ACU
PETER FABER
BUSINESS SCHOOL

ASSESSMENT GUIDE

Unit: ITEC102 Python fundamentals for data science, Semester 2, 2021

Assessment number (3)

Assessment Artefact: Report and Python Code

Weighting [40%]

Why this assessment?

- The purpose is to assess students' comprehensive Python data science skills and understanding from data processing to data visualisation on real-world datasets with consideration of data ethics.

What are the types of employability skills that I will acquire upon completion of this assessment?

Skill Type	
Developed critical and analytical thinking	☒
Developed ability to solve complex problems	☒
Developed ability to work effectively with others	☐
Developed confidence to learn independently	☒
Developed written communication skills	☒
Developed spoken communication skills	☐
Developed knowledge in the field study	☐
Developed work-related knowledge and skills	☒

Assessment Overview:

Purpose, as written in the EUO

Due date:	5pm on Friday of Week 15, 12 November 2021
Weighting:	40%
Length and/or format:	Individual Runnable code, detailed comments and discussion in jupyter notebook
Learning outcomes assessed	LO3, LO4
Graduate attributes assessed	GA3, GA4, GA5
How to submit:	via LEO
Return of assignment:	via LEO within 2 weeks of submission
Assessment criteria:	Rubric: see end of document

Context

Data processing, analysis and visualisation assignment

In this assignment you will be analyzing the BRFSS weight vs height data (brfss.csv), which can be download from unit LEO website and use pandas to load it.

The six columns in the data represent: age, current_weight (kg), weight_a_year_ago (kg), current_weight_with_2_decimals (kg), height (cm), and gender, where gender == 1 represents male and 2 represents female.

In this assignment you will have the chance to do initial exploratory and visualization about the data with learned skills from this unit.

Instructions

Attempt below tasks with the given dataset, at the same time, reflect on the development and applications of data science while ensuring the respect of human rights and of the values shaping open, pluralistic and tolerant information societies.

Task 1 (15 marks): Produce a **summary statistics** graph on current_weight, weight_a_year_ago, and height.
[Hint: similar to figure 1 below]

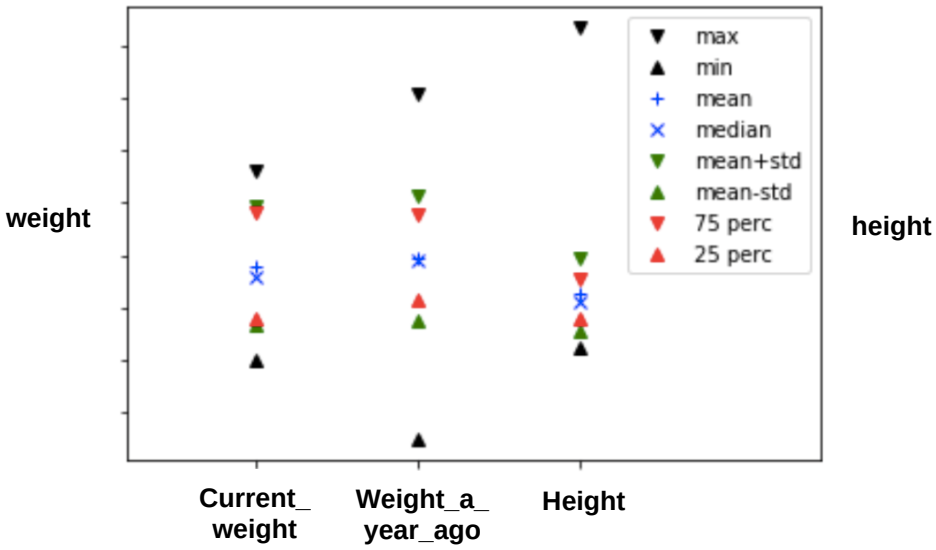

Figure 1: An example of summary statistics graph

Task 2 (15 marks): Calculate correlation: Define weight_change = (current_weight – weight_a_year_ago). Calculate correlation between weight_change and the following variables, and determine which one is most correlated (regardless of sign of correlation) with weight_change. Use **scatter plots** to support your conclusion.

i. current_weight
ii. weight_a_year_ago
iii. age

[Hint: One scatter plot for each variable.]

