Android Air Route Planner
Software Requirements Specification
Version 1.1
October 24, 2012

Team Awesome X
SE 300 Section 1

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Introduction

The purpose of this document is to specify the requirements for the development of the SE 300 Android Air Route Planner Program. It needs to inform the user of airport routes in a 24 hour period. The system will receive airport information through a text file which contains airport name, arrival and departure times, airline name, and cost. The system will calculate a travel route based on the following criteria: cheapest, shortest, most frequent airline used for that day. The route will be displayed graphically for the Android operating system.

Team Project Information

- Course: Fall 2012 SE300 Section 1

- Team: Awesome X

- Members/Roles
  - Team Leader: David Franklin
  - Quality Manager: Max Chang
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  - Design Manager: Finn Carlsvi
  - Construction Engineer: all team members

- Customer: T. Hilburn

- Schedule
  - Need Assessment 09/11/2012
  - Project Launch 09/18/2012
  - Project Plan 09/20/2012
  - Requirements 09/24/2012
  - Architecture 10/08/2012
  - Cycle 1 Construction 10/15/2012
  - Cycle 2 Construction 11/01/2012
  - System Testing 11/14/2012
  - Acceptance Testing 12/03/2012
  - Postmortem Analysis 12/05/2012

Requirements Specification

General Requirements

1 At system startup, the system shall allow the user to import a file containing a list of routes. (Cycle 1)
- 1.1 The system shall accept a text file.
- 1.2 The system shall allow the user to specify the location of the text file.
- 1.3 The system shall verify the correctness of the text file data formatting (refer to section 30 for data structure format).

Route Search Requirements

2 The program shall allow the user to find the path that costs the least between two airports. (Cycle 2)
- 2.1 The program shall allow the user to specify a departure airport.
- 2.2 The program shall verify that the specified departure airport in 2.1 exists in the list of airports.
- 2.3 The program shall allow the user to specify an arrival airport.
- 2.4 The program shall verify that the specified arrival airport in 2.3 exists in the list of airports.
- 2.5 The program shall output the list of routes which connect the two given airports.
- 2.6 The program shall output the total travel time.
- 2.7 The program shall output the total cost of the calculated path.

3 The program shall allow the user to find the shortest travel and layover time path. (Cycle 2)
- 3.1 The program shall allow the user to specify a departure airport.
- 3.2 The program shall verify that the specified departure airport in 3.1 exists in the list of airports.
- 3.3 The program shall allow the user to specify an arrival airport.
- 3.4 The program shall verify that the specified arrival airport in 3.3 exists in the list of airports.
- 3.5 The program shall output the list of routes which connect the two given airports.
- 3.6 The program shall output the total travel time.
- 3.7 The program shall output cost of travel.

4 The program shall allow the user to find the path which uses a specific airline for the greatest percentage of traveled time. (Cycle 2)
- 4.1 The program shall allow the user to specify a departure airport.
- 4.2 The program shall verify that the specified departure airport in 4.1 exists in the list of airports.
- 4.3 The program shall allow the user to specify an arrival airport.
- 4.4 The program shall verify that the specified arrival airport in 4.3 exists in the list of airports.
- 4.5 The program shall allow the user to specify an airline.
- 4.6 The program shall verify that the specified airline in 4.6 exists in the list of airlines.
- 4.7 The program shall output the list of routes which connect the two given airports.

4.8 The program shall output total travel time.
4.9 The program shall output travel cost.

Data Modification Requirements

5 The program shall allow the user to add a route. (Cycle 1)
- 5.1 The program shall allow the user to specify an airline name.
- 5.2 The program shall allow the user to specify a departure airport.
- 5.3 The program shall verify that the specified departure airport in 5.2 exists in the list of airports.
- 5.4 The program shall allow the user to specify an arrival airport.
- 5.5 The program shall verify that the specified arrival airport in 5.3 exists in the list of airports.
- 5.6 The program shall allow the user to specify departure time. (Refer to Sec. 14 for time format)
- 5.7 The program shall allow the user to specify arrival time. (Refer to Sec. 14 for time format)
- 5.8 The program shall allow the user to specify route price.
- 5.9 The program shall display the inputted new route information.

6 The program shall allow the user to add a new airport. (Cycle 1)
- 6.1 The program shall allow the user to specify the new airport 3-letter identification code.
- 6.2 The program shall allow the user to specify the open times of the new airport. (Refer to Sec. 14 for time format)
- 6.3 The program shall display the imported new airport information.

7 The program shall allow the user to close an airport. (Cycle 1)
- 7.1 The program shall allow the user to specify an airport.
- 7.2 The program shall verify that the specified airport in 7.1 exists in the list of airports.
- 7.3 The program shall allow the user to specify airport closed time. (Refer to Sec. 14 for time format)
- 7.4 The program shall allow the user to specify airport reopen time. (Refer to Sec. 14 for time format)
- 7.5 The system shall display the modified airport operation time.
- 7.6 The system shall cancel all routes that arrive at the selected airport during closing time.
- 7.7 The system shall cancel all routes that depart from the selected airport during closing time.

