

## COMP7230 – Introduction to Programming for Data Scientists

Assignment 1 Due Friday 7 September 2018, 04:00 pm

Last update 13 August 2018

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## Overview and Objectives

The main idea of this assignment is to showcase how we can use Python for basic data manipulation, storage and analysis. In this assignment you will be writing some short pieces of code to process and display data related to historical tropical cyclones in Australia. The original data set was obtained from: <http://www.bom.gov.au/cyclone/history/>. The map was obtained from: <https://www.google.com.au/maps>.

## Important

- Make sure that your student ID is included as a comment at the start of your submission.
- Do **NOT** include your name anywhere in your submission. All marking will be done anonymously.
- Submit **one Python file only**, named *COMP7230\_Assignment\_1\_Submission.py*.
- Make sure you submit a **final** version of the assignment before the submission deadline.

## Submission

Submission will be done using Wattle. Click on the link Assignment 1 submission (<https://wattlecourses.anu.edu.au/mod/assign/view.php?id=1382944>) to upload your file. You may submit as many draft versions of the assignment as you wish. However, you must make sure you submit a **final** version before the due date. We will mark the **final** version present at the due date, or the first one submitted following the due date, with penalties in accordance with the late submission policy (see below). This means that if you intend to submit late, do not submit an early **final** version, since we will assume it is your actual submission and it will be marked accordingly.

## Deadlines, Extensions and Late Submissions

The assignment is due by 16:00 (04:00pm) on Friday, September 7, 2018.

Students will only be granted an extension on the submission deadline in extenuating circumstances, as defined by official ANU policy. If you think you have grounds for an extension, you should notify the course convener as soon as possible and provide written evidence in support of your case (such as a medical certificate). The course convener will then decide whether to grant an extension and inform you as soon as practical. In accordance with the ANU late submission policy, except where an extension has been approved by the course convener, late submissions will be penalised by 5% of the total marks for the assignment for each business day or part thereof late, up to a maximum of 10 business days, after which you will receive a mark of 0 (zero).

Please also note that if your submission is not received on time, we may be unable to give you feedback prior to the submission deadline of Assignment 2.

## Plagiarism

No group work is permitted for the assignment. We do encourage you to discuss your work, but we expect you to do the assignment work by yourself. If you are unsure about what constitutes plagiarism, please read through the ANU Academic Honesty Policy.

If you do include ideas or material from other sources, then you clearly have to make attribution. For example, by providing a reference to the material or source as a comment in your code. We do not require a specific referencing format, as long as you are consistent and your references allow us to find the source, should we need to while we are marking your assignment.

Once marks are released, you will have two weeks in which to question your mark. After this period has elapsed, your mark will be considered final and no further changes will be made. If you ask for a re-mark, your assignment will be re-marked entirely, and your mark may go UP or DOWN as a result.

## Assignment Structure

The first assignment consists of four python files:

- *COMP7230\_Assignment\_1\_Submission.py*
- *COMP7230\_Assignment\_1\_Submission\_Tests.py*
- *COMP7230\_Assignment\_1\_Heatmap.py*
- *COMP7230\_Assignment\_1\_Animation.py*

and the following helper files:

- *Cyclones.csv*
- *Example\_heatmap.png*
- *Australia\_Map.jpg*

You should download all these files to the same location, before starting to answer the assignment questions.

## Assignment Tasks

You only need to modify and submit *COMP7230\_Assignment\_1\_Submission.py*. Your task consists of writing or fixing seven functions in *COMP7230\_Assignment\_1\_Submission.py*. The specifications for each of these functions are included as comments in *COMP7230\_Assignment\_1\_Submission.py*. The function parameters and return types are all listed inside the *docstrings* for the functions you need to write. **Do not modify the function signatures** (such as by renaming the input parameters, or adding extra ones). You also should not add any code outside the seven functions provided, except optionally, **import** statements. You should include comments in your code.

In addition to the file *COMP7230\_Assignment\_1\_Submission.py*, we have also provided a suite of unit tests, *COMP7230\_Assignment\_1\_Submission\_Tests.py*, which will help you to test your work. These tests work in an identical fashion to the examples we use in the labs, so please familiarise yourself with those if you are not sure how to make use of them. Please note that these tests are there to assist you, but passing the tests is NOT a guarantee that your solution is correct.

- Once you have completed questions 1-4, you should be able to run this file and produce a histogram. Question 5 requires you to improve the histogram to make it clearer and easier to understand.
- Once you have completed questions 1, 2, 3 and 6, you should be able to run *COMP7230\_Assignment\_1\_Animation.py* and see the cyclone events animating on the map.
- Once you have completed questions 1, 2, 3 and 7, you should be able to run *COMP7230\_Assignment\_1\_Heatmap.py* and produce the heat-map.

## Marking

The assignment will be marked out of 20, with each question being worth between 1 and 4 marks, as specified in *COMP7230\_Assignment\_1\_Submission.py*. The assignment will count for 20% of your final grade for COMP7230. Partial marks may be awarded, even for solutions that do not pass all the tests, as long as the code is making progress towards a correct solution and it is well structured and well commented.

Please note that the suite of tests we will use during marking is much more extensive than that provided in *COMP7230\_Assignment\_1\_Submission\_Tests.py*, so focus on correctly completing the question, rather than just passing the associated unit-test.