Electrifex

Enhancing Quality of Life

NAME: ______________________________

DOB: ______________________________

COLLEGE ID: ________________________

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BRANCH : _________________________

Round 1: Coding Question

Instructions:

1) Understand the coding questions at the start of the session. If you have any questions, you must ask only the invigilator for clarification.
2) Time Limit: 3 Hours including the evaluation. The start and end time will be communicated by the invigilator. Manage your time effectively to complete all the questions within the given time frame.
3) Use C or Python for coding. Don't switch between languages during the test.
4) Use of Libraries and External Resources: Unless specified otherwise, avoid using external libraries or resources beyond what's provided in the standard library of the chosen programming language.
5) Coding Style: Follow good coding practices and maintain a clean and readable code style. Use meaningful variable names, proper indentation, and comments to explain complex code sections.
6) Function and Variable Naming: Choose descriptive names for functions and variables that accurately reflect their purpose and usage. Avoid using single-letter variable names unless they are standard conventions (e.g., i, j, k for loop counters).
7) Input/Output Format: Ensure that your program reads input from stdin or command-line arguments as specified and outputs results to stdout in the required format. Pay attention to details such as whitespace, newline characters, and formatting.
8) Error Handling: Implement error handling where necessary, especially for cases where input may be invalid or unexpected. Handle edge cases gracefully and provide informative error messages if applicable.
9) Testing: Test your code thoroughly using sample inputs and edge cases to ensure correctness. Check for off-by-one errors, boundary conditions, and corner cases that might lead to unexpected behaviour.
10) Malpractices: Write your solutions independently without copying code from external sources or collaborating with others during the test. If found guilty, you will be disqualified.
11) Submission: Submit your solutions within the given time limit. Double-check your code and ensure that all test cases pass before submitting. Once submitted, you may not be able to make further changes.
12) Electrifex has full discretion to take actions for the smooth conduct and in the evaluation of the coding round.

QUESTION 1

A magic square of order `n` is an arrangement of n^2 numbers, usually distinct integers, in a square, such that the `n` numbers in all rows, all columns, and both diagonals sum to the same constant. A magic square contains the integers from `1` to `n²`. Create a magic square of a given order `N`.

SAMPLE INPUT 1

Magic Square of order `N` = 3

SAMPLE OUTPUT 1

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

QUESTION 2

You are given `N` identical eggs, and you have access to a `K`-floored building from `1` to `K`. There exists a floor `f` where `0 <= f <= K` such that any egg dropped from a floor higher than `f` will break, and any egg dropped from or below floor `f` will not break.

There are few rules which are given below.

a) An egg that survives a fall can be used again.

b) A broken egg must be discarded.

c) The effect of a fall is the same for all eggs.

d) If the egg doesn't break at a certain floor, it will not break at any floor below.

e) If the eggs break at a certain floor, it will break at any floor above.

f) Return the minimum number of moves to determine with certainty what the value of `f` is.

Your Task: Complete the function eggDrop() which takes two positive integer `N` and `K` as input parameters and returns the minimum number of attempts you need in order to find the critical floor.

SAMPLE INPUT 1

```
N = 1
K = 2
```

SAMPLE OUTPUT 1

```
2
```

Explanation:

a) Drop the egg from floor 1. If it breaks, we know that f = 0.

b) Otherwise, drop the egg from floor 2. If it breaks, we know that f = 1.

c) If it does not break, then we know f = 2.

d) Hence, we need at minimum 2 moves to determine with certainty what the value of f is.

SAMPLE INPUT 2

N = 2, K = 10

SAMPLE OUTPUT 2

4

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