MSc Artificial Intelligence Python Primer

Unit 4 Worksheet

**Aims and Objectives**

1. Learn how to create functions and use them in Python
2. Learn how to prioritise requirements using the MoSCoW method
3. Learn how to write pseudocode and implement it in Python

**Introductory Tasks**

* Download the ***Unit 4 Jupyter Notebook*** to your local drive. The Notebook can be found on Blackboard (in Python Primer >> Unit 4 – Algorithm Design)
  + Once you have downloaded this Notebook, open the *Anaconda Navigator* and launch the *Jupyter Notebook* application and open the downloaded Notebook file
  + There are exercises for you to complete throughout the Notebook. These are clearly marked Worksheet Exercises
* Read the following three chapters of the ***Beginners Guide to Python 3 Programming*** core text-book:
  + Chapter 10. Introduction to Structured Analysis
  + Chapter 11. Functions in Python
  + Chapter 12. Scope and Lifetime of Variables

NOTE: .pdf versions of these chapters can be found on Blackboard (in Python Primer >> Unit 4 – Algorithm Design)

**Optional Extra Tasks**

* In the ***Unit 4 Jupyter Notebook*** we look at the MoSCoW method for requirement prioritisation, and how to write pseudocode
  + Take a look at [this resource](https://www.agilebusiness.org/page/ProjectFramework_10_MoSCoWPrioritisation) for more information on MoSCoW
  + Take a look at [this resource](https://blog.majestic.com/training/thinking-in-algorithms-and-writing-pseudocode/) for another way of representing pseudocode
* One of the exercises in the ***Unit 4 Jupyter Notebook*** makes use of the inbuilt Python datetime library
  + Review the documentation for the datetime library <https://docs.python.org/3/library/datetime.html>
* Chapter 9 in the ***Beginners Guide to Python 3 Programming*** core text-book introduces the concept of recursion. Read the chapter and complete the exercises included in section 9.9
* Review the module reading list for other sources of information to supplement your understanding of Python Functions and Algorithm Design.

**Advanced Tasks**

* Read Chapter 9 in the ***Beginners Guide to Python 3 Programming*** core text-book that introduces the concept of Curried Functions and complete the exercises.
* Read Chapter 36 in the ***Beginners Guide to Python 3 Programming*** core text-book that introduces the concept of the Map, Filter, and Reduce functions and complete the exercises.

**Assessment Details**

* There are no formatively assessed exercises in ***Unit 4 Jupyter Notebook***

**Useful Links and Resources**

* Defining functions: <https://docs.python.org/3/tutorial/controlflow.html#defining-functions>
* Default function arguments: <https://docs.python.org/3/tutorial/controlflow.html#default-argument-values>
* Keyword arguments: [https://docs.python.org/3/tutorial/controlflow.html#keyword-arguments](https://docs.python.org/3/tutorial/controlflow.html%23keyword-arguments)
* Unpacking function arguments: <https://docs.python.org/3/tutorial/controlflow.html#unpacking-argument-lists>
* Function documentation strings: [https://docs.python.org/3/tutorial/controlflow.html#documentation-strings](https://docs.python.org/3/tutorial/controlflow.html%23documentation-strings)