

CS 314 - IMAGE PROCESSING PRACTICAL (2020/2021)

Assignment 01 - Python Basics

Due date: June 27th 2022, 11.59 pm

This assignment is a sequence of exercises in Python. Each exercise requires you to write a program in a file called exN.py, where N is the number of the exercise. Use bare python to accomplish the following tasks.

1. Write a program that reads the input parameter of following shapes from the user and compute the area and circumference.
 - a. Rectangle
 - b. Circle
 - c. Triangle
 - d. Parallelogram(Hint: for circle input parameter is radius)
2. Write a function to compute the factorial of a given number (n).
3. Write a function to display Fibonacci sequence up to the nth term.
4. Write a function to solve the quadratic equation. (input parameters a, b, c)
 - a. Find the solution for the following equations.
 - i. $5x^2 + 17x - 10$
 - ii. $12x^2 + 10 + 20$
 - iii. $x^2 + 5x + 6$
5. Write a function to calculate the distance between two points.
6. Write a program to perform the following tasks.
 - a. Read ten marks of a student and store it in to a empty list called 'marks'.
 - b. Sort the 'marks' list in ascending order.
 - c. Print the total, mean, median and mode element of the 'marks' list. (import suitable library to calculate mean, median and mode).
 - d. Create a new list called 'grade' with the same size as 'marks' and find the grade for each mark and insert into 'grade' list by using following grade criteria.

Marks	Grade
$100 \geq \text{marks} \geq 80$	A
$79 \geq \text{marks} \geq 60$	B
$59 \geq \text{marks} \geq 50$	C
$49 \geq \text{marks} \geq 30$	D
$29 \geq \text{marks} \geq 00$	F

7. Write a Python program to get the total number of words included in a given text file. You may consider the words separated by commas or dashes as two different words.

First create the below text file (words_file.txt) inside your working directory.

words_file.txt:

"Python is an interpreted high-level general-purpose programming language. Its design philosophy emphasizes code readability with its use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. It is often described as a 'batteries included' language due to its comprehensive standard library. Guido van Rossum began working on Python in the late 1980s, as a successor to the ABC programming language, and first released it in 1991 as Python 0.9.0.[33] Python 2.0 was released in 2000 and introduced new features, such as list comprehensions and a cycle-detecting garbage collection system (in addition to reference counting). Python 3.0 was released in 2008 and was a major revision of the language that is not completely backward-compatible. Python 2 was discontinued with version 2.7.18 in 2020. Python consistently ranks as one of the most popular programming languages."