Programming Assignment Problems

pingala.iiit.ac.in/courses/cs0-101-m24/assessments/l2b/writeup

Lab 2B

Problem 1: Pencils and Erasers

You have 'm' amount of money in your wallet. A pencil costs 'p' and an eraser costs 'e' money. You visit a stationary store and buy as many pencils as possible, and with the remaining money you want to buy as many erasers as possible without exceeding 'm'. Calculate the remaining money you have after the visit to the store.

Input Format:

Positive integers m, p, e.

Constraints:

`m, p, e` ≤ 1000

Output Format:

A single integer 'rem' (the amount of money remaining).

Example:

```
Input:
    20 7 4
Output:
    2
Explanation:
    We can buy 2 pens for 2*7 total. And buy a single eraser for 4.
    Thus the total cost is 2*7 + 4 = 18. Hence the remaining money is 20-18 = 2.

Input:
    17 7 4
Output:
    3
Explanation:
    We can buy 2 pens for 2*7 total. And we buy 0 erasers.
    Thus the total cost is 2*7 = 14. Hence the remaining money is 17-14 = 3.
```

Problem 2: Pencils and Erasers continued

You realize that irrespective of the number of pencils you buy, you always want to buy atleast one eraser. Again you buy as many pencils as possible keeping in mind the above constraint and with the remaining money buy one or more erasers (as many as possible.) Calculate the number of pencils 'numP' and number of erasers 'numE' bought, and the money remaining 'rem'.

Input Format:

Positive integers m, p, e.

Constraints:

- `m, p, e` ≤ 1000
- A valid solution is guaranteed

Output Format:

Output 3 space separated integers 'numP' 'numE' 'rem'.

Example:

```
        Input:
            17 7 4
        Output:
            1 2 2
        Explanation:
            We can buy 1 pen and 2 erasers. (If we buy 2 pencils we cant buy an
eraser)
            Thus the total cost is 7 + 2*4 = 15. Hence the remaining money is 17-
15 = 2.

        Input:
            18 7 4
        Output:
            2 1 0
        Explanation:
            We can buy 2 pens and 1 eraser.
            Thus the total cost is 2*7 + 4 = 18. Hence the remaining money is 18-
18 = 0.
```

Problem 3: Minimal Squares

Little Polycarp is extremely fond of square numbers. His friend Monocarp gave him a number X and asked him to come up with a number greater than it. This problem seemed way too easy for Polycarp, so he decided to report the smallest square number greater than the given number. But now he seems to need your help to do the same.

Input Format:

A single line conataining an integer x.

Output Format:

A single line containing an integer y, such that y is greater than x and is a square of a number

Constraints:

- `1 <= x <= 1e12`
- Note : To store x, we advise you to use a variable of long long data type.

Examples:

```
Input: 25
Output: 36

Input: 101
Output: 121
```

Submission Guidelines

Do not rename any files given in the handout. Only write the code in the specified C files in the respective directories.