IT21L : Python Programming Lab Assignments (2023-2024)

Lab Assignment List No. 2

Note: *For all assignments, take input from user and display well formatted output on screen.*

3. Programs for understanding functions, use of built in functions, user defined functions

1) Write the following programs by making use of built-in functions:
    a. To print pyramid of '*'.
    b. To sort the words form a string based on their alphabetical order.
2) Write a user defined function
    a. average() which will return the average of the numbers inputted by the user.
    b. nMax() which will return the maximum between the entered numbers.
3) Write a program to find the factorial of a number using recursion.
4) Write a program to generate a fibonacci sequence using recursion.
5) Write a program to print the sum of natural numbers using recursion.
6) Write a lambda functions for the following:
    a. Lambda function which will return the square root of a given number.
    b. Lambda function which will return the maximum between two numbers.
    c. Lambda function which will return True if the number is even, False otherwise.
7) Write a message encoder - decoder program using a nested function. Define outer function as encodeMsg() which will accept a message to encode and a key to encode with. Define the inner function as encoder() which will encode the message with a given key (how to encode, that is up to you). The outer function then returns this encoded message to the main program. Similarly, do the task of decoding the encoded message, by writing outer function as decodeMsg() and inner function as decoder().
8) Implement a generator called "squares" to yield the square of all numbers from (a) to (b). Test it with a "for" loop and print each of the yielded values.
9) Create a generator which will generate the next even number from the number passed. For example if the number passed is 3 then the next even number is 4, if the number passed is 6 then the next even number is 8.
10) Create a decorator "smart_div" which is used to decorate the regular function "div". The decorator contains an "inner()" function which will do the division operation only if the denominator is not zero. (i.e. the smart division).

4. Programs to use existing modules, packages and creating modules, packages

1) Create a module "Calculator" which contains the functions for addition, subtraction, multiplication and division. Write a main program to demonstrate the use of this module.
2) Create a package "myCalci" which contains the modules "simpleCalci" and "advanceCalci". Write the code for above two modules as per your choice. Write a main program to demonstrate the use of this package.
3) Write a program to demonstrate the use of datetime moduleas:
    a. Display date in different format
    b. Date arithmetic like display date after one year, date before 7 days etc.
4) Write a program to guess a number generated randomly.
5) Write a program to implement Rock, Paper, Scissor game between human and computer. Make use of random module.