# Logical-x-Coding-Challenge 🔥💻🚀

Got it! Here's a **Coding challenge** to help you strengthen your logic-building and problem-solving skills in Java. These questions will focus on **core Java** topics such as arrays, strings, loops, control flow, and collections—without diving into **Object-Oriented Programming (OOP)** concepts.

Java Basics and Control Flow

**Topics: Variables, Data Types, Operators, Conditionals (if, else, switch), Loops (for, while, do-while)**

1. **Print "Hello, World!" in Java.**
2. **Check if a number is even or odd.**
3. **Write a program to check if a number is positive, negative, or zero.**
4. **Print all numbers from 1 to N using a loop.**
5. **Find the largest of three numbers.**
6. **Write a program to reverse a number (e.g., 123 -> 321).**
7. **Find the factorial of a number using a loop.**
8. **Check if a number is divisible by both 3 and 5.**
9. **Print the multiplication table of a number.**
10. **Write a program to find the sum of digits of a number (e.g., 123 -> 6).**
11. **Write a program to check if a number is prime.**
12. **Write a program to find the sum of numbers from 1 to N.**
13. **Write a program to check if a year is a leap year.**
14. **Print the Fibonacci series up to N numbers.**
15. **Find the minimum of two numbers.**
16. **Write a program to print all prime numbers up to N.**
17. **Count the number of vowels in a string.**
18. **Check if a string is a palindrome.**
19. **Print the reverse of a string.**
20. **Print all even numbers from 1 to N.**
21. **Write a program to swap two numbers without using a temporary variable.**
22. **Write a program to find the smallest element in an array.**
23. **Find the sum of all elements in an array.**
24. **Count the number of characters in a string.**
25. **Write a program to find the average of an array of numbers.**

Arrays and Strings

**Topics: Arrays, String Methods, Array Manipulation**

1. **Write a program to reverse an array of integers.**
2. **Find the largest and smallest element in an array.**
3. **Write a program to check if an array is sorted in ascending order.**
4. **Write a program to find the sum of elements at even indices in an array.**
5. **Write a program to remove duplicate elements from an array.**
6. **Write a program to find the second largest number in an array.**
7. **Write a program to find the index of a given element in an array.**
8. **Write a program to rotate an array by K positions.**
9. **Count the frequency of each element in an array.**
10. **Write a program to check if two arrays are equal.**
11. **Concatenate two strings.**
12. **Write a program to count how many times a specific character appears in a string.**
13. **Find the length of the longest substring without repeating characters.**
14. **Reverse a string without using additional arrays or lists.**
15. **Write a program to check if a string is an anagram of another string.**
16. **Write a program to find the common characters between two strings.**
17. **Check if a string is a palindrome using a stack (non-recursive).**
18. **Convert a string to lowercase/uppercase.**
19. **Write a program to find the character that appears most frequently in a string.**
20. **Write a program to count the number of words in a sentence.**
21. **Find the first non-repeating character in a string.**
22. **Write a program to split a string into words based on spaces.**
23. **Find the longest word in a sentence.**
24. **Write a program to join all elements of an array into a single string.**
25. **Check if a string contains only digits.**

Java Collections

**Topics: Lists, Sets, Maps, Collections API**

1. **Create a list of integers and print them using a for-each loop.**
2. **Write a program to remove duplicates from an array using a Set.**
3. **Write a program to find the frequency of an element in an array using a Map.**
4. **Create a HashMap that stores employee names and their salaries, then print the entries.**
5. **Sort a list of integers in descending order using Collections.sort().**
6. **Write a program to check if a HashSet contains a specific element.**
7. **Create a TreeSet and add elements to it. Print them in sorted order.**
8. **Write a program to implement a stack using LinkedList.**
9. **Write a program to implement a queue using LinkedList.**
10. **Write a program to merge two ArrayLists into one.**
11. **Write a program to find the union of two sets.**
12. **Write a program to implement a basic phone book using HashMap.**
13. **Write a program to iterate over a list of Strings and print each element.**
14. **Write a program to remove all elements from a list using clear().**
15. **Write a program to sort a list of strings alphabetically.**
16. **Write a program to find the common elements between two sets.**
17. **Create a PriorityQueue and sort elements in ascending order.**
18. **Write a program to implement a simple inventory system using Map.**
19. **Write a program to clone an ArrayList.**
20. **Write a program to find the smallest element in a PriorityQueue.**
21. **Write a program to get all values in a HashMap using values().**
22. **Write a program to sort an ArrayList using Collections.sort().**
23. **Write a program to create a list of employee names and filter those with names starting with 'A'.**
24. **Write a program to check if two maps are equal.**
25. **Write a program to find the largest element in a list using Collections.max().**