Team 000000000111

Airport Map

Test Procedure

Revision History

Authors	Description of Change	Sections	Rev	Date
Lola	Filled out some of the test procedures according to the RIDs in the Test Plan, updated ToC	1, 4	1	4/17/2018
Lola & Christine	Added Test Plans	4	2	4/24/18
Christine	Rearranged Test Plans	4	3	4/25/18
Christine	Added Verification Cross Reference Matrix	5	1	4/25/18
Lola	Added a brief Introduction	2	1	4/26/18
Lola	Added Tests 8 (enable vertex) and 9 (enable edge) to correspond with the modified Test Plan, changed ToC	1, 4	4	4/26/18
Lola	Added identification of req docs	3	1	4/26/18
Lola	Changed distance handling in adding edges	4	5	5/1/18

Table of Contents

1 Team Description

Team Member Name	Email Address
Yushuo Lu	yushuolu@csu.fullerton.edu
Christine Trujillo	christinetru@csu.fullerton.edu
Matthew Noack	matthewnoack@csu.fullerton.edu
Lola Holiday	lolaholliday@csu.fullerton.edu

2 Introduction

This document outlines the nine procedures that test basic functionality of the Airport Map program's core features. Some procedures contain validity tests which check to ensure that the program does not process non-existent data and does not negatively affect finalized variables.

2.1 Identification

Requirement Document Tested:	Written Requirements
Requirement Document Revision:	4
Revision Release Date:	4/17/18

Requirement Document Tested:	Test Plan
Requirement Document Revision:	4
Revision Release Date:	4/26/18

Test Procedures

2.2 Test 1: Adding Vertices to the Map

Description: This test demonstrates the creation of new vertices on an airport map.

Precondition(s):

1) The user types of the system (Airline and FAA) are defined and perform tasks according to their roles.

2) The system starts with an empty map that contains no vertices and no edges.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	Start the airport map program by entering: **airportmap_system**	Program starts up	RID-0000
2	The FAA user chooses **Add Vertex to Map**	Receive (x, y) coordinates, name, and location as input. Check if the vertex exists at this coordinate. Create the new vertex.	RID-0009 RID-0010 RID-0011 RID-0001
3	The FAA user chooses **Add Vertex to Map** at a different location.	Receive (x, y) coordinates, name, and location as input. Check if the vertex exists at this coordinate. Create the new vertex.	RID-0010 RID-0011 RID-0001
4	The FAA user chooses **Add Vertex to Map** at the location the first vertex is already at.	Receive (x, y) coordinates, name, and location as input. Check if the vertex exists at this coordinate. A vertex already exists. Return to the map.	RID-0010 RID-0011

2.3 Test 2: Adding Edges to the Map

Description: This test demonstrates the creation of new edges on an airport map.

Precondition(s):

1) The airport map program is already running.

2) At least two vertices exist on the map.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA user chooses **Add Edge to Map**	Display all the current map vertices to the user.	RID-0012
2	FAA user selects the two vertices for the new edge.	Check that the selected vertices are not duplicates. System automatically generates the distance between the two vertices. Create the edge between them.	RID-0013
3	FAA user finishes the edge creation.	Display confirmation to the user ”The edge was created successfully”	RID-0002
4	FAA user chooses **Add Edge to Map**	Display all the current map vertices to the user.	RID-0012
5	FAA user selects the previous vertices for the new edge.	System will check to see if there is an edge present. An edge already exists between these vertices. Return to the map.	RID-0019

2.4 Test 3: Make Path

Description: Test the system capability to generate a flight path.

Precondition:

1) The airport map program is already running.

2) The airport map contains at least two vertices.

3) The airport map contains at least one edge.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	Airline user will choose to **Make a Flight Path**	Display all the current map vertices and their connected edges to the user.	RID-0008 RID-0026
2	Select start point and end point	Start and end points will be taken as inputs	RID-0008 RID-0026 RID-0027
3	Calculate the shortest path	The shortest path will be generated by the system using the distance and coordinates data.	RID-0027
4	Display the shortest path	The shortest path will be displayed to the user.	RID-0028

2.5 Test 4: Save Path

Description: Test the system capability to save a flight path for later editing.

Precondition:

1) The airport map contains at least two vertices and one edge connecting these vertices.

2) A flight path already exists that utilizes the existing information on the map.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	Airline user will generate a path by inputting a start and end point	The shortest path will be generated and the user will be given the option of saving the path	RID-0030 RID-0031
2	Airline user will choose to **Save the Path**	The system will save the coordinates of the vertices along the path and the distance between vertices	RID-0032
3	Confirm flight path with the user	Display to the Airline user “Enter departure time for this flight” Receive input as a string (hr/min, day/month/year) and store it as user-relevant data within the system.	RID-0033
4	Airline user will generate a new path by inputting a start and end point	The shortest path will be generated and the user will be given the option of saving the path	RID-0030 RID-0031
5	Airline user will choose **Do Not Save Path**	The user is returned to the map generator	RID-0034

2.6 Test 5: Delete Path

Description: This test demonstrates deleting a path from the system. Paths may be deleted under certain conditions: if the Airline user chooses not to save a generated path, if the FAA chooses to delete or disable a vertex within a saved path, or if the FAA chooses to delete or disable an edge within a saved path.

