CIS 106 – Loops Part 2

For each problem prepare an IPO chart. Then write the code for each. Save the IPO within this document and upload to your repository. After code is complete upload the files (.py) to your repository. Paste the link to your repository into the assignment completion link in Blackboard.

1. Allow the user to enter a principle amount and interest rate repeatedly (need a loop to control the program execution). Compute the annual interest (principle x rate). Compute ending balance to be principle (begTinning balance + interest). Display year, beginning balance and ending balance **for each of the 5 years**. Display the **accumulated interest for the 5 years.** Note: the new balance by year (this will be the principle for the following year. Format the output.

Example:

Enter principle amount: 10000.00

Enter interest rate: 0.10

Year	Beginning Balance	Ending Balance
1	$10,000.00	$11,000.00
2	$11,000.00	$12,100.00
3	$12,100.00	$13,310.00
4	$13,310.00	$14,641.00
5	$14,641.00	$16,105.00

Total interest earned: $6,156.00

INPUT	**PROCESS**	**OUTPUT**
principle amount	annual interest= principle* rate	year
interest rate	endbalance=beginning balance + interest	beginning balance
	interest=0	ending balance
		sum interest of 5 yrs

2. Fibonacci sequence is a sequence of natural order. The sequence is:
   1, 1, 2, 3, 5, 8 etc
   Use of for loop compute and display first 20 numbers in the sequence. Hint: start with 1 , 1.

Input	Process	Output
1	**before loop** print x y	1,1
1	**for loop** for count in range (1, 19, 1) assign z=x+y	rest of #'s in Fibonacci sequence until 20

3. Create a text file that contains employee last name and salary. Read in this data. Determine the bonus rate based on the chart below. Use that rate to compute bonus. For each line display the employee last name, salary and bonus. After the loop display the sum of all bonuses paid out.

Salary	Bonus Rate
100,000.00 and up	20%
50,000.00	15%
All other salaries	10%

Input	Process	Output
Lname	1. open/read file 2. initialize count & ttlbonus 3. Lname=f.(readline)	
salary	**In Loop** if salary>= 100K: elif salary<100K & salary>=50K else .10 bonus= salary* brate ttlbonus= ttlbonus+bonus c=c+1 Display: Lname, salary, bonus Lname=f.(readline)	Lname salary bonus
	print: ttlbonus	ttl bonus

Example file (create your own data with at least 5 lines:

Adams

50000.00

Baker

75000.00

Smith

45000.00

Etc

4. Create a text file with item, quantity and price. Read through the file one line at a time. Compute the extended price (quantity x price). For each line display the item, quantity, price and extended price. After the loop display the sum of all the extended prices, the count of the number of orders and the average order.

Example Data File

Widget

10

50

Hammer

2

10

Saw

4

8

Etc

Input	**Process**	**Output**
item	count=0 total extprice=0	
qty	**IN LOOP** Get item while item != “”: print qty, get price extp= qty* price **count=count+1**	item price qty extp

	sumextp= sumextp+ extprice Display item, qty, price, extp –prompt item	
price		
AFTER LOOP	avg=sumextp/count print sum, count, avg	sumextp count avg
	Display count, sumextp, avg	

5. Create a text file with student last name, district code (I or O) and number of credits taken. Compute tuition owed (credits taken x cost per credit). Cost per credit for in district students (district code I) is 250.00. Out of district students pay 500.00 per credit. For each line display student last name, credits taken and tuition owed. After the loop display sum of all tuition owed and the number of students.

Example file

Jones

I

12

Adams

I

10

Baker

O

12

Smith

O

16

Input	**Process**	**Output**
Lname	c=0 ttltuition=0	
code	If district code=I: credcost=250.00 elif district code=O credcost=500.00 assign ttltuition & c get Lname	Lname credit tuition
credits		
after loop	display ttltuition & c	ttltuition, c