PROBLEM 2: PAYING DEBT OFF IN A YEAR (15 满分)

计算在12月内付清信用卡欠款所需的最小固定月付款项

Now write a program that calculates the minimum **fixed** monthly payment needed in order pay off a credit card balance within 12 months. By a fixed monthly payment, we mean a single number which does not change each month, but instead is a constant amount that will be paid each month.

是一个每个月需要支付的不便的数值

In this problem, we will *not* be dealing with a minimum monthly payment rate.

在这个问题中，我们不会处理最小月付款率问题。

The following variables contain values as described below:

1. `balance` - the outstanding balance on the credit card
   欠款 在信用卡中未偿还的余额
2. `annualInterestRate` - annual interest rate as a decimal
   年利率 一个分数值的每年的利率

The program should print out one line: the lowest monthly payment that will pay off all debt in under 1 year, for example:

```
Lowest Payment: 180
```

Assume that the interest is compounded monthly according to the balance at the end of the month (after the payment for that month is made). The monthly payment must be a multiple of $10 and is the same for all months. Notice that it is possible for the balance to become negative using this payment scheme, which is okay. A summary of the required math is found below:

假设利率是根据月末的欠款的月度复利（在支付过本月欠款后）。

阅读器账单需要与10美元相乘，而且所有月份相同。

注意到使用这种支付方案欠款可能变为负数，这是允许的。

Monthly interest rate = (Annual interest rate) / 12.0
Monthly unpaid balance = (Previous balance) - (Minimum monthly payment)
Updated balance each month = (Monthly unpaid balance) + (Monthly interest rate x Monthly unpaid balance)

Test Cases to Test Your Code With. Be sure to test these on your own machine - and that you get the same output! - before running your code on this webpage!

Click to See Problem 2 Test Cases

The code you paste into the following box **should not** specify the values for the variables `balance` or `annualInterestRate` - our test code will define those values before testing your submission.

```
1 # Paste your code into this box
2
```

未答复

Hints

Hint: How to think about this problem?

从每月支付10美元开始计算欠款能否在一年内付清。

- Start with $10 payments per month and calculate whether the balance will be paid off in a year this way (be sure to take into account the interest accrued each month).
- If $10 monthly payments are insufficient to pay off the debt within a year, increase the monthly payment by $10 and repeat.

如果10美元不能够在一年内付清欠款，每月增加10美元，重复计算。

Hint: A way of structuring your code

- If you are struggling with how to structure your code, think about the following:
  - Given an initial balance, what code would compute the balance at the end of the year?

确定一个初始欠款值，什么样的代码能够在年末计算欠款?

  - Now imagine that we try our initial balance with a monthly payment of $10. If there is a balance remaining at the end of the year, how could we write code that would reset the balance to the initial balance, increase the payment by $10, and try again (using the same code!) to compute the balance at the end of the year, to see if this new payment value is large enough.
  - I'm still confused!
- Be careful - you don't want to overwrite the original value of `balance`. You'll need to save that value somehow for later reference!

Reminder: Only hit "Check" once per submission. We are unable to give you more than 30 checks.

提交 保存

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