NATIONAL QUALIFIER TEST

TCS NQT 2025

ALL NUMBER PROBLEMS

1. **Question:** Reverse a digit
   Input: 1234
   Output: 4321
2. **Question:** Binary to Decimal Conversion
   Input: 1010
   Output: 10
3. **Question:** Decimal to Binary Conversion
   Input: 12
   Output: 1100
4. **Question:** Prime Number in the given range
   Input: A = 10, B = 30
   Output: [11, 13, 17, 19, 23, 29]
5. **Question:** Find all palindrome numbers in the range of A to B
   Input: A = 100, B = 150
   Output: [101, 111]
6. **Question:** Sum of digits of a number
   Input: 456
   Output: 15
7. **Question:** Armstrong number check
   Input: 153
   Output: True (153 is an Armstrong number)
8. **Question:** Find Armstrong numbers in the range of A to B
   Input: A = 100, B = 500
   Output: [153, 370, 371, 407]
9. **Question:** Check if a number is a prime
   Input: 29
   Output: True (29 is a prime number)
10. **Question:** Check if a number is a palindrome
    Input: 121
    Output: True (121 is a palindrome)
11. **Question:** Greatest Common Divisor (GCD) of two numbers
    Input: A = 36, B = 60

Output: 12

12. **Question:** Least Common Multiple (LCM) of two numbers
    Input: A = 6, B = 8
    Output: 24
13. **Question:** Factorial of a number
    Input: 5
    Output: 120
14. **Question:** Find the number of digits in a number
    Input: 12345
    Output: 5
15. **Question:** Check if a number is perfect
    Input: 28
    Output: True (28 is a perfect number)
16. **Question:** Check if a number is harshad (divisible by the sum of its digits)
    Input: 18
    Output: True (18 is a harshad number)
17. **Question:** Generate a bill, find the costly item and its price
    Input: [('Item A', 200), ('Item B', 450), ('Item C', 120)]
    Output: Costly Item: 'Item B', Price: 450
18. **Question:** Find the sum of the first N natural numbers
    Input: N = 10
    Output: 55
19. **Question:** Find the sum of the squares of the first N natural numbers
    Input: N = 3
    Output: 14 ($1^2 + 2^2 + 3^2 = 14$)
20. **Question:** Find the sum of the cubes of the first N natural numbers
    Input: N = 3
    Output: 36 ($1^3 + 2^3 + 3^3 = 36$)
21. **Question:** Count the number of prime numbers between A and B
    Input: A = 10, B = 50
    Output: 10 (Prime numbers: [11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47])
22. **Question:** Find the next prime number greater than N
    Input: N = 14
    Output: 17
23. **Question:** Find the next palindrome number greater than N
    Input: N = 123
    Output: 131
24. **Question:** Convert a number to its hexadecimal representation
    Input: 255
    Output: FF
25. **Question:** Find the Fibonacci sequence up to N terms
    Input: N = 5
    Output: [0, 1, 1, 2, 3]
26. **Question:** Find the nth Fibonacci number
    Input: N = 7
    Output: 13

27. **Question:** Find the sum of the digits of a number until it becomes a single digit
    Input: 9875
    Output: 2 (9 + 8 + 7 + 5 = 29 → 2 + 9 = 11 → 1 + 1 = 2)
28. **Question:** Check if a number is an automorphic number (a number whose square ends with the number itself)
    Input: 25
    Output: True ($25^2 = 625$, ends with 25)
29. **Question:** Calculate the sum of prime numbers between A and B
    Input: A = 1, B = 10
    Output: 17 (Prime numbers: [2, 3, 5, 7])
30. **Question:** Check if a number is a spy number (sum of digits = product of digits)
    Input: 132
    Output: True (1 + 3 + 2 = 6, 1 * 3 * 2 = 6)
31. **Question:** Find the sum of all cubes in the range of A to B
    Input: A = 1, B = 3
    Output: 36 ($1^3 + 2^3 + 3^3 = 36$)
32. **Question:** Find the sum of all perfect numbers in the range of A to B
    Input: A = 1, B = 1000
    Output: 28 (Perfect numbers: [6, 28])
33. **Question:** Print the multiplication table of a given number N
    Input: N = 2
    Output:
    2 * 1 = 2
    2 * 2 = 4
    2 * 3 = 6
    ...
    2 * 10 = 20
34. **Question:** Fibonacci series up to N terms
    Input: N = 6
    Output: [0, 1, 1, 2, 3, 5]
35. **Question:** Modify an array based on divisibility rules
    Input: [2, 3, 4, 5, 15]
    Output: [2, Three, 4, Five, ThreeFive]
36. **Question:** Find the sum of squares in the range of A to B
    Input: A = 1, B = 4
    Output: 30 ($1^2 + 2^2 + 3^2 + 4^2 = 30$)
37. **Question:** Find the product of all digits in a number
    Input: 1234
    Output: 24 (1 * 2 * 3 * 4 = 24)
38. **Question:** Find all numbers divisible by N in the range of A to B
    Input: A = 1, B = 20, N = 4
    Output: [4, 8, 12, 16, 20]
39. **Question:** Find the sum of the first N odd numbers
    Input: N = 5
    Output: 25 (1 + 3 + 5 + 7 + 9 = 25)

40. **Question:** Replace even numbers with "Even" and odd numbers with "Odd" in an array
    Input: [1, 2, 3, 4, 5]
    Output: ["Odd", "Even", "Odd", "Even", "Odd"]
41. **Question:** Find the largest prime number less than or equal to N
    Input: N = 50
    Output: 47
42. **Question:** Find all prime factors of a number
    Input: 36
    Output: [2, 3]
43. **Question:** Find the sum of all even numbers in a range of A to B
    Input: A = 1, B = 10
    Output: 30 (2 + 4 + 6 + 8 + 10 = 30)
44. **Question:** Check if a number is a palindrome after adding its reverse
    Input: 56
    Output: 121 (56 + 65 = 121, which is a palindrome)
45. **Question:** Generate a list of numbers in the range of A to B that are divisible by both 3 and 5
    Input: A = 1, B = 50
    Output: [15, 30, 45]