Task 3 (10 marks): Use **t-test** to check significant difference

3.1 Use t-test to test whether there is a significant difference between the weight_change of male and female.

3.2 Randomly split the subjects (all the rows) into two groups of roughly equal sizes, and use t-test to test whether there is a significant difference between the weight_change of the two groups.
[Hint: use t-test here
https://docs.scipy.org/doc/scipy/reference/generated/scipy.stats.ttest_ind.html]

Structure

Prepare a Jupyter Notebook for this project. The structure of the Jupyter Notebook should alternate texts and python codes and cover topics listed the in specific tasks above. One template could be found in any week's workshop resources in LEO.

Naming the submission: start with your student ID, name and followed by unit name and code, i.e., studentID_studentNames_ITEC102_AT3.ipynb, e.g., S00258769_Alice_Zuk_ITEC102_AT3.ipynb

How do I submit?

Submit Jupyter Notebook (.ipynb) to Assessment 3 via LEO assessment tile

Note that: The code will be compared to other students' submission in Turnitin to make sure the submission satisfies academic integrity.

Submission checklist

I have formatted my jupyter notebook as per the specifications	☐
I have checked my Turnitin report and taken appropriate actions to ensure that the submission satisfies academic integrity	☐
I have actioned feedback advice provided to me from labs and assessment 2 (if applicable)	☐
I have submitted my work before the due date/time	☐
I have submitted feed forward template along with my assignment submission	☐

Feed Forward Template (example)

A template for students to use and act on feedback and provide recommendations for improvement.

Note

This is a task for any instance of follow-on assignment (assessment 2 and 3). This must be submitted as the first page of the follow-on assignment (assessment 2 and 3) to ensure you acted on the feedback provided to you in the previous assignment (this is not counted as part of the assessment word count).

How did you act on the feedback?

Feedback is an important component of learning. Please consider the feedback you received in your last assignment and provide a response on how you acted on, or intend to act upon, that feedback, and how it has informed the current assignment task. Submit this sheet along with your assignment.

Questions	Your learning from the previous assignment feedback

How have you acted on the feedback from previous assignment to improve your work in this assignment?	(e.g. based on my previous feedback, I made sure that I supported my discussion, position, ideas, concepts with peer reviewed journal references in this assignment)
What is your expectation around the type of feedback that enhances your learning?	(e.g. I want to know where I made a mistake and how I can correct them and not make the same mistake again i.e. I want specific feedback that will help me to improve my learning and performance in the next assignment)
Did you have any difficulty understanding or acting on previous feedback? Please be as specific as possible so that you can gain further feedback/clarify anything you do not understand in the feedback	(e.g. feedback provided in my previous assignment was very generic I did not know how to improve my work. So, I would like the teacher to explain more on xxxx aspects of the feedback or I would like an opportunity to have a dialogue to understand the feedback)

Some Helpful Websites and Resources

LEO listed contents

Anaconda environment https://docs.anaconda.com/anaconda/

Python official website https://www.python.org/

Useful python packages:

https://numpy.org/

https://pandas.pydata.org/

https://matplotlib.org/

Who can help me?

Academic skills Unit (ASU)

Places NLiC Maoying Qiao (via LEO messages or maoying.qiao@acu.edu.au)

Lecturer Wen Shao (via LEO messages or wen.shao@acu.edu.au)

Lab instructor Zijing Chen (via LEO messages or zijing.chen@acu.edu.au)

I'm having problems

Application for Extension (EX) of Time for submission of an Assessment Task: The EX form should be completed by ACU students applying for an extension of time for submission of an assessment task. The completed and signed form must be submitted to the relevant National Lecturer-in-Charge prior to the due date of the assessment task. It must be accompanied by supporting documentary evidence such as EIP, doctor's certificate or equivalent, death certificate, or a statutory declaration.

