EGB103 Assignment 3
Data Integration and Solving Engineering Problems

Individual only (strictly no group work or collaboration allowed)

Due: Friday 28th October (Week 13)

Worth: 50%

Part A (worth 40%)

See provided EGB103Assignment3PartA.ipynb template for instructions.

Submission Requirements

Everything for Part A should be included in a single Jupyter notebook. The Python code included should follow best practices as outlined in the lectures, including using well chosen identifier names, writing clear simple code, and not repeating yourself.

All data processing should be done using the Pandas library.

All of these features are covered in the lectures and/or practical exercises, so please do not use Python or Pandas features outside of what has been covered in class. Note, ***you will get Zero marks*** if you use some other programming language, library or system such as R, MATLAB or Excel.

Note: Part B is separate and does not relate to the Traffic data processing or Pandas.

Part B (worth 10%)

A case study of computing and data in action

This part of the assessment task gives you a chance to explore and present an example of computing and data being put to work. In high-level terms, we want you to find and investigate a situation where computing and data are being used to solve problems or design solutions, then describe the underlying algorithm or computational method to us as a short (1-2 page) case study, using the elements of "motivation", "materials" and "methods" like case studies presented in class.

You are free to choose whatever situation interests you, but we expect you to treat the topic seriously with an engineering mindset. You could explore an algorithm that has been around for centuries, or a method that is at the current frontier of knowledge, or anything in between. This is a chance for you to explore something that is new and interesting to you, maybe something that could help you decide on your engineering major or motivate your future career?

Your response must conform to the template provided for part B. To guide you, we have used blue text to describe what we expect you to put in each section or element of the case study. You must delete or replace all that blue text with your own words in your submission.

We also provide an annotated exemplar case study to demonstrate the quality and content of work that would be awarded full marks.

For Part B, you should use the provided Juypter Notebook template file, however for submission you should convert your Juypter Notebook into a PDF file using `Save and Export Notebook As PDF` from the File Menu.

On Blackboard you will find the following attachments related to Part B:

1. `EGB103Assignment3PartB.ipynb` *(a template for you to use)*
2. `ExampleCaseStudyPartB.pdf` *(an example of what is expected)*
3. A video explaining Part B

What to Submit

Please submit precisely two files named as follows:

1. `EGB103Assignment3PartA.ipynb` *(do **not** export as PDF)*
2. `EGB103Assignment3PartB.pdf` *(generated from EGB103Assignment3PartB.ipynb)*

If you have been granted an extension **– please do not attach any extra files** – we already know precisely who has been granted an extension!