

Team 000000000111

Airport Map

Written Requirements

Revision History

Authors	Description of Change	Sections	Rev	Date

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Revision History

Authors	Description of Change	Sections	Rev	Date
Lola H.	Added basic terminology.	2 Terminology	1	2/27/2018
Christine Trujillo	Added to part 3	3	1	3/6/18

1 Team Description

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2 Terminology

The following table defines terms used within this document.

Term	Definition
Vertex	An indivisible object that are connected by edges.
Edge	A line directly linking any two vertex. An edge starts at vertex A and ends at vertex B.
Path	A network of one or more edges that links two specific vertices.
Airline	Main customer of the software; based on certain use cases, the airline alternates between primary actor and secondary actor.
FAA	Regulator of the software, can directly modify any flight's path data.
Airport	The airline's representation of a vertex. Flight paths can only be made between two airports. Airports are regulated by the FAA, which allows airlines to use the airport.

3 Airport Map

3.1 Overview

The Airport Map Program will have the following functions:

- Create empty airport map
- Create Airport
- Create Edge
- Remove Airport
- Remove Edge
- Disable Airport
- Disable Edge
- Generate a path between two airports

Once the map is created, airports will be added to the map, and edges will be added to connect airports together. Flight paths between airports are determined by a combination of edges that link two airports together. The airline selects one airport to be the starting point and one airport to be the ending point. With this information, the system will compute the fastest possible path with the shortest distance between the two selected airports. The system will save this path in the database so the airline can access it. The FAA can add, remove, or disable any path, edge, or airport on the map. If an airport is removed from either the map or a saved path, the system will remove all edges connected to the affected airport, and an alert will be displayed to the airline with details of which airport was removed and what paths were affected. If an airport is temporarily disabled on either the map or a saved path, an alert will be displayed to the airline and the system will recompute a new path using edges that do not connect to the disabled airport. If a starting point or ending point airport is removed or disabled, an alert will be displayed to the airline, and any paths or saved paths affected will be deleted.

3.1.1 Create elements for map

The FAA user will be able to add airports and edges to the map. The map will initially be empty and the FAA will need to add these elements.

3.1.1.1 Create an airport

The FAA will have the capability to create a new airport. The FAA will input the coordinates, name and location of the airport. The system will test to see if the airport is already in the map.

3.1.1.2 Create an edge

The FAA will have the capability to create an edge. The FAA will input the airports and the flight distance.

3.1.2 Remove elements from the map

The FAA user will be able to remove airports and edges from the map.

3.1.2.1 Delete an airport

The FAA will have the capability to remove an airport from the map permanently. The FAA will choose from a list of airports and select the one for deletion. The system will then delete the airport and any connecting edges. The system will also alert airlines with affected paths

3.1.2.2 Delete an edge

The FAA will have the capability to remove an edge from the map permanently. The FAA will choose the airports with the connecting edge. The system will check if there is an edge at this location. The edge will be deleted and any airline with an affected path will be alerted.

3.1.2.3 Cancel an airport

The FAA will have the capability to remove an airport from the map for a period of time. The FAA will choose from a list of airports, and input a time frame for cancellation. The system will disable the airport and will alert any airline with an affected path.

3.1.2.4 Cancel an edge

The FAA will have the capability to remove an edge from the map for a period of time. The FAA will choose the airports with the connecting edge and input a time frame for cancellation. The system will disable the edge and will alert any airline with an affected path.

3.1.3 Generate a path between two airports

The Airline user will select a starting airport and an ending airport for the system to generate the path. The user can then choose to save the path.

3.1.3.1 Generate Path

The airline will select a starting airport and an ending airport. With this information the system will then calculate the shortest path of connecting edges from the start to end point.

3.1.3.2 Save Path

The airline will have the option to save the path with a departure time.

Guidelines – remove these from your document

Write at least ten to twenty text requirements that describe the key features of your system. This description should encompass all important functionality of your system. A person reading the document should be able to understand what the system does without any external references. Assume the audience for this document has the typical knowledge of a software engineer. Do not reference any implementation details. Describe what the system does, not how it does it.

Use grammatically correct and concise language.

Use a uniform level of detail.

Once defined, terminology such as “the user” and “the system” are generally appropriate.

Reuse of material from use-case and class diagram is OK, but make sure it is all shaped into the proper form.

The word “shall” indicates a testable requirement. Bold this word.

Use indentation to clarify the structure of the documents.

Do not write “shall not” requirements. They are problematic to test.

- Generate empty airport map.
- Add airport to map.
- Remove airport from map.
- Temporarily disable the use of an airport from map.
- Add edge between airports to map.
- Remove edge between airports from map.
- Temporarily disable the use of an edge from map.
- Select starting airport and destination airport.
- Determine if path between starting airport and destination airport is possible.
- If path between starting airport and destination airport is possible, generate shortest path by distance.

- If path between starting airport and destination airport is not possible, generate error.
- If path between starting airport and destination airport is possible and is selected, save path in the database.
- If path between starting airport and destination airport is possible and is selected and then is canceled, delete path in the database.
- Display all saved paths.
- If airport or edge in a saved path is removed, the saved path is deleted and an alert is created for airline.

AND Requirements

“Select starting airport and destination airport” action shall be taken when **all of** the following conditions are met:

- Empty airport map is generated
- At least two airports exist

OR Requirements

Cancel path action shall be taken when **any of** the following conditions are met:

- Edge in path is deleted
- Airport in path is deleted
- Edge in path is disabled
- Airport in path is disabled

Remove path from database action shall be taken when **any of** the following conditions are met:

- Path is canceled

“Alert created for airline” action shall be taken when **any of** the following conditions are met:

- Airport on the map is deleted
- Edge on the map is deleted
- Airport in saved path is deleted
- Edge in saved path is deleted

Your system will be tested according to these requirements.