Assignment-1

Deadline

Due Date: Friday, 23 August, 11:59 PM

Plagiarism Policy

All submissions must be your own work. Plagiarism, including copying from peers, online resources, or using generative AI tools is strictly prohibited. Violations will result in academic penalties as per the institution's guidelines.

Q1-Juice Canteen's Flavorful Dilemma

Juice Canteen is preparing for a grand event. The manager knows that it's trendy to offer a variety of unique drinks. They have four types of juices left from last year, but some might be the same flavor. To impress the guests, the canteen needs to offer four different flavors. Luckily, the supplier offers juices in every imaginable flavor, and the canteen has enough budget to order any four types. To minimize costs, the manager wants to order as few new flavors as possible. Can you help determine the minimum number of new juice flavors the canteen needs to order to ensure they have four different flavors for the event? (**Without using loops**)

Input Format

- 4 integers (representing the flavors of the existing juices) in a single line.

Output Format

- A single integer (representing the minimum number of new juice flavors needed).

Testcases

Testcase 1:

- **Input:** 1 7 3 3
- **Output:** 1
- **Explanation:** The existing juices have the flavors 1, 7, and 3, with 3 being repeated. To have four different flavors, only one new flavor needs to be ordered.

Testcase 2:

- **Input:** 7 7 7 7
- **Output:** 3
- **Explanation:** All existing juices have the same flavor (7). To have four different flavors, three new flavors need to be ordered.

Constraints

- All input values will be less than 10^9.

Q2-Apex's Stone Tower Challenge

Apex is organizing a game where you have to build a tower using stones. Initially, the tower has 1 stone. In one move, you can either add exactly 2 stones to the tower or remove exactly 2 stones from the tower. Your goal is to determine if it is possible to have exactly m stones in the tower after exactly n moves. (**Without using loops**)

Input Format

- 2 integers (m and n) in a single line.

Output Format

- "YES" or "NO" (indicating whether it is possible to achieve the desired number of stones).

Testcases

Testcase 1:

- **Input:** 11 5
- **Output:** YES
- **Explanation:** Starting with 1 stone, 5 moves can be made as follows: add 2 stones 5 times, resulting in $1 + 2 \times 5 = 11$ stones.

Testcase 2:

- **Input:** 6 2
- **Output:** NO
- **Explanation:** Starting with 1 stone, 2 moves can be made. However, it is impossible to reach exactly 6 stones with only 2 moves.

Constraints

- m and n are positive integers less than 10^6.

Q3-Chintu's Feeding Schedule

Chintu the dog needs to be fed at specific times. The current schedule is in a 24-hour format, which can be confusing for some. To make it easier, we need to convert Chintu's feeding times to a 12-hour format with AM/PM notation.

Input Format

- A string representing the time in the format HH:MM:SS.

Output Format

- A string representing the time in 12-hour format with AM/PM notation. For example: 11:23:34 PM.

Testcases

Testcase 1:

- **Input:** 23:24:23
- **Output:** 11:24:23 PM
- **Explanation:** 23:24:23 in 24-hour format is 11:24:23 PM in 12-hour format.

Testcase 2:

- **Input:** 11:24:23
- **Output:** 11:24:23 AM
- **Explanation:** 11:24:23 in 24-hour format is 11:24:23 AM in 12-hour format.

Constraints

- The input time will be in the format HH:MM:SS.