# IC152: Assignment 3
# Functions, Loops and Conditions

In this assignment, we will use in-built functions, create user-defined functions, start writing loops, and use conditional statements. You have to write one python file for each question. So, in total there will be 5 python files to submit for this assignment.

If you are solving this assignment in the A11's PC Lab: Keep Fn + F9 pressed during the start of your machine (do not repeatedly press, keep it continuously pressed), and then select the second option with "ubuntu". Please check if you are able to login to moodle, else change the machine.

**Problem 1:** Using the in-built functions.

a. Import math library, and use the following functions with float values to understand them:
   - math.ceil()
   - math.floor()
   - round()
   - type(round())
   - format()
   - type(format())

   The first argument to the round() function is a value, and the second argument is the number of decimal places. Similar are the arguments for format() function, except the second argument is a string '.2f' for two decimal places.

Print, the difference between outputs of round() and format() functions. Use the floating point value of 23.5312 and save the print statements for above functions (with 3 decimal places for round and format) in a file with name q1InBuiltFns.py

b. Use following string methods on different characters and numbers to understand them (e.g., usage is “a”.isalpha()):
   - isalpha()
   - isspace()
   - isnumeric()
   - isalnum()

   Use the strings ' ', '23', and ‘q1b’ and manually append the print statements for above functions in q1InBuiltFns.py (created in previous part).

**Problem 2:** Conditional statements. Write a common python file “q2Conditions.py” and prompt the user with “q2 part a- input (string): ”, “q2 part b- input (integer): ” and so on for different parts.

a. Write a program that receives an input parameter from a user named a. If the input number is positive, then print it, else do nothing.
b. Write a program that receives an input parameter named a. If a is negative, zero, or positive, then print –1, 0, 1, respectively.
c. Write the program that prints whether the input string from the user consists of only alphabets or only digits or both.
d. Print number of days in a given month. Prompt user to provide name of the month.

e. Write a program that receives two input parameters named a, b, and c. Print the max of a, b, and c.

**Problem 3:** Writing user-defined functions with conditional statements. Write a common python file “q3Functions.py” and prompt the user with “q3 part a- input (year): ”, “q3 part b- input (first integer): ”, “q3 part b- input (second integer): ” and so on for different parts.

a. Write a function that takes an year as input and returns a boolean value to represent if the input is a leap year or not. Take inputs from the user and call the function in the main program. (Hint: 6%3 returns 0, i.e. remainder of 6/3)
b. Write a function that takes three sides of a triangle as inputs and checks and returns if it is isosceles or scalar or equilateral.

**Problem 4:** Write code for following questions using for or while loops. Write a common python file “q4Loops.py” and prompt the user with “q4 part a input (string): ”, “q4 part b input (integer): ” and so on for different parts.

a. Write the code to reverse a string by using indexing in a for loop. (Do not use [::-1]). Take input from the user.
b. Using any of the loops: store the sum of the positive odd numbers which are strictly less than N (input from user) in a variable called oddSum. Store the sum of the positive even numbers which are strictly less than N in a variable called evenSum. Print the values of oddSum and evenSum in the same line.
c. Take an integer N from the user, and write a code <u>using a while loop</u> to print the factorial of N.

**Problem 5:** Combining user-defined functions, loops and conditional Statements. Write a common python file “q5Combined.py” and prompt the user with “q5 part a input (natural number): ”, “q5 part b input (string): ” and so on for different parts.

a. Write a script that takes a natural number N as input from the user and prints if it is a prime number or not.
b. If a string has more numbers of vowels than the consonants, we classify it as vowel-dominant, otherwise, consonant-dominant. Determine and print whether a given string is vowel-dominant or consonant-dominant or none of them based on the user’s input. (No need to write function in this question)
c. Write a function that calculates and returns the number of digits in the input string. Take the user's input and call the function to print the returned value.
d. Write a function that calculates and returns the number of letters in the input string. Take the user's input and call the function to print the returned value.
e. Write a function to print divisors of n. Take the user's input and call the function to print the returned value.

Create the folder having your python files, with name having your roll number followed by “_assignment3” (don’t use inverted commas in folder name), compress the folder with .zip extension and submit it on moodle.

Make sure that you delete all your files from the lab PC/Laptop, and shut it down before you leave.