# Assignment 3 (100 points)

## Question 1 (10 points)

Write a program that calculates the monthly payment amount and total interest that will be paid on a car loan. Prompt the user to enter the principle amount of the loan, the interest rate of the loan, and the loan duration in months. Then, calculate and display the monthly payment amount and total interest that will be paid on the loan using the given formulas. Make sure to check that the input makes sense, and display a message to the user if it doesn't.
Formulas:
monthly payment = (amount of loan * monthly interest rate) / (1 - (1 + monthly interest rate)^-duration)
monthly interest rate = annual rate / 1200
total interest = duration * monthly payment - loan amount

## Question 2 (10 points)

Write a program that calculates that amount of caffeine left in the body hourly after consuming various amounts of coffee. Assuming that one cup of coffee contains 130 mg of caffeine, calculate and print the following values:
(a) The number of hours required until less than 65 mg of caffeine remains in the body.
(b) The amount of caffeine in the body 24 hours after the person drinks one cup of coffee.
(c) The amount of caffeine in the body after a person drinks a cup of coffee every hour for 24 hours.

## Question 3 (10 points)

Write a program that shows the importance of starting an IRA early. Suppose Earl and Larry both begin full time jobs in January 2015 and plan to retire in January 2063. They both contribute to an IRA that earns 4% interest compounded anually. However, Earl starts contributing to his IRA immediately and deposits $5,000 each year for 15 years, leaving the money to collect interest for the remaining years. Larry waits 15 years before contributing, and contributes $5,000 each year until he retires. Calcualte and display the total amount of money each person contributed to their IRA and the total amount of money in each IRA upon retirement.

## Question 4 (10 points)

Write a program that prompts the user to enter a phrase
and displays whether or not that phrase is a palindrome.
A phrase is a palindrome if the characters read the same
forwards and backwards, disregarding punctuation, case,
and whitespace. For example, "A Man, A Plan, A Canal: Panama."
is a palindrome.
HINT: Remove all spaces and punctuation before analyzing the phrase.

## Question 5 (40 points)

a) Write the code to call a function whose name is send_number. There is **one argument** for this function, which is an int. Send 5 as an argument to the function.

b) Write the **definition** of a function add, that receives two int parameters and returns their **sum**.

c) Write the code to call the function named send_signal. There are **no parameters** for this function.

d) Write the code to call a function named send_variable and that expects a single int parameter.Suppose a variable called x refers to an int. Pass this variable as an argument to send_variable .

e) Write the code to call a **function** named send_two and that expects **two parameters**: a float and an int. Invoke this function with 15.955 and 133 as arguments.

f) Given print_larger, a **function** that expects two parameters and returns no value and given two variables , sales1 and sales2, that have already been defined, write a **statement** that calls print_larger, passing it sales1 and sales2.

g) Assume that to_the_power_of is a **function** that expects two int parameters and returns the value of the first parameter raised to the power of the second parameter.

Write a **statement** that calls to_the_power_of to compute the value of cube_side raised to the power of 3 and that associates this value with cube_volume.

h) max is a **function** that expects two int parameters and returns the value of the larger one.

Two variables , population1 and population2, have already been defined and associated with int values.

Write an **expression** (not a statement!) whose value is the larger of population1 and population2 by calling max.

## Question 6 (10 points)

Write a program that calculates and displays the depreciation in value of a given item. Given the following formulas:
straight-line depreciation = each year the item depreciates by (1/n)th of its original value
double-declinging depreciation = each year the item depreciates by (2/n)ths of its value at the beginning of that year. In the final year it is depreciated by its value at the beginning of the year.

Write a program that prompts the user to enter the name of the item, the year it was purchased, the cost of the item, the estimated life of the item in years, and the method of depreciation. Then print out the given information and display the value at the beginning of the year, the amount the item depreciated during the year, and the total amount of deprciation
up to the current year in a table for each year of the item's estimated lifetime.

## Question 7 (10 points)

Write a program that prompts the user for a word and displays whether or not that word contains three succesive letters in consecutive alphabetical order.
For example, THIRSTY does (RST) and GOODBYE does not. Your program should implement a function isTripleConsecutive(word) that returns a Boolean value.
HINT: Use the ord function.

## Submission

Use Python 3.x.
Submit each question in one python program.
Please submit the actual code you write pasted (not an image) in a word document along with a screenshot. Questions without screenshots will get a zero grade.
Question 5, should be one python program.