

# 6.00.1X 计算机科学和PYTHON编程导论(自主模式) ■已申请认证证书

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# 感谢 hjhjw1991 童鞋的翻译!!

### PAYING OFF CREDIT CARD DEBT 支付信用卡账单

支付最低数额的费用,通常是到期余额的2%。

Each month, a credit card statement will come with the option for you to pay a minimum amount of your charge, usually 2% of the balance due. However, the credit card company earns money by charging interest on the balance that you don't pay. So even if you pay credit card payments on time, interest is still accruing on the outstanding balance.

Say you've made a \$5,000 purchase on a credit card with an 18% annual interest rate and a 2% minimum monthly 假如你已经在信用卡上购买了一笔价值5000美元的商品,伴随着18%的年利率和每月最低支付率为2%。 payment rate. If you only pay the minimum monthly amount for a year, how much is the remaining balance? 如果你在一年中仅支付每月最低费用,那么剩下的欠款是多少?

You can think about this in the following way.

#### 假设你的欠款数量称作b0

At the beginning of month 0 (when the credit card statement arrives), assume you owe an amount we will call  $b_0$  (b for balance; subscript 0 to indicate this is the balance at month 0).

### 在0月支付的欠款是p0

Any payment you make during that month is deducted from the balance. Let's call the payment you make in month 0,  $p_0$ . Thus, your **unpaid balance** for month 0,  $ub_0$ , is equal to  $b_0-p_0$ .

$$ub_0=b_0-p_0$$

At the beginning of month 1, the credit card company will charge you interest on your unpaid balance. So if your annual interest rate is r, then at the beginning of month 1, your new balance is your previous unpaid balance  $ub_0$ , **plus** the interest on this unpaid balance for the month. In algebra, this new balance would be

$$b_1=ub_0+rac{r}{12.0}\cdot ub_0$$

In month 1, we will make another payment,  $p_1$ . That payment has to cover some of the interest costs, so it does not completely go towards paying off the original charge. The balance at the beginning of month 2,  $b_2$ , can be calculated by first calculating the unpaid balance after paying  $p_1$ , then by adding the interest accrued:

$$ub_1=b_1-p_1 \ b_2=ub_1+rac{r}{12.0}\cdot ub_1$$

Let's look at an example. If you've got a \$5,000 balance on a credit card with 18% annual interest rate, and the minimum monthly payment is 2% of the current balance, we would have the following repayment schedule if you only pay the minimum payment each month:

Month	Balance	Minimum Payment	Unpaid Balance	Interest
0	5000.00	100 (= 5000 * 0.02)	4900 (= 5000 - 100)	73.50 (= 0.18/12.0 * 4900)

1	4973.50 (= 4900 + 73.50)	99.47 (= 4973.50 * 0.02)	4874.03 (= 4973.50 - 99.47)	73.11 (= 0.18/12.0 * 4874.03)
2	4947.14 (= 4874.03 + 73.11)	98.94 (= 4947.14 * 0.02)	4848.20 (= 4947.14 - 98.94)	72.72 (= 0.18/12.0 * 4848.20)

你可以看到你的大量的还款是填补了利率,而且如果你这样做持续到12月,你将会看到在一年后,在你需要支付1165.63美元后

You can see that a lot of your payment is going to cover interest, and if you work this through month 12, you will see that after a year, you will have paid \$1165.63 and yet you will still owe \$4691.11 on what was originally a \$5000.00 debt.

Pretty depressing!

相对于最初的5000.00欠款,还有4691.11美元的欠款。

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