Problem 2

Problem 2 - Paying Debt Off in a Year

15.0/15.0 points (graded)

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.

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

The following variables contain values as described below:

1. `balance` - the outstanding balance on the credit card
2. `annualInterestRate` - annual interest rate as a decimal

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:

Monthly interest rate = (Annual interest rate) / 12.0
Monthly unpaid balance = (Previous balance) - (Minimum fixed 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

```
# Paste your code into this box
fixedMonthlyPayment = 0
newBalance = balance
while newBalance > 0:
    fixedMonthlyPayment += 10
    newBalance = balance
    monthlyUnpaid = 0
    for i in range(12):
        #totalPaid = totalPaid + fixedMonthlyPayment
        monthlyUnpaid = newBalance - fixedMonthlyPayment
        newBalance = monthlyUnpaid + monthlyUnpaid*(annualInterestRate/
print('Lowest Payment: ' + str(fixedMonthlyPayment))
```

Press ESC then TAB or click outside of the code editor to exit

Correct

Test results

See full output

CORRECT

See full output

Hints

Hint: How to think about this problem?

- 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.

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?
  - 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!

    A good way to implement this problem will be to use a loop structure. You may want to refresh your understanding of **while** loops. Think hard about how the program will know when it has found a good minimum monthly payment value - when a good value is found, the loop can terminate.
- 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.

Important

Only hit "Check" once per submission. You only get 30 checks per problem.

If you believe you have correct code but it is marked incorrect after clicking "Check"...

"Staff Debug: L397 Error" means your code has an infinite loop...

Do not define your own values

Submit You have used 1 of 30 attempts

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Struggling with code, got some correct and some wrong I have a code that works for a few of the test cases but not all of them and I'm not sure why. I...	2
Why I get different numbers? This is my code. Why I get different numbers? minimum = 10 n = 0 def bal(balance,annualInte...	1
Trying it a different way (finding midpoint and working up or down for exact answer) but not working correctly and can't see why (Sorry just realized that because I was attempting it the 'wrong' way but was actually doing it ...	5
Some output values are 10 off from correct answers My code is: `(( Snip: please post no more than a couple of lines of PSET code ))` `((Inste...	4
just curious how many lines it took everyone :) Hi guy, I was just curious how may lines it took you guys and did you use recursion or iteratio...	35
Keep track of the months Yay, finally did it after an hour. I forgot that Python counts from 0, so I was having a 13 mont...	1

?	Is it bad form to have really long lines of code? With my background in finance, I used a formula I knew in a line of my code that ended up b...	2
?	SPOILER - Code working fine in Spider IDE, but returns a Staff Debug: L397 Error "Infinite Loop" When Submitted Hi, I would like to know any insight into this problem. I have created a program that runs fine ...	1
?	Help in understanding the problem and its demands Hello everyone. I don't understand the problem. It would be great if someone could explain t...	5
☑	[SPOILER] Why infinite loop? I tried using this code to solve the problem: [CTA EDIT code revealed too much of the solutio...	4
💬	For those struggling with some, but not all correct answers returned I'm not going to lie, I was a bit annoyed by the way this problem differed from the previous p...	3
?	HELP TA! In some cases by value differ by $10 from the actual answer. I tried adding print at various pl...	7
💬	if we are not allowed to define functions in the grader, how do I iterate back through the initial computation after increasing the the fixed payment File "<string>", line 13 SyntaxError: 'return' outside function *** ERROR: Expected Lowest Pay...	5
?	How can i reset balance value to initial value in the loop without defining a variable? I am using While loop and if statements. Thank you How can i reset balance value to initial value in the loop without defining a variable? I am usi...	1
?	Error RecursionError: maximum recursion depth exceeded in comparison *** ERROR: Expected to ...	2
💬	This was a nice problem ,a tough one for me Firstly I was not able to get any idea how to solve it but then I tried by calculating principal a...	3
💬	Help in Problem 2 Can I please get some hint as to what method did you guys use to calculate the minimum pa...	2
💬	Would be curious to see how others solved this? I used recursion I used recursion along with a for loop. This took me kind of a little bit of time, but I was curio...	4