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 (beginning 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 Ending

Balance 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 |
| * no | * while answer does not equal yes end program | * thanks for using this program |
| * Starting amount * Interest rate | * Rate \* starting amount = interest * Add interest to already accumulated interest and principle amount * Loop 5 times in a for loop * Create file to store data | * Year * Before balance * Ending balance * Total intrest |

1. 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 |
| * no | * while answer does not equal yes end program | * thanks for using this program |
| * yes | * Using for loop for 20 loops * Take result value 1 and add it to value 2 | * Create a text file with the first 20 units |

1. 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%

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

Adams

50000.00

Baker

75000.00

Smith

45000.00

Etc

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| * text file | * based on employee’s salary decide the bonus rate and calculate * add bonus to total bonuses | * Each employees name, salary and bonus * sum of all bonuses |

1. 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 |
| * Nothing | * While there is still information in the file read 3 lines * The first line is the item the second is the price the 3rd is the quantity * Multiply quantity and price * Add to total summed price the extended price * Add quantity to total quantity * Add extended price to total extended price * Add 1 to total orders | * Item name * Price per unit * Number of units * Extended price |
| * leaving while loop | * divide summed price by quantity to get average price | * average price * number of orders * total extended price |

1. 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 |
| * Text file | * While there is still information in the file read 3 lines * First is name, second is district code, third is credits * If code = I multiply credits by 250 * Else multiply cerdits by 500 * Add tuition to total tuition * Add one to total students | * Name, cerdits, tution |
| * leaving while loop |  | * Total students * Total tuition |