
28. Write a program to print Fibonacci series up to n terms.
29. Create a program to check if a number is prime.
30. Write a program to find the sum of digits of a number.
31. Create a program to print patterns (triangle of stars).
32. Write a program to reverse a number.
33. Create a program to find the LCM of two numbers.
34. Write a program to print all Armstrong numbers between 1 and 1000.
35. Create a program to find the sum of all even numbers between 1 and n.
36. Write a program to find the second largest number in a list.
37. Create a program to remove duplicates from a list.
38. Write a program to merge two sorted lists into one sorted list.
39. Create a program that rotates a list by k positions.
40. Write a program to find all pairs in a list whose sum equals target.
41. Create a program to split a list into two equal halves.
42. Write a program to count frequency of each element in a list.
43. Create a program to find the median of a list of numbers.
44. Write a program to move all zeros to the end of a list.
45. Create a program that simulates a shopping cart with add/remove/calculate total.
46. Write a program to convert tuple to list and vice versa.
47. Create a program to find the most frequent element in a tuple.
48. Write a program to unpack a tuple of student info (name, age, grade).
49. Create a program to check if all elements in a tuple are the same.
50. Write a program to concatenate multiple tuples.
51. Write a program to find common elements between two lists using sets.
52. Create a program to find symmetric difference between two sets.
53. Write a program to check if a set is subset of another set.
54. Create a program to remove all duplicates from a list using sets.
55. Write a program to perform union, intersection, difference operations.
56. Create a program to count word frequency in a sentence.
57. Write a program to merge two dictionaries.
58. Create a student database with roll numbers as keys and names as values.

59. Write a program to invert a dictionary (keys become values, values become keys).
60. Create a program to find the highest three values in a dictionary.
61. Write a program to sort a dictionary by value.
62. Create a phonebook with search, add, delete functions.
63. Write a program to convert two lists into a dictionary.
64. Create a program to find keys with the same value in a dictionary
65. Write a program to group words by their first letter
66. Write a function to check if a string is palindrome.
67. Create a function that returns both sum and product of two numbers.
68. Write a recursive function to calculate factorial.
69. Create a function that accepts variable number of arguments to calculate average.
70. Write a function to generate nth Fibonacci number.
71. Create a function that converts decimal to binary.
72. Write a function to calculate compound interest.
73. Create a function to validate email format.
74. Write a function to find GCD of two numbers.
75. Create a function that takes a list and returns a new list with unique elements
76. Use lambda to sort a list of tuples by the second element.
77. Use map() to convert a list of Celsius temperatures to Fahrenheit.
78. Use filter() with lambda to get all even numbers from a list.
79. Use map() to square all elements in a list.
80. Use lambda with sorted() to sort strings by their length.
81. Write a program to count lines, words, and characters in a file.
82. Create a program to copy contents from one file to another.
83. Write a program to find and replace a word in a text file.
84. Create a program to count frequency of each word in a file.
85. Write a program to append user input to a file.
86. Create a program to merge two files into a third file.
87. Write a program to display the last n lines of a file.
88. Create a program to remove blank lines from a file.
89. Write a program to create a CSV file of student records.
90. Create a program to read a file and write only lines containing a specific word to another file.

91. Write a program to handle division by zero error.
92. Create a program that handles file not found exception.
93. Write a program with custom exception for negative numbers.
94. Create a program that handles invalid input for age (non-numeric).
95. Write a program that retries file opening up to 3 times if file doesn't exist.
96. Create a BankAccount class with deposit, withdraw, and display methods.
97. Write a Student class with attributes and methods to calculate percentage.
98. Create a Rectangle class with methods for area and perimeter.
99. Write a Car class with attributes and a method to display car details.
100. Create a Book class with title, author, price attributes and display method.
101. Create base class Vehicle and derived classes Car, Bike with different implementations of start() method.
102. Write a base class Employee and derived classes Manager, Developer with different calculate_salary() methods.
103. Create a base class Shape and derived classes Circle, Rectangle with area() method.
104. Write a program demonstrating method overriding in inheritance.
105. Create a base class Animal with speak() method and derived classes Dog, Cat with their own speak() methods.
106.