CS 3035 Homework 1
Please review the late submission and plagiarism policies in the syllabus!

Please submit a code file with the correct extension for each question. Note the following elements of your code that you will be graded on:

- **Code structure and readability:**
  - Comments and Code Documentation - Have clear, concise comments for each section of the code
  - Variable and Function Names - Have meaningful and descriptive variable and function names
  - Code Formatting - Have consistent and readable spacing and formatting.

- **Implementation of required functionality:**
  - Correctly implement all functions and code components stated in the problem.
  - Code should be able to execute without errors or additional library installations while grading.

1. (25) Please write a Python program called Calculator with 4 functions: add, subtract, divide, and multiply.
   - add() can add three digits (x,y,z) as x+y+z
   - subtract() can subtract three digits (x,y,z) as z-y-x
   - divide() can divide two digits (x,y) and (x/y)
   - multiply() can multiple 2 digits (x,y) as x*y

   Use the functions to solve an expression of the form ((x+y+z)*x)/(z-y-x)*y as divide(multiply(add(x,y,z),x), multiply(subtract(x,y,z),y))

   Add an if condition to check that the denominator is not 0. Having a denominator of 0 will result in a ZeroDivisionError!

2. (25) Write the same program as Question 1 in C.

3. (25) Please write a Python program for a Zoom Management System. The goal of the Zoom Management System is to categorize animals based on their characteristics. Your program should do the following:
   - Create a list of animals with their characteristics. Each animal should have the following associated information: name, species, legs, habitat. Each element of the list should be a dictionary with the keys name, species, legs, and habitat.
     - *Example dictionary input: {'name': 'Lion', 'species': 'Mammal', 'legs': 4, 'habitat': 'Grassland'}*

   - Write a function called print_animal_details() that takes a dictionary as an input argument and prints its details.

- *Example output: "Name: Lion, Species: Mammal, Legs: 4, Habitat: Grassland"*

- Use a loop to iterate through the list of animals and call the print_animal_details() function to print their details.

- Write a function to classify animals based on their legs. The function should take the number of legs as an argument and return a classification.
  - If the number of legs is 0, return "No legs - Snake or Fish".
  - If the number of legs is 2, return "Two legs - Bird or Human".
  - If the number of legs is 4, return "Four legs - Mammal or Reptile".
  - If the number of legs is more than 4, return "More than four legs - Insect or Spider".

- Use a loop to iterate through the list of animals and classify them based on their legs. Print each classification.
  - *Example output: Lion: Mammal of Reptile*

4. (25) Please write a C program for a Bookstore Inventory Management System. The bookstore needs a program that will continuously update the total number of books in the store based on user input. The program should repeatedly ask the user to input the number of books added or removed until the user decides to stop. Allow the user to quit the program if the user input is 0. The program should update the inventory based on the user's input and display the current inventory count after each update. Use a while loop with an if condition that terminates the loop if a user enters a value of 0.

*Hint: You will need an infinite loop to keep asking the user for input. 'while(1)' creates an infinite while loop. To exit the program if the user enters 0, use **break** in the body of the if loop where you check the terminating condition.*