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#Create Performance Task
#Purpose: To determine a student's final grade in their class
#         based on assignments in weighted categories.

import math
category1 = []
category2 = []
category3 = []

#Explains the program and lets the user name their categories.
print ("This program will help you calculate the grade you have in a class.")
classname = str(input("\nName of your class: "))

print ("\n\nInput the names of each category in your class: ")
cat1name = str(input("\nCategory 1: "))
cat2name = str(input("Category 2: "))
cat3name = str(input("Category 3: "))

#Has user input the weight of each category.
print ("\n\nWhat is the weight of the " + cat1name + " category?")
cat1weight = int(input())

print ("What is the weight of the " + cat2name + " category?")
cat2weight = int(input())

print ("What is the weight of the " + cat3name + " category?")
cat3weight = int(input())

#Has the user input grades for all categories.
print ("\n=====")
print ("\nNow input the percentage grades of all assignments in each category.")
print ("(Type 'Q' when you have input all grades.)\n")

#Category 1
print ("\n" + cat1name)
grade = 0
i = 1
while (grade != 'Q' and grade != 'q'):
    grade = (input("Grade " + str(i) + ": "))
    if (grade != 'Q' and grade != 'q'):
        category1.append(grade)
    i = i + 1

#Category 2

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print ("\n" + cat2name)
grade = 0
i = 1
while (grade != 'Q' and grade != 'q'):
    grade = (input("Grade " + str(i) + ": "))
    if (grade != 'Q' and grade != 'q'):
        category2.append(grade)
    i = i + 1

#Category 3
print ("\n" + cat3name)
grade = 0
i = 1
while (grade != 'Q' and grade != 'q'):
    grade = (input("Grade " + str(i) + ": "))
    if (grade != 'Q' and grade != 'q'):
        category3.append(grade)
    i = i + 1

print ("\n=====\\n")

#This function finds the average out of an input list of grades.
def findavg(category):
    num = 0
    lettergrade = 'X'
    for i in range (len(category)):
        num = num + float(category[i])
    avg = math.floor(num / len(category))

    if avg > 89:
        lettergrade = 'A'
    if avg < 90 and avg > 79:
        lettergrade = 'B'
    if avg < 80 and avg > 69:
        lettergrade = 'C'
    if avg < 70 and avg > 65:
        lettergrade = 'D'
    if avg < 65:
        lettergrade = 'F'

    return avg, lettergrade

#This function will find the weighted average of each category added together.
def findgrade(cat1avg, cat2avg, cat3avg, cat1weight, cat2weight, cat3weight):

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num1 = cat1avg * cat1weight
num2 = cat2avg * cat2weight
num3 = cat3avg * cat3weight

sumnum = num1 + num2 + num3
sumweights = cat1weight + cat2weight + cat3weight

finalgrade = math.floor(sumnum / sumweights)
return finalgrade

#Finds the average grades for all categories.
cat1avg, lettergrade1 = (findavg(category1))
cat2avg, lettergrade2 = (findavg(category2))
cat3avg, lettergrade3 = (findavg(category3))

#Finds overall grade and converts it to a letter grade.
finalgrade = findgrade(cat1avg, cat2avg, cat3avg, cat1weight, cat2weight,
cat3weight)
if finalgrade > 92:
    lettergradefinal = 'A'
if finalgrade < 90 and finalgrade > 79:
    lettergradefinal = 'B'
if finalgrade < 80 and finalgrade > 69:
    lettergradefinal = 'C'
if finalgrade < 70 and finalgrade > 65:
    lettergradefinal = 'D'
if finalgrade < 65:
    lettergradefinal = 'F'

#Outputs the user's data and final grade.
print ("Your grade in the " + cat1name + " category: " + str(cat1avg) + "%")
print (" ( " + lettergrade1 + " )\n")
print ("Your grade in the " + cat2name + " category: " + str(cat2avg) + "%")
print (" ( " + lettergrade2 + " )\n")
print ("Your grade in the " + cat3name + " category: " + str(cat3avg) + "%")
print (" ( " + lettergrade3 + " )\n")

print ("\nYour final grade in " + classname + " is " + str(finalgrade) + "%")
print (" ( " + lettergradefinal + " )\n\n")

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