# BE - Problem Solving Questions



## Rules

1. Please take the time to fully understand the questions described below. Please aim to finish as many as possible.
2. You are free to use any programming language you are familiar with, e.g. Node.js, Go, Python, Java, etc.
3. Write the answer for this problem on your own Github repository and make it public. Send the link to us at the latest **three** days after receiving this.

## Questions

### Question 1

You need to manage a library that is able to calculate fine based on corresponding rules:

- If the book is returned on or before due time, then no fine (0)
- If the book is returned after the expected return day but still on the same month and year then the fine will be **15** for each day it is late. (if 3 days then will be 45 because 3 * 15)
- If the book is returned after the return month but still in the same year then the fine will be 500 for each month it is late.
- If the book is returned after expected year then there will be a fixed fine of 12000

Fine is only calculated based on day/month/year (not accumulated), so if there's a late difference in day and month, only take the month.

#### Example

d1, m1, y1 = 15,8,2022
d2, m2, y2 = 22,8,2022

The first value is the expected return date while the second value is the actual return date. The book will be 7 days late (22 - 15), hence the fee will be 105 (7*15).

#### Input Format

There will be two lines of input:

1. The first one will be 3 space-separated integers `d1 m1 y1` for each day, month, and year to which the book is expected to return.
2. The second one will be 3 space-separated integers `d2 m2 y2` for each day, month, and year to which the book is returned.

#### Output

The value of the fine will be printed out.

#### Constraint

1 <= d1, d2 <= 31
1 <= m1, m2 <= 12
1 <= y1, y2 <= 4000

#### Sample input

```
7 6 2022
19 8 2022
```

#### Sample output

```
1000
```

## Question 2

The classroom has a certain number of students and a number of candies provided by the teacher. The teacher will hand in one candy to each student sequentially until no more candies are left. The first student that will get the candy is determined by the teacher. The teacher always slips in one sour candy as the last piece of candy. You need to determine which one of the students got the sour candy.

**Example**

student = 3
candies = 5
first student = 2

The distribution of candies starts from student 2 and the students will be arranged from 1 to 3. So the candy distribution will be **2,3,1,2,3.** The student who will get the sour candy is student 3.

**Input Format**

One line of input with 3 integers (student, candies, first student)

**Output**

The number of the student who gets the sour candy.

**Constraint**

$1 <= student <= 10^9$
$1 <= candies <= 10^9$
1 <= first student <= student

**Sample Input**

```
5 3 1
```

**Sample Output**

```
3
```

## Question 3

In this question, you need to find an element in an array where the sum of elements to the left is equal to the sum of all elements to the right.

**Example**

arr = [1, 3, 5, 4]

5 is between subarrays that sum to 4

[**1, 3**, 5, **4**]  left: 1+3 and right: 4

If the array can find the element that meets the criteria then returns YES, if no then return NO.

**Input Format**

`in1` Length of the array.
`in2` List of integers for the array.

**Output**

YES or NO

**Constraint**

1 <= lenght of array <= 10^5
1 <= array value <= 10^4

**Sample Input 0**

```
5
1 5 7 2 4
```

**Output 0**

```
YES
```

**Sample Input 1**

```
4
1 3 4 9
```

**Output 1**

```
NO
```