

CSE110 Makeup Midterm Summer 2021

Set Abira

Question 1

You will be given three inputs **M**, **N**, and **P**. The **M** indicates the number of chocolates you have. And there is a shop where you can get **P** new chocolates if you return **N** empty chocolate packets.

You need to find the total number of chocolates that you can have and print it.

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Sample Input 1:

100

4

1

Sample Output 1:

133

Explanation 1:

In this input, the shop will return 1 new chocolate for every 4 empty packets. So, if you have 100 chocolates in the beginning, you can have more chocolates through the following steps.

1. **Eat 100 chocolates** -> 100 empty packs.
2. 100 empty packs -> 25 new chocolates.
3. **Eat 25 chocolates** -> 25 empty packets.
4. 25 empty packets -> 6 new chocolates and 1 empty packet.
5. **Eat 6 chocolates** -> (6 + 1 remaining) = 7 empty packs.
6. 7 empty packets -> 1 new chocolate and 3 empty packets.
7. **Eat 1 chocolate** -> (1 + 3 remaining) = 4 empty packs.
8. 4 empty packs -> 1 new chocolate.
9. **Eat 1 chocolate** -> 1 empty packet.

No new chocolate can be obtained using only 1 packet.

Now counting all the chocolates, you have eaten you'll get

$(100 + 25 + 6 + 1 + 1) = 133$ chocolates in total. So, the output is 133.

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Sample Input 2:

100
10
3

Sample Output 2:

139

Explanation 2:

In this input, the shop will return 3 new chocolates for every 10 empty packets. So if you have 100 chocolates in the beginning, you can have more chocolates through the following steps.

1. **Eat 100 chocolates** -> 100 empty packs.
2. 100 empty packets -> 30 new chocolates. (3 for each 10)
3. **Eat 30 chocolates** -> 30 empty packs.
4. 30 empty packs -> 9 new chocolates. (3 for each 10)
5. **Eat 9 chocolates** -> 9 empty packs.

You can't get any more new chocolates with 9 empty packs since 9 is less than 10.

Now counting all the chocolates, you have eaten. You'll get $(100 + 30 + 9) = 139$ chocolates in total. So, the output is 139.

Question 2

Write a python program that will take a string as input from the user and will print the UPPERCASE letters only, if 3 consecutive UPPERCASE letters are found, otherwise it will print all the lowercase letters only. We can assume that the string will always contain both UPPERCASE and lowercase letters.

[You cannot use any built in functions except input(), print(), len(String), ord(String), chr(int)]

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Sample Input 1:

This is CSE110

Sample Output 1:

TCSE

Explanation 1:

The string that the user has given as input here 'This is CSE110' does have 3 consecutive UPPERCASE letters 'CSE' as we can see. Thus, our program prints the UPPERCASE letters only which are 'TCSE'.

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Sample Input 2:

thisIsAVariableName

Sample Output 2:

thissvariableame

Explanation 2:

Our user input this time 'thisIsAVariableName' does not have 3 consecutive UPPERCASE letters. Hence only the lowercase letters are printed which concatenate to 'thissvariableame'.

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