Precondition:

1) At least one flight path is saved within the system.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA chooses to **Delete a Path**	Check if there are any paths saved in the system. Display information about all saved paths to user.	RID-0007
2	FAA selects the path to delete	Delete the selected path from the system.	RID-0025
3	FAA sends notification to Airline	Send a notification to all Airline users when they next access the airport map program “The flight path X was removed from the system”	RID-0020
4	FAA chooses to **Delete a Path**	Check if there are any paths saved in the system There are no paths saved in the system. Return user to the map.	RID-0007

2.7 Test 6: Disable Vertex

Description: This test demonstrates the temporary disabling of existing vertices on an airport map.

Precondition:

1) At least one vertex exists on the map.

2) Any edge connected to the disabled vertex is also disabled.

3) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA user chooses to **Disable a Vertex**	Display all the current map vertices and their connected edges to the user.	RID-0005 RID-0021
2	FAA selects one vertex to disable.	The system disables the vertex for a short time period.	RID-0022
3	Inform the FAA user “Paths that contain the vertex will be deleted”	System deletes any saved flight paths that contain the disabled vertex. System notifies the Airline user about deleted paths.	RID-0020

2.8 Test 7: Disable Edge

Description: This test demonstrates the temporary disabling of existing edges on and airport map.

Precondition:

1) At least one edge exists on the map

2) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA user chooses to **Disable an Edge**	System displays vertices	RID-0006
2	FAA user inputs the vertices with the connecting edge and the time period for disabling	System will check that the edge is in existence and will delete the edge System will check if there are any saved paths affected by the disabled edge and will notify any Airline affected	RID-0024 RID-0023 RID-0020
3	FAA user chooses to **Disable an Edge**	System displays vertices	RID-0006
4	FAA user inputs the vertices with no connecting edge	System will check if an edge exists and will notify the user that none was found	RID-0019

2.9 Test 8: Enable Vertex

Description: This test demonstrates the enabling of temporary disabled vertices on an airport map.

Precondition:

1) At least one vertex exists on the map and is currently disabled.

2) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA user chooses to **Enable a Vertex**	System displays all disabled vertices	RID-0005
2	FAA user selects one vertex to enable.	The system enables the vertex.	RID-0021 RID-0022
3	FAA sends notification to Airline	System notifies the Airline of which vertex was enabled for use.	RID-0020

2.10 Test 9: Enable Edge

Description: This test demonstrates the enabling of temporary disabled edges on an airport map.

Precondition:

1) At least one edge exists on the map and is currently disabled.

2) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	FAA user chooses to **Enable an Edge**	System displays vertices that are connected to an disabled edge	RID-0006
2	FAA user inputs the vertices with the connecting edge to be enabled	System will check that the edge is in existence and will enable the edge	RID-0024 RID-0023
3	FAA user notifies Airline	System will check if there are any saved paths affected by the enabled edge and will notify any Airline affected	RID-0020

2.11 Test 10: Delete Vertex

Description: This test demonstrates the deletion of existing vertices on an airport map.

Precondition:

1) At least one vertex exists on the map.

2) Any vertex to be deleted that is within a path will also cause the deletion of the path.

3) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	The FAA user chooses to **Delete A Vertex**	Display all the current map vertices and their connected edges to the user.	RID-0003 RID-0014
2	The FAA user selects one vertex to delete.	Delete selected vertex from the map. If the vertex has edges connected to it, delete all connecting edges leading to or from the vertex.	RID-0015
3	Inform the FAA user “Paths that contain the vertex will be deleted”	Delete any flight path currently saved in the system that contains the deleted vertex.	RID-0016
4	FAA sends notification to Airline	Send a notification to all Airline users when they next access the airport map program “The vertex X was removed, along with related edges and paths”	RID-0020 RID-0029

2.12 Test 11: Delete Edge

Description: This test demonstrates the deletion of existing edges on an airport map.

Precondition:

1) At least one edge exists on the map.

2) Any edge to be deleted that is within a path will also cause the deletion of the path.

3) Airline notification works and displays the relevant information to the Airline user.

Step Number	Action	System Response	Requirement Tested (if applicable)
1	The FAA user chooses to **Delete An Edge**	System will display a list of vertices	RID-0004 RID-0017
2	The FAA user will choose two vertices that have an edge between them	System will confirm that there is an edge between the vertices and will delete the edge System will check if there are any saved paths affected by the deletion and will notify any Airline affected	RID-0018 RID-0020
3	The FAA user chooses to **Delete An Edge**	System will display a list of vertices	RID-0004 RID-0017
4	The FAA user will choose the same vertices for deletion	System will check to see if there is an edge present and will notify the FAA user that none exists	RID-0019 RID-0029

3 Verification Cross Reference Matrix

Requirement Identifier	Where Tested
RID-0001	Test 1
RID-0002	Test 2
RID-0003	Test 8
RID-0004	Test 9
RID-0005	Test 6
RID-0006	Test 7
RID-0007	Test 5
RID-0008	Test 3
RID-0009	Test 1
RID-0010	Test 1
RID-0011	Test 1
RID-0012	Test 2
RID-0013	Test 2
RID-0014	Test 8
RID-0015	Test 8
RID-0016	Test 9
RID-0017	Test 9
RID-0018	Test 9
RID-0019	Test 2, 7, 9
RID-0020	Test 5, 6, 7, 8, 9
RID-0021	Test 6
RID-0022	Test 6
RID-0023	Test 7
RID-0024	Test 7
RID-0025	Test 5
RID-0026	Test 6

RID-0027	Test 3
RID-0028	Test 3
RID-0029	Test 8, 9
RID-0030	Test 4
RID-0031	Test 4
RID-0032	Test 4
RID-0033	Test 4
RID-0034	Test 4