2.3 Instrumentation of the Code

Unit-level Testing:

A number of helper functions were written to assist with unit-level testing.

The first function was a generatePoint function, which generated a random longitude latitude point within Edinburgh. This function was used in the testing of move size and angle, 2ponts were generated and a path was calculated between them using A star. The size and angle of each move in the was then checked using getAngle and getDistance functions.

getAngle takes in 3 points, and returns the angle at the middle point using the dot product.

getDistance returns the distance between two points rounded to 5 decimal places, to account for floating point error.

Integration-level Testing:

A generateMedDispatches function was used to generate random deliveries. The function takes in an integer, n, and returns a list of deliveries of size n. These deliveries were used to calculate a delivery path. The getAngle and getDistance functions were then used to check the path was valid.

System-level Testing:

To check if tasks ran in under 30 seconds, the system time was checked before and after a task was completed. The time was then checked to ensure it was under 30 seconds.