Requirements List

- Functional Requirements:

- **Safety**

Goal: The drone can complete the delivery without causing any damages

1. The drone must avoid crashes into buildings during route planning.
2. The attachments between the delivery box and the drone must be strong.
3. The drone must not enter the no-fly zone.
4. The drone must carry between 1 and 4 pizzas in a single delivery.
5. The drone must not take any deliveries if the remaining battery is not enough to complete it.

- **Correctness**

Goal: The drone can complete the delivery without causing any errors.

1. Once the drone enters the central area, it must not leave until it delivers the current order, to avoid causing any false deliveries.
2. The drone must not fly in an arbitrary direction; its direction has to be one of the 16 compass directions.
3. The drone must hover for one move once it reaches its current destination, i.e., the target restaurant and drop point on Appleton Tower.
4. The drone must be launched and returned to the top of Appleton Tower every day.
5. The drone must have an angle of null when hovering.
6. Each move of the drone must be precisely a length of 0.00015 degrees.
7. The drone must be able to navigate and find the path to its target destination.
8. The drone must use the order number - “no-order” when the drone is making the flight back to the top of the Appleton Tower when all of the day's orders have been delivered.
9. The drone has at most 2000 moves before it runs out of battery every day.
10. The system must have a fixed delivery cost – £1 apply to every order.
11. The system must be able to filter any invalid orders.
12. Valid delivered order must have the order outcome stated: “Delivered”.

- Measurable Quality Attributes:

- **Resilience**

1. The system should close under extreme weather.
2. The drone should be able to perform well in the general environment and handle extreme weather for a safe landing.

- **Performance**

1. Response Time: The system should have a response time of 60 seconds or less for planning and plotting the drone's daily flightpath.
2. Memory usage: The amount of memory the system uses to generate daily files should keep low.

- **Reliability**
  1. Mean time between failures (MTBF): average time between system failures should be recorded and used for future analysis.
  2. Availability: The percentage of time that the system is available for delivery should be recorded.

- **Cost Effectiveness**
  1. Repair: The drone should try to avoid most hazards to prevent damage.

- Qualitative Requirements:

- **Accessibility**
  1. The system shall be used by everyone, including students with disabilities.

- Maintainability
  1. The system shall be well-structured so that it is maintainable in future.

- **Usability**
  1. The system shall be easy to use.

- **Efficiency**
  1. The system shall find the optimal delivery path to maximize efficiency to satisfy consumers' needs to the greatest extent.