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| **1. Module number** | SET0923 |
| **2. Module title** | Interactive Data Visualisation |
| **3. Module leader** | Dr. Peter Chapman |
| **4. Tutor with responsibility for this Assessment** | Dr. Simon Wells |
| **5. Assessment** | Coursework 1 |
| **6. Weighting** | 40% |
| **7. Size and/or time limits for assessment** | Presentation: Maximum 5 minutes individual Demonstration<br>Design Report: 8 page individual report |
| **8. Deadline of submission** | Due at 3:00PM on Friday 27th October 2023. |
| **9. Arrangements for submission** | Presentation and Code should be submitted via Moodle |
| **10. Assessment Regulations** | This assessment is subject to the University Regulations. |
| **11. Requirements for the assessment** | Please see attached descriptor for details |
| **12. Special instructions** | None |
| **13. Return of work** | We generally aim to return work with an uncomfirmed grade and summative feedback within three working weeks of the submission. |
| **14. Assessment criteria** | Please see attached marking criteria for details |

# Coursework #1

In this assessment you will take on the role of a Data Scientist who has been assigned to a project that aims to analyse weather data for marketing purposes. In particular, you have been asked to create an interactive visualisation dashboard that will allow you and your colleagues to explore this dataset and discover patterns.
In this first coursework, you will focus on creating an initial dashboard prototype to explore the dataset. In the second coursework you will further develop and finalise your visualisation dashboard.
This document describes the tasks to undertake in detail, along with requirements for the submission of the coursework, marking criteria, and finally, the data you are given to visualise. Please make sure to read it thoroughly, as failure to do so might see you losing marks.

## Tasks

This coursework will involve two activities (your tasks):

1. Development
2. Presentation

## Development

Your first task will be to develop the visualisation dashboard prototype. It can have as many charts as you see fit, but at minimum, you are required to implement three different types of charts. The code and visualisation developed during the module's Practical Lab sessions should be your starting point, however, you are strongly invited to enhance these and/or implement new visualisations. Your choice of visualisation must be appropriate for the type of data presented. You will have to decide which subsets of the dataset you wish to see visualised. Your code must implement data operations to aggregate and/or filter the provided dataset. Your dashboard must be interactive. The visualisations should implement basic linked- highlight interaction, meaning that it should be possible to interact with one visualisation to highlight elements on another.
If part of your implementation is supported or inspired by external resources (e.g., online forums, documentation, tutorials) you should cite those in comments. The code submitted is expected to be ready to run in Google Chrome or Mozilla Firefox. No third-party library other than the ones provided should be used. Details on the marking criteria for the development task can be found below.

## Presentation

Your second task will be to present and demonstrate your dashboard prototype. You should first highlight the visualisations, including the data they represent and your rationale for the choice of visualisation. Next, you should demonstrate the interactions available to the user, and their effects on the dashboard. Finally, you should include a brief description of some of the insights your dashboard prototype has allowed you to discover.

Two formats of presentation are available:

- Written Report of maximum 8 A4 pages, where your discussion must be supported by screenshots; or
- Screencast demonstration of 5 minutes maximum, showing a recording of your screen and with your voice commenting the presentation (if you are unsure of how to do this then contact the module tutor (Simon) for advice).

Details on the marking criteria for the presentation task can be found below.

## Submission Details

This coursework contributes to 40% of your overall module grade. This is an individual assessment. The work submitted should be entirely your own and will be checked for plagiarism. You will be penalised if Academic Misconduct is detected (see Academic Regulations).

## Deliverables

- Your project should be submitted as a single .zip archive file, via the appropriate Moodle submission link.
- Your presentation should be submitted via the appropriate Moodle submission link.
  - If you are submitting a written report: your report should be submitted as a .pdf document file.
  - If you are submitting a screencast presentation: your screencast should be submitted as an .mp4 video file, using the Add Media option.

## Deadline

Your submission is due:

**Friday 27th October 2023 at 3PM on Moodle**

Late submission (up to five days) will be capped to 40% of the assessment mark. Submissions over five days will get 0%. Standard Extenuating Circumstances Procedures apply.

## Grades & Feedback

Provisional grades and feedback will be provided on Moodle within 3 working weeks of the submission (before 17th November 2023).

# Marking Criteria

| Element | Criteria | Marks |
|---|---|---|
| Visualisations | For each type of visualisation:<br>• The contextual information is clear<br>• The choice of data representation is appropriate | |
| Interaction | • The code implements data operations<br>• The visualisations implement basic linked-highlight interactions | |
| Self study | • The code implements features or elements going beyond the taught material | |
| Code Quality | • The code is well structured and commented | |
| | **Total marks available for Development** | **75** |
| Presentation | • The visualisations are presented and explained<br>• The available interactions are demonstrated<br>• The presentation contains a brief description of insights from the data exploration<br>• The presentation is clear and respects format constraints | |
| | **Total marks available for Presentation** | **25** |
| | **Coursework Total** | **100** |

# Data Description

The dataset in weather_data.csv consists of 3420 records made by weather stations across the UK. The data was download from the Met Office website:

https://www.metoffice.gov.uk/research/climate/maps-and-data/historic-station-data

Some stations had incomplete records for the date range used and were therefore excluded from this dataset.

Each station has several entries, corresponding to different years and months. Each entry has the following attributes, in order:

1. name – the station's name
2. lon – the station's longitude
3. lat – the station's latitude
4. region – the region in which the station is located: England S, England N, Wales, Northern Ireland and Scotland
5. year – the year of the record, from 2007 to 2021
6. month – the month of the record, from 1 to 12
7. max_temp – the average daily maximum temperature in degrees Celsius for the month of the record
8. min_temp – the average daily minimum temperature in degrees Celsius for the month of the record
9. af_days – the numbers of days of air frost for the month of the record
10. rain – the total rainfall in millimetres for the month of the record
11. sun – the total sunshine duration in hours for the month of the record