CH3866   Bachelor of Information and Communication Technologies

BCPR301   Advanced Programming

Assessment One
Interpreter

Semester One 2019

Due date: Monday, 25 March 2019

Time: 3pm

Student Name/ ID   ....

Submissions received late will be subject to a penalty of 10% of the student's mark per working day.

This assignment is worth 10% of the total marks for this course.
This paper has three (3) pages including the cover sheet.

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Institute of Canterbury
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This assessment relates to the following Learning Aim 2:

"To ensure students have the knowledge and experience to effectively learn a new programming language."

Problem domain

Create a Python 3 program being able to generate code skeleton/ frame based on a UML 2 design-level class diagram (in either a graph file format or a well-known textual modeling language/ notation, e.g., DOT[1] and PlantUML[2]) by using Python package(s).

Note that real-world data is often not perfect. It means that you should check/ wash the input data before applying any other operation, i.e., calculating and displaying, with it.

You MUST supply (i.e., <u>ZERO mark if not</u>)

1   A design-level class diagram of your proposed program. If the input of your program is a diagram in textual modeling language/ notation, you have to submit the <u>correct textual version</u>[3] of the class diagram required as well. And

2   A help file details the commands provided by your line-oriented command interpreter and the lecturer must approve these <u>before</u> you start the coding for this assessment. And

3   Your program must be able to do all the tasks mentioned in the section of Problem domain. And

4   Your code MUST comply with the Python style (i.e., being able to pass PEP8 check). And

5   A document to list (for each component claimed for marks in your program): a) the ownership (i.e., done by you or someone else?); b) self-reflection on robustness[4]; and c) self-reflection on the completeness and implementation. And

6   You must carry out version control in a repository during your development process. And

7   A filled self-marking sheet.

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[1] The DOT Language https://graphviz.gitlab.io/_pages/doc/info/lang.html
[2] The PlantUML http://plantuml.com/class-diagram
[3] The textual version of a class diagram can be successfully converted to a graphical version of it by using an existing tool. You will need to demonstrate the correctness of the textual version of your class diagram when you demonstrate your solution to this assessment.
[4] **Robustness**. The degree to which a system continues to function in the presence of invalid inputs or stressful environmental conditions.

Your quality goal is to create a ROBUST system.

- You ARE ENCOURAGED to work with your classmates for this assessment, as pair programming teams. You should clearly identify the component you worked on. Marks will also depend on if your code exists in the program that your team submits at the end.

- Note that only your OWN work will be awarded marks. When marking the assessment, you will be asked to explain how your code works in front of the class.

- You can select which component you work on from the list provided below. You will be marked on a 0 – 6 scale for each component for which you present original source code. Your total marks will be the sum of the marks for each component.

    1) Support command-line arguments

    2) Has a line-oriented command interpreter based on cmd

    3) Display command line help of available commands

    4) Change commands and options

    5) Extract data

    6) Validate data

    7) Provides object-persistence/ object serialization using either pickle or shelve

    8) Can load data from a file

    9) Can raise exceptions and provide exception handling

    10) Amount of error trapping & handling

    11) Provide doctests

    12) Provide unittests

    13) Breadth of test coverage

    14) Can deal with directories and file locations

    15) Pretty print [5] , i.e., displaying data in bar chart, pie chart, UML diagram component, etc.

    16) Can save and read data from a database

- This assignment will be marked out of 60.

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[5] Please note that here displaying data does not mean simply outputting the data as a 2D table.