Big Data Programming 2: 2021 (25 Points)

Assignment 1: Python programming

Due date: 03.Feb.2021

How to submit:

The assignment must only be done in Python programming language using version 3.

exercise 1 must be made into a docker container and uploaded to docker hub

assignment must be submitted by each individual in zip format with the name convention : matriculationNumber-fullName-assignment-1.zip

The zip file must contain for exercise 1

1. the source code for Exercise 1 in python (.py) file format (if modules / packages are used then zip all python files). in the source code please add a comment to the docker hub location of the container
2. the original DockerFile to run the code

The zip files must contain for exercise 2

1. the source code for Exercise 1 in python (.py) file format (if modules / packages are used then zip all python files)

Exercise 1: paranthesis balancing(15 Points)

paranthesis balancing: write a function that take a string of paranthesis at the input and returns the longest balanced substring at the output

the string is said to be balanced when the opening paranthesis has its corresponding matching closing paranthesis. Note that an opening paranthesis cannot match a closing paranthesis that comes before it and vice-versa

sample input :{{}}}{

output : {{}}

try and get the optimum big O notation (considering the worst case) and mention the reason for the same in a comment.

Exercise 2: Rectangle (10 Points)

Write a function that takes a list of cartesian co-ordinates (x,y) and returns the numbers of rectanlges formed by these co-ordinaties

a rectangle should have its four corners amongst the co-ordinates to be counted as a rectanlge. Only rectangles whos sides are parallel to the x and y axes to be considered

sample input = coordinates = `[ [0,0],[0,1],[1,1][1,0], [2,1][2,0],[3,1],[3,0] ]`

try and get the optimum big O notation (considering the worst case) and mention the reason for the same in a comment.