40-Day Java Impact Report

This report outlines the daily progress and learning activities undertaken over a 40-day period focused on Java programming. The report includes key topics, practice questions, and competitive problem-solving tasks encountered throughout the sessions.

## Day 1

Introduction to Java

Java Basics

* - Simple addition (a + b) with and without Scanner class.
* - Sum of first and last digit of a 4-digit number.
* - Sum of all 3-digit numbers.

## Day 2

Conditional and Control Statements

* - Reverse a 3-digit number.
* - Odd or Even checker with validation.
* - "Weird" or "Not Weird" classification.
* - Trendy number / Meatball sandwich logic.
* - Hotel tariff calculator.
* - Special number.
* - Fibonacci series ("Amoeba").
* - Collatz sequence.
* - Treasure Box Game.

## Day 3

Note: Absent due to heavy rain.

## Day 4

Number Theory & Nested Loops

* - Adam number.
* - Kaprekar number.
* - Leetcode Problem 70.

## Day 5

Patterns & Arrays

* - Print even numbers from array.
* - Check if two arrays are the same.

## Day 6

Array Compatibility

* - Check if arrays are compatible.

## Day 7

Leetcode & Array Operations

* - Even sum.
* - Odd sum.
* - Minimum and maximum element.
* - Leetcode Problem 4.
* - Name pattern.

## Day 8

Complex Array Challenges

* - Bus boarding logic.
* - Max height and weight selection.
* - Even number after odd number arrangement.
* - Oil factory problem.

## Day 9

Advanced Array Manipulations

* - Move zeros to end of array.
* - Separate even and odd numbers.
* - Find smallest missing positive number.

## Day 10

Bit Manipulation & Leetcode

* - Leetcode Problem 2 – Add Two Numbers.
* - Leetcode Problem 169 – Majority Element.
* - Decimal to Binary.
* - Binary to Decimal.
* - Bitwise operations.

## Day 11

Bitwise Practice

* - Second maximum element.
* - Left shift, right shift, NOT operations.

## Day 12

Bit Position Checks

* - Check if ith bit is set (left shift).

Note: Tech Mahindra and Capgemini Test.

## Day 13

Advanced Bit Manipulation

* - Check if ith bit is set (right shift).
* - Set ith bit.
* - Clear bit at a position.
* - Find non-repeating elements.

Leetcode: 12 Medium, 4 Hard, 4 Easy problems.

## Day 14

String Basics

* - Count vowels in a string.
* - Check for palindrome.

## Day 15

String and Leetcode Problems

* - Leetcode 110 – Defanging an IP Address.
* - Leetcode 771 – Jewels and Stones.
* - First non-repeating character.
* - Antakshari.
* - Reverse string.
* - Leetcode 680 – Valid Palindrome II.

## Day 16

Subsequences

* - Sub-sequence logic.
* - Leetcode 392 – Is Subsequence

Leetcode Practice: Easy {1, 26, 27, 35}, Medium {11, 15, 16, 18, 31, 33, 34, 36, 39, 40, 45, 46}, Hard {4, 37, 41, 42}

## Day 17

Strings & 2D Arrays

* - Decrypt company transfer data.
* - Detect cycle.
* - Count sum of numbers in a string.
* - 2D Arrays: Transpose, Upper triangular, Max element in rows.