1. Detailed System Design
   1. Main

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| Main |
| in : ADSBInterface  thisAircraft : Aircraft  otherAircaft: Aircraft[]  errorByte : int  warningLevel: WarningLevelCalculator |
| + Main() : constructor  + start() : void  + reset() : void  + end() : void |

* + 1. The main class will store all of our classes in a single scope to be shared amongst each other. There are various functions for starting and ending the system as well as testing.
  1. ADSBInterface

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| ADSBInterface |
| otherAircaft: Aircraft[] |
| + ADSBInterface(Aircraft[] nearList) : constructor  + listen() : void  + addAircraft(Aircraft newAircraft) : int |

* + 1. The ADSBInInterface class retrieves the data that the ADS-B In module has received. This data includes a unique aircraft ID, its location, and heading. This class also handles receiving our own location from the ADS-B module.
  1. Aircraft

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| Aircraft |
| - id : string  - location : double[]  - heading : double[]  - warningLevel : int |
| + Aircraft(string id, double[] location, double[] heading) : constructor  + getId() : string  + getPosition() : double[]  + getHeading() : double[] |

* + 1. The Aircraft class holds the data for a specific aircraft in range of our aircraft.
  1. Collision

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| Collision |
| + aircraft : Aircraft  + collisionPoint : double[] |
| + Collision(Aircraft aircraft, double[] collisionPoint) : constructor |

* + 1. The Collision class holds a reference to an Aircraft and the location of its collision with our Aircraft given both these aircraft’s current trajectories and velocities.
  1. WarningLevelCalculator

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| WarningLevelCalculator |
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| + WarningLevelCalculator() : constructor  + parseList(Aircraft, Aircraft[]) : void  + detectCollision(Vector1, Vector2) : Collision  + testCollisionPoint(Collision) : Boolean  + setWarningLevelYellow() : void  + setWarningLevelRed() : void  + setWarningLevelOrange() : void |

* + 1. The WarningLevelCalculator class handles calculating the warning levels for each aircraft in our aircraft’s area using the Collision objects. Any aircraft without a collision object are by default reduced to the green level.
  1. PeripheralInterface

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| PeripheralInterface |
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| + createFrame(Aircraft thisAircraft, Aircraft[] otherAircraft) : void  + playAudio(Aircraft thisAircraft) : void |