**Python Introduction Section 2**

**Python Reading**

Read the [General Introduction](http://interactivepython.org/runestone/static/thinkcspy/toc.html) from the section entitled *What is Debugging?* through the section entitled *Experimental Debugging*.

**Checking Your Understanding (16 pts total)**

Look over the [compound interest formula](http://qrc.depaul.edu/studyguide2009/notes/savings%20accounts/compound%20interest.htm) to familiarize yourself with how compound interest is calculated.

# ****Compound Interest Formula****

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| Regular Compound Interest Formula  **P** = principal amount (the initial amount you borrow or deposit)  **r**  = annual rate of interest (as a decimal)  **t**  = number of years the amount is deposited or borrowed for.  **A** = amount of money accumulated after n years, including interest.  **n**  =  number of times the interest is compounded per year |

**Example:**

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| An amount of $1,500.00 is deposited in a bank paying an annual interest rate of 4.3%, compounded *quarterly*. What is the balance after 6 years? |

**Solution:**

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| Using the compound interest formula, we have that **P** = 1500, **r** = 4.3/100 = 0.043, **n** = 4, **t** = 6. Therefore,  Example Solution  So, the balance after 6 years is approximately $1,938.84. |

Next open IDLE, click File and then click New File. Copy the following code exactly like I have it, paste it into the new file you just opened, and save it in your Python Programs folders as CompoundInterestCalculator: Once you have saved it, run the program using the following input: principal = 1000; percentage rate = 5; number of years = 10; number of times compounded = 4. When you run it, you will see a prompt to input the principal. That is when you input 1000 and hit enter. You will then see the next prompt.

print("Compound Interest :")

amount = input('Enter the principal amount: $')  
amount = float(amount)  
rate = input('Enter percentage rate : ')  
time = input('Enter number of years: ')  
time = float(time)  
compoundTimes = input('Number of times interest will be compounded each year: ')  
compoundTimes = float(compoundTimes)  
  
total\_amount = amount \* ((1 + ((float(rate)/100))/4)\*\*(compoundTimes\*time))  
print('\nTotal Amount = $%0.2f' %total\_amount)  
compound\_interest = total\_amount - amount  
print('Compound Interest = $%0.2f' %compound\_interest)

**Directions: Provide an answer for each question directly after the question on the copy of this document that you saved to your drive – please save it with the same name I have given it. When appropriate, you need to answer in complete sentences.**

1. What were the 2 lines of output produced from the program. (10 pts)

The two lines that were outputted form the program were the total amount of money you have at the end of the inputted years, and the other line states how much money was made or the interest that you had to pay.

1. Describe a syntax error you could introduce into the above program. (2 pts)

To create a syntax error you could change the print spelling to prnt, or put a bunch or semicolons everywhere

1. Describe a run-time error you could introduce into the above program. (2 pts)

To create a run-time error you could replace the number 4 on line 10 with 0.

1. Describe a semantic error you could introduce into the above program. (2 pts)

To create a semantic error you could rearrange the values that that you requested for the input.