

Assessment Autumn 21/22

Due: last commit on or before August 21st, 2022

To submit, please email your repository URL to ian.mcloughlin@atu.ie.

These are the instructions for the assessment of Fundamentals of Data Analysis in Autumn 2021/2022. The assessment is worth 100% of the marks for the module. Please read the *Using git for assessments* [1] document on the Moodle page which applies here. As always, you must also follow the code of student conduct and the policy on plagiarism [2].

Instructions

The purpose of this assessment is to ensure that you have achieved the learning outcomes of the module while also providing you with sample work to show prospective employers. The overall assessment is split into the three components as detailed below. The percentages beside each heading give the weighting of each of the three components. You may assume that each bullet point has an equal weighting within its component. Note, however, that the examiners' overall impression of your submission may override the individual weightings where deemed appropriate.

GitHub Repository (20%)

Create a GitHub repository containing two Jupyter notebooks – these are described further down. The repository should contain the following:

- A clear and informative `README.md` explaining why the repository exists, what is in it, and how to run the notebooks.
- A `requirements.txt` file that enables someone to quickly run your notebooks with minimal configuration. You should also include any other required files such as data files and image files.

Pyplot Notebook (40%)

Include a Jupyter notebook called `pyplot.ipynb` that contains the following.

- A clear and concise overview of the `matplotlib.pyplot` Python package [?], pitched at your classmates.

- An example of plotting of plotting continuous data using the `matplotlib.pyplot` Python package [?]. You can select any publicly available data set you wish for this purpose, including any included in the package itself.
- An example of plotting of plotting categorical data using the `matplotlib.pyplot` Python package [?]. You can select any publically available data set you wish for this purpose, including any included in the package itself.
- An explanation of the difference between continuous data and categorical data.

CAO notebook (40%)

Include a Jupyter notebook called `cao.ipynb` that contains the following.

- An overview of the publicly available data from the Central Applications Office (CAO).
- An analysis, using the Python package `pandas` [?], of the 2021 CAO points data.
- An analysis, using the `pandas` [?], of the 2020 CAO points data.
- A comparison of CAO points in 2021 and 2020, using appropriate plots and descriptive statistics.

More information about marking

In completing each component of the assessment, you should consider the following four overall aspects of academic work. It is important that your submission provides direct evidence of each aspect. For instance, your commit history should demonstrate that you were consistent in your work. Likewise, your submission should have references in it to demonstrate that you considered the literature and the work of others.

Research

Evidence of research performed on topic; submission based on referenced literature, particularly academic literature; evidence of understanding the documentation for any software or libraries used.

Development

Environment can be set up as described; code works without tweaking and as described; code is efficient, clean, and clear; evidence of consideration of standards and conventions appropriate to code of this kind.

Consistency

Evidence of planning and project management; pragmatic attitude to work as evidenced by well-considered commit history; commits are of a reasonable size; consideration of how commit history will be perceived by others.

Documentation

Clear documentation of how to create an environment in which any code will run, how to prepare the code for running, how to run the code including setting any options or flags, and what to expect upon running the code. Concise descriptions of code in comments and README.

References

- [1] I. McLoughlin, "Using git for assessments,"
<https://github.com/ianmcloughlin/using-git-for-assessments/>.
- [2] GMIT, "Quality assurance framework,"
<https://www.gmit.ie/general/quality-assurance-framework>.