CodeChum NPC-Style Practice Problems

Problem 1: Lucky Ticket

Problem Statement: A ticket number is called lucky if the sum of the first half of its digits is equal to the sum of the second half.

Input: A 6-digit integer.

Output: Print 'Lucky' if the ticket is lucky, otherwise 'Not Lucky'.

Sample Input:

```
123321
```

Sample Output:

```
Lucky
```

Problem 2: Digital Root

Problem Statement: The digital root of a number is found by repeatedly summing its digits until only one digit remains.

Input: A positive integer.

Output: Print the digital root.

Sample Input:

```
9875
```

Sample Output:

```
2
```

Problem 3: Word Reversal

Problem Statement: Write a program that reverses each word in a sentence but keeps the word order intact.

Input: A string containing multiple words.

Output: The sentence with each word reversed.

Sample Input:

> ***Hello CodeChum***

Sample Output:

> ***olleH muhCedoC***

Problem 4: Fibonacci Checker

Problem Statement: Check if a given number belongs to the Fibonacci sequence.

Input: A positive integer.

Output: Print 'Yes' if it is a Fibonacci number, 'No' otherwise.

Sample Input:

21

Sample Output:

Yes

Problem 5: Matrix Diagonal Sum

Problem Statement: Given a square matrix, compute the sum of its main diagonal and secondary diagonal.

Input: First line: integer n (size of matrix). Next n lines: n integers each.

Output: Print two integers: main diagonal sum and secondary diagonal sum.

Sample Input:

```
3
1 2 3
4 5 6
7 8 9
```

Sample Output:

```
15 15
```

Problem 6: Balanced Parentheses

Problem Statement: Check if a string of parentheses is balanced.

Input: A string containing only '(' and ')'.

Output: Print 'Balanced' if every opening bracket has a matching closing bracket, otherwise 'Not Balanced'.

Sample Input:

(())

Sample Output:

Balanced

Problem 7: Array Rotation

Problem Statement: Rotate an array of n integers to the left by k positions.

Input: First line: two integers n and k. Second line: n integers.

Output: The rotated array.

Sample Input:

```
5 2
1 2 3 4 5
```

Sample Output:

```
3 4 5 1 2
```

Problem 8: String Compression

Problem Statement: Compress a string by replacing consecutive identical characters with the character followed by its count.

Input: A string of lowercase letters.

Output: The compressed string.

Sample Input:

aaabbcddd

Sample Output:

a3b2c1d3

Problem 9: GCD and LCM

Problem Statement: Compute the Greatest Common Divisor (GCD) and Least Common Multiple (LCM) of two integers.

Input: Two integers separated by space.

Output: Two integers: the GCD and LCM.

Sample Input:

```
12 18
```

Sample Output:

```
6 36
```

Problem 10: Spiral Matrix

Problem Statement: Generate a spiral matrix filled with numbers from 1 to n*n.

Input: A single integer n.

Output: An n x n matrix filled in spiral order.

Sample Input:

```
3
```

Sample Output:

```
1 2 3
8 9 4
7 6 5
```