



Sheryians Coding
School

Live Cohort

Assignments



JavaScript Questions

1. ISBN Number

Description: An ISBN (International Standard Book Number) is a unique 10-digit number assigned to books. The ISBN is valid if the sum of its digits, each multiplied by its position (1 to 10), is divisible by 11.

Example:

- Input: 020131452
 - Explanation: The sum of the digits multiplied by their positions is not divisible by 11.
- Input: 0471958697
 - Output: Valid ISBN
 - Explanation: $(0 \times 1 + 4 \times 2 + 7 \times 3 + \dots + 7 \times 10)$ is divisible by 11.

Hint: Use a loop to multiply each digit by its respective position and check divisibility by 11.

2. HCF/GCD

Description: The Highest Common Factor (HCF) or Greatest Common Divisor (GCD) of two numbers is the largest number that divides both numbers without leaving a remainder.

Example:

- Input: a = 12, b = 18
 - Output: 6
 - Explanation: Factors of 12: {1,2,3,4,6,12}, Factors of 18: {1,2,3,6,9,18}. Common factors: {1,2,3,6}. The highest is 6.

Hint: Use the Euclidean algorithm: $\text{GCD}(a, b) = \text{GCD}(b, a \% b)$.

JavaScript Questions

3. Harshad Number

Description: A number is a Harshad number if it is divisible by the sum of its digits.

Example:

- Input: 18
- Output: Harshad Number
 - Explanation: Sum of digits $(1 + 8) = 9$, and 18 is divisible by 9.

Hint: Extract digits using modulo (%) and integer division (//).

4. Perfect Square

Description: A number is a perfect square if it is the square of an integer.

Example:

- Input: 25
- Output: Perfect Square
 - Explanation: $5 \times 5 = 25$.

Hint: Use `sqrt(N)`, check if it's an integer.

5. Abundant Number

Description: A number is abundant if the sum of its proper divisors is greater than the number itself.

Example:

- Input: 12
- Output: Abundant Number
 - Explanation: Proper divisors: 1, 2, 3, 4, 6 → Sum = 16 (greater than 12).

Hint: Use a loop to find proper divisors.

JavaScript Questions

6. Fibonacci Series using Loop

Description: Print Fibonacci series up to N terms using a loop.

Example:

- Input: N = 6
- Output: 0,1,1,2,3,5

Hint: Use a loop and store previous two numbers.

7. Find Numbers with Exactly X Divisors (Java)

Description: Find numbers that have exactly X divisors.

Example:

- Input: X = 3
- Output: 4, 9, 25, 49
 - Explanation: These numbers have exactly three divisors.

Hint: Use prime factorization.

8. Prime Factors in Java

Description: Find all prime factors of a number.

Example:

- Input: 30
- Output: 2, 3, 5

Hint: Use division method.

JavaScript Questions

9. Calculate Area using Switch Statement

Description: Find the area of a circle, rectangle, or triangle using switch.

Example:

- Input: Choice = Circle, Radius = 5
- Output: Area = 78.5

Hint: Use switch with case statements.

10. Neon Number

Description: A number where the sum of digits of its square equals the number itself.

Example:

- Input: 9
- Output: Neon Number
 - Explanation: $9^2 = 81$, sum of digits = 9.

Hint: Find square, sum digits, compare.

11. Sum of Even Indexed Fibonacci Numbers

Description: Find the sum of Fibonacci numbers at even indices up to the 2Nth Fibonacci number.

Example:

- Input: N = 4
- Output: 33

Hint: Use a loop and maintain a sum for even-indexed elements.

JavaScript Questions

12. Find the Largest Digit in a Number

Description: Find the largest digit in a given number.

Example:

- Input: 54829
- Output: 9

Hint: Extract digits using modulo (% 10) and compare.

13. Find LCM of Two Numbers

Description: Find the Least Common Multiple (LCM) of two numbers.

Example:

- Input: a = 12, b = 15
- Output: 60

Hint: LCM can be found using the formula: $\text{LCM}(a, b) = (a \times b) / \text{GCD}(a, b)$.

14. Find the Sum of Even Digits in a Number

Description: Find the sum of all even digits in a given number.

Example:

- Input: 2384
- Output: 14

Hint: Extract digits using % 10, check if even (digit % 2 == 0), add to sum.

JavaScript Questions

15. Number of Days in a Month

Description: Find the number of days in a given month and year (to handle leap years).

Example:

- Input: Month = 2, Year = 2024
- Output: 29

Hint: Use conditions:

- 31 Days: Jan, Mar, May, Jul, Aug, Oct, Dec.
- 30 Days: Apr, Jun, Sep, Nov.
- February: 28 or 29 (check for leap year using `year % 4 == 0` but not `year % 100 != 0` unless `year % 400 == 0`).