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 principal (beginning balance + interest). Display year, beginning balance and ending balance for each of the first 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*** to look like the example below.

Input	Process	Output
User enters principle and interest rate	Compute the annual interest every year for 5 years. Also compute the ending balance using the principle and the interest for that year.	Display the year, beginning balance and ending balance for each of the 5 years

Example:

Enter principle amount: 10000.00

Enter interest rate: 0.10

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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

2. Fibonacci sequence is a sequence of natural order. The sequence is:
   1, 1, 2, 3, 5, 8 etc. where it is a series of numbers that starts with 0 and 1, and each subsequent number is the sum of the two preceding numbers.

   Use a for loop compute and display first 20 numbers in the sequence.

Input	Process	Output
Start with 0, 1	Sum of the two preceding numbers	First 20 numbers

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's last name, salary and bonus. After the loop display the sum of all bonuses paid out.

Input	Process	Output
Create a loop and Input the last name and the salary of a employee	Compute the bonus given for the employee. If the salary is over 100,000 give a bonus rate of %20. 50,000 bonus rate of %15. All other salaries give %10.	Inside the loop, Display the last name, salary, and bonus. After the loop, display the sum of the bonuses paid out

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

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

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.

input	process	output
Create text file. Input quantity, item, and the price	For each line, Compute the extended price	For each line, display the item, quantity, price and extended price.

		After the loop, display sum of all extended prices

Example Data File

Widget
10
50
Hammer
2
10
Saw
4
8
etc.

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.

Input	Process	Output
Create text file. Input student last name, district code, number of credits taken.	Determine cost per credit, for in district and out of district. Compute tuition using the amount of credits and the cost	For each student, display last name, credits taken, and tuition owed. After you are finished with the loop, display the sum of all tutions owed and the number of students.

Example file

Jones
I
12
Adams
I
10
Baker
O
12
Smith
O
16