Special Consideration: This **form** is used by students to apply for **Special Consideration** for assessable work in studies at Australian Catholic University. Approval of such applications will only be granted to students who are legitimately disadvantaged in their assessment due to exceptional and unforeseen **circumstances** beyond their control.

Referencing

All referencing should be in ACU Harvard style; however if you are coming from another faculty, you may choose to use your usual referencing style. If this is the case you must indicate at the top of your reference list what referencing style you are using (e.g. APA, MLA, Chicago, etc).

Please ensure your assignment makes use of in-text citations and a reference list. Missing citations or references is equivalent to plagiarism.

Criteria

The full criteria is compiled in a rubric, which can be found on the following page/s.

Rubric for Assessment 3

Relevant LO/GAs	**Criterion** (related to a single GA from the related LO – one GA per criterion	**Does not meet expectations**	**Meets expectations**	**Exceeds expectations**		
		NN (0-49%)	**PA (50-64%)**	**CR (65-74%)**	**DI (75-84%)**	**HD (85-100%)**
GA5 **LO3 and LO4** **Weight=25 marks** **TL=3** **Learning stage = I and D**	Demonstrate correct understanding of the concepts of data processing, analysis and visualisation	Fail to adequately demonstrate correct understanding of the concepts of data processing, analysis and visualisation, i.e., **None of the above tasks** are addressed and **no figures** are produced. (0 – 12.25)	Adequately demonstrate correct understanding of the concepts of data processing, analysis and visualisation, i.e., **at least one task** is addressed and **one figure** is produced with **reasonable quality** (12.5 –16.0)	Credibly demonstrate correct understanding of the concepts of data processing, analysis and visualisation, i.e., **at least two tasks** are addressed and **one figure** is produced with **desired quality**. (16.25 – 18.5)	Distinctively demonstrate correct correct understanding of the concepts of data processing, analysis and visualisation, i.e., **most of the tasks** are addressed and the **figures** are produced with **desired quality**. (18.75 – 21.0)	Highly distinctively demonstrate correct understanding of the concepts of data processing, analysis and visualisation, i.e., **all tasks** are addressed with **figures** of **desired quality**. (21.25 – 25)
GA4 **LO3** **Weight=10 marks** **TL=3** **Learning stage = I and D**	Demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures	Fail to adequately demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures, i.e., **no summary and conclusion** are drawn around the output (0 – 0.49)	Adequately demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures, i.e., **thoughts about the output of the completed tasks are drawn** (5.0 – 6.4)	Credibly demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures, i.e., **reasonable insights about the output of the completed tasks and figures are given** (6.5 – 7.4)	Distinctively demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures, i.e., **thoughts and insights about the code output and the figures of the completed tasks are detailed** (7.5 – 8.4)	Highly distinctively demonstrate critical and reflective thinking skills by observing and summarizing output of codes and figures, i.e., **thoughts and insights about all the tasks and figures are detailed** (8.5 – 10)
GA3 **LO4** **Weight=5 marks** **TL=3** **Learning stage = I and D**	Demonstrate awareness of data ethics occurred in the data science process	Fail to adequately demonstrate awareness of data ethics occurred in the data science process, i.e., **no data** is explored (0 – 2.45)	Adequately demonstrate awareness of data ethics occurred in the data science process, i.e., **part of the data** is explored via **one task** (2.5 – 3.2)	Credibly demonstrate aware of data ethics occurred in the data science process, i.e., **part of the data** is explored via **two tasks** (3.25 – 3.7)	Distinctively demonstrate awareness of data ethics occurred in the data science process, i.e., **part of the data** is explored via **most of the tasks** (3.75 – 4.2)	Highly distinctively demonstrate awareness of data ethics occurred in the data science process, i.e., **full data** is explored via **all tasks**. (4.25 – 5)