TCS NQT Coding Questions (15th March,2025) Shift 1

Question 1. Problem Statement: Making Triplets Equal

You are given a triplet of integers (a,b,c). You can perform the following operation any number of times.

1. Select any two numbers from the triplet.

2. Add 1 to both selected numbers.

3. Subtract 1 from the remaining number.

Your task is to determine the number of steps needed to make all three numbers equal using thegiven operations.

If not possible return -1

Input:

A single integer T representing the number of test cases
Each test case consists of three integers a,b,c

Output:

For each test cass, print number of steps if its possible to make all three equal; otherwise print -1.

Constraints: 1≤T≤10^4

−10^9 ≤a,b,c≤10^ 9

Example:

Input:

3

1 2 3

4 4 4

2 2 8

Output:

-1

0

3

Question 2. Problem Statement: Range Sum Query

You are given two integers i and j, where $0 \le i < j \le 9999$. Your task is to compute the sum of integers from index i to j , both included.

Input Format:

- A single integer T representing the number of queries.
- Each of the next T lines contains two integers i and j ($0 \le i < j \le 9999$).

Output Format:

- For each query, print a single integer representing the sum of numbers from i to j.

Constraints:

$1 \le T \le 10^4$

$0 \le i < j \le 9999$

Example Input:

3

0 3

2 6

10 1001

Example Output:

6 20 invalid input i & j i <= j < 10000 Explanation:

1: Sum from 0 to 3: 0 + 1 + 2 + 3 = 6

2: Sum from 2 to 6: 2 + 3 + 4 + 5 + 6 = 20

3: Sum from 10 to 20: 10+11 + + 20=165

TCS NQT Coding Questions (15th March,2025) Shift 2

Question 1. Problem Statement: Minimum Team Selection for Required Skills

You are given a set of required skills and a number of candidates, where each candidate possesses certain skills. Your task is to form a team with the minimum number of people that collectively covers all the required skills.

Input Format:

A single line containing:

- A space-separated list of required skills.
- A comma (,) followed by the number of candidates.

- A comma-separated list where each part contains space-separated skills of a candidate.

Output Format:

A space-separated list of indices representing the minimum number of candidates needed to

cover all required skills.

Example:

Input: a b c d , 4 , a b , c , c d , c

Output: 0 2

Explanation:

- The required skills are {a, b, c, d}.
- There are 4 candidates:
    - Candidate 0: {a, b}
    - Candidate 1: {c}
    - Candidate 2: {c, d}
    - Candidate 3: {c}

The minimum team is [0, 2] because:

- Candidate 0 covers {a, b}
- Candidate 2 covers {c, d}
- Together, they cover {a, b, c, d} with the fewest people.

Question 2. You are given a list of integers of length N. Every element in the list appears exactly two times, except for one unique element, which appears exactly once. Your task is to find and print this unique element.

Input Format:

- The first line contains an integer N, the length of the list.
- The second line contains N space-separated integers representing the elements of the list.

Output Format:

Print the unique element that appears exactly once.

Constraints:

1≤N≤1051 \leq N \leq 10^51≤N≤105

All elements except one appear exactly twice.

Example 1:

Input:

9

1 1 2 2 5 6 6 7 7

5

Example 2:

Input:

7

3 3 4 4 9 2 2

Output:

9

TCS NQT Coding Questions (20th March,2025) Shift 2

Question: 1. Sum of All Prime Numbers Between 2 and n

Given an integer nnn, return the sum of all prime numbers between 2 and nnn (inclusive).

Constraints:

- 2≤n≤1062 \leq n \leq 10^62≤n≤106

Input:

- A single integer nnn representing the upper limit.

Output:

- Return an integer representing the sum of all prime numbers between 2 and nnn.

Example 1:

Input: 10

Output: 17

Explanation: The prime numbers between 2 and 10 are [2, 3, 5, 7]. Their sum is 2+3+5+7=172 + 3 + 5 + 7 = 172+3+5+7=17.

Example 2:

Input: 2

Output: 2

Explanation: 2 is the only prime number between 2 and 2.

Question: 2. Shortest Path in a Directed Acyclic Graph (DAG)

Problem Statement:

You are given a Directed Acyclic Graph (DAG) with NNN vertices and MMM edges. Each edge has a weight associated with it. Your task is to find the shortest path from a given source node (SRC) to a destination node (DES) using the provided graph data.

Input Format:

1. N MN \ MN M — Two integers representing the number of vertices (NNN) and the number of edges (MMM).

2. X Y WX \ Y \ WX Y W — Three integers for each edge representing an edge from vertex XXX to vertex YYY with weight WWW.

3. SRC DESSRC \ DESSRC DES — Two integers representing the source node (SRCSRCSRC) and the destination node (DESDESDES).

Output Format:

- Print the shortest path from SRCSRCSRC to DESDESDES.

- Display the total weight of this path.

Example:

Input:

```
3 3

0 1 5

1 2 3

0 2 10

0 2
```

Output:

```
Path: 0 -> 1 -> 2, Total Weight: 8
```

TCS NQT Coding Questions (25th March,2025) Shift 1

Question 1. Write a program that processes a given string to determine:

1. The first non-repeating character (if present).
2. The most repeated character in the string.
3. If multiple characters have the same highest frequency, print the first non-repeating character first, then the most repeated character.
4. If the input string is empty, print "Invalid Input".
5. If all characters in the string are repeating, print "None" followed by the most repeated character.

Test Cases:

Enter a string: *swissmissisippi*

Output

First Non-Repeating Character: w
Most Repeated Character: s (appears 7 times)

Enter a string: *aabbcc*

Output

First Non-Repeating Character: None
Most Repeated Character: a (appears 2 times)

Enter a string: *aabbccd*

Output

First Non-Repeating Character: d
Most Repeated Character: a (appears 2 times)

Question 2. Write a program that continuously takes user input for the following details:

1. Income (amount earned).

2. Type of Material (category of expenditure).
3. Expenditure on that Material (amount spent).

The input process continues until the user enters "done".

After the input process is complete, the program should:

- Display the total income.
- Calculate and display the total savings (i.e., Income - Total Expenditure).
- List all expenditures (showing where the money was spent and how much).

Input

```
Income: 5000
Type of Material: Food
Expenditure: 100
Type of Material: Mobile
Expenditure: 200
Type of Material: Electricity
Expenditure: 500
Then the user enters "done".
```

Expected Output

```
Total Income: 5000
Total Savings: 4200

Expenditures:
Food: 100
Mobile: 200
Electricity: 500
```

Q3. We need to find number of pairs (i, j) (i and j can overlap), such that number Arr_i, Arr_j converted to string then added (string addition), then if the resulting number lies between x and y, then it is valid pair. Find all such pairs (all, not only unique).

Ex - n = 5, x = 20, y = 50, Arr = [2, 5, 7, 6, 3] String addition example - "2" + "7" = "27" -> 27 converted to int

TCS NQT Coding Questions (31 March,2025) Shift 2

Question1. Write a program that accepts two integer inputs, X and Y, which denote specific positions in the sequence of prime numbers. The program should identify the prime numbers at these positions, compute their product, subtract 1 from the result, and display the final output.

TestCases:

```
3 5

Output

54
```

Explanation

```
3rd prime number → 5

5th prime number → 11

Output → (5 * 11) - 1 = 54
```