Testing Techniques Document

Range of Techniques used:

Testing was done at all levels, which included: **unit**, **integration** and **system**. Such examples of testing can be found in the GitHub repository test folder. For example, unit testing was carried out in LngLatTest, CentralAreaTest and BaseAddressAndDate; integration testing examples included DeliveriesTest; system testing in GeoJsonWriterTest, etc.

**Systematic functional testing/black box testing** was used in most of the test classes that involved unit and integration. Function testing is a way to **verify specifications** with our results from the unit and integration level tests. To ensure that the requirement is met, we may use Junit’s assertEquals() methods to compare the expected value and the actual values from the unit tests. The testing is **systematic** because specific values that were likely to raise faults were used, examples may include credit card month expiry validation, or crossing no fly zone detection despite not ever landing within a no fly zone. This can be though of as exploiting the specifications to reduce the input testing space to save time. This followed the planning document where a mix of synthetic data was used and also REST server data was integrated into the functional testing.

In the **measurable qualities** section mentioned in section 1.1, some examples of testing to meet those qualities may include a **manual inspection system level** testing method to verify **functionality**, where the output GeoJson file of the final drone path found using the REST server data can be inspected using the GeoJson website to see if any part of the flightpath had violated any rules, just like in the planning document. Another example would be testing to ensure the **efficiency** quality. To ensure the program runs under 60 seconds, it would be verified by taking the average computational time taken to generate the necessary files for any given day for 12 days. Lastly, to test the **performance** quality, the average number of delivered orders were taken over 12 different days, where the average was about 29 delivered out 40.