Book Buying Program – Using functions, numeric variables, input, loop, and calculations.

1. Problem Definition: Develop a program that collects data about book purchases and calculates the average cost of the books being purchased. Output of the total and average must be well formatted.
2. Problem Analysis: Create functions to be called by main() for the basic IPO activities. Input values for the number of books and the price of each book. Then calculate the total and average costs. Finally, output the total and average.
3. Program Algorithm:

* Create a main() function that calls functions that:
  + displays a heading,
  + inputs and returns the number of books,
  + inputs, calculates, and returns the total cost and average price
  + accepts all the data and formats informational output
* In main(): Initialize variables for the number of books being purchased and the total and average costs. Then call the functions in turn.
* In a function - Display a heading.
* In a function - Ask the user for the number of books.
* In a function - Create a loop that the user to input the price of each book and accumulates the total. After the loop, calculate the average book price.
* In a function - Display the total and average cost using nice formatting.

1. Program Code and Test:

#Author: Andy Chrastek

#Program: BookBuy-functions.py

#Date: 09/23/2019

#Description: This program asks for a number of books being purchased and

# the cost of each of the books.

# It then calculates and displays the total cost of the books and the average book price.

def main():

# Initialize variables

totalCost = 0.0

averageBookPrice = 0.0

bookCount = 1

books = 0

printHeading()

books = getInput()

totalCost, averageBookPrice = processLoop(bookCount, books)

printOutput(books, totalCost, averageBookPrice)

print ("Thank you for using my program")

def printHeading():

# Display a heading

print("Andy's Book Buy program \n -------------------------------")

def getInput():

# Input: Ask the user for the number of books and then the cost of each

books = int(input("How many books are you buying? "))

return books

def processLoop(bookCount, books):

# Loop through input, process, output for each book

totalCost = 0.0

averageBookPrice = 0.0

while bookCount <= books:

price = float(input("Enter price of book %d:$ " % bookCount))

totalCost = totalCost + price

bookCount = bookCount + 1

# Calculate the average book price.

averageBookPrice = totalCost / books

return totalCost, averageBookPrice

def printOutput(books, totalCost, average):

# Display informational output

print("\nTogether the %d books cost $%5.2f" % (books, totalCost))

print("The average price per book is $%3.2f" % average)

main() # Don't forget this or your program won't do anything!

1. Program test output: \*\*\* TAKE A SCREEN SHOT OF THE OUTPUT IN THE SHELL \*\*\*

RESTART: / - Minneapolis Community and Technical College /Andy/BookBuy-functions.py

Andy's Book Buy program

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How many books are you buying? 5

Enter price of book 1:$ 1.99

Enter price of book 2:$ 2

Enter price of book 3:$ 3

Enter price of book 4:$ 4

Enter price of book 5:$ 5.99

Together the 5 books cost $16.98

The average price per book is $3.40

Thank you for using my program

>>>

1. Maintenance: this phase of the program life cycle is where bugs are listed, before being fixed. Also, the programmer can list changes to make the code better in some way. Also, enhancements may be requested by the user and listed here for review.

This program works as requested.

Program Code ToDo list:

No planned changes required