Data Output Requirements

8 The program shall allow the user to view the route list. (Cycle 1)
- 8.1 The program shall display a list of the active routes during hours of operation.
- 8.2 The program shall display a list of closed routes during hours of operation.

9 The program shall allow the user to view all airports that are accessible from a given

airport. (Cycle 2)

9.1 The program shall allow the user to specify an airport.

9.2 The program shall verify that the specified airport in 9.1 exists in the list of airports.

9.3 The program shall display a list of airports that are accessible from the given airport.

10 The program shall allow the user to view the list of all airports. (Cycle 1)

11 The program shall allow the user to view the list of airlines operating from an airport. (Cycle 1)

11.1 The program shall allow the user to specify an airport.

11.2 The program shall verify that the specified airport in 11.1 exists in the list of airports.

11.3 The program shall display a list of all airlines operating from the selected airport.

11.4 The program shall display airlines of canceled routes only if that airline also has an active route servicing the given airport.

12 The program shall allow the user to view all routes which service an airport. (Cycle 1)

12.1 The program shall allow the user to specify an airport.

12.2 The program shall verify that the specified airport in 12.1 exists in the list of airports.

12.3 The program shall display a list of all active routes that either arrive at or depart from the specified airport.

13 The program shall allow the user to view route information. (Cycle 1)

13.1 The program shall allow the user to specify a route number.

13.2 The program shall verify that the specified route number in 13.1 exists in the list of routes.

13.3 The program shall display the selected route's departure airport.

13.4 The program shall display the selected route's arrival airport.

13.5 The program shall display the selected route's departure time.

13.6 The program shall display the selected route's arrival time.

13.7 The program shall display the selected route's price.

Non-Functional Requirement

14 The program shall use time within integer 0000 – 2359 representing hour and minute of the day.

15 The program shall run on android based systems.

16 The program shall be compatible with the most recent android version.

17 All inputs will be trough touch screen interface on the android device.

18 The user shall use button selections to choose the options that they want.

19 Input (adding and removing airports) and available flights shall be different menus on the touch screen.

20 The user shall not be able to modify how the program operates through the interface.

21 The program shall be compatible with all current Android 4.0.X version of Android SDK.

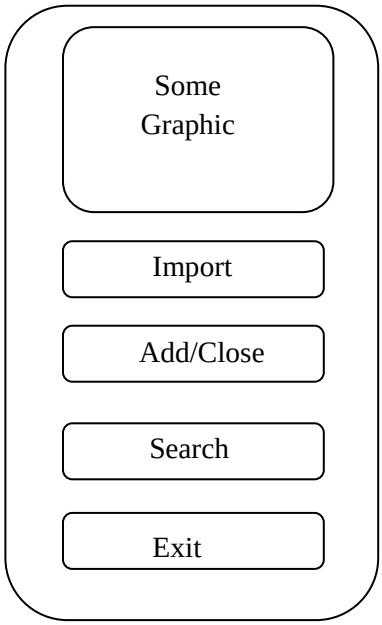
22 The program shall interface with user via a GUI.
23 The program shall reject all files not of .txt form with a display of error message.
24 The program shall accept .txt files that only follow specified guidelines (See Section 30).
25 A user manual shall be provided to the customer with instruction to operate the program.
26 The program shall be compatible with the current android operating systems.
27 The program shall restart to the original state when experienced a power loss or equipment failure.
28 The program shall allow user to input a file up to 50 routes.
29 The program shall allow user to add a maximum of 20 additional new airports or routes.
30 The program shall erase all airport and route information when the user closed the program.

Data Format Description

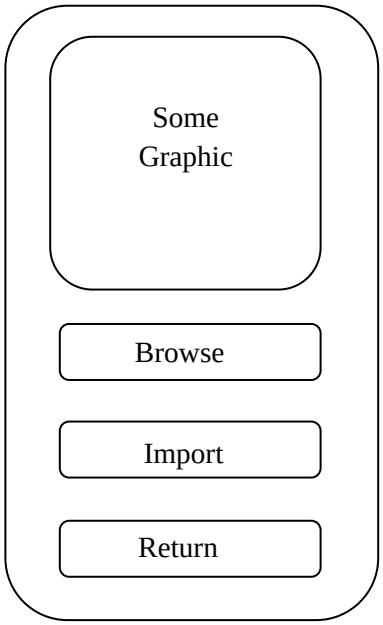
31 The user shall select a .txt file to import all flight data.
- 31.1 The document shall be divided into 6 columns delineated by 4 ASCII spaces between values to differential each column data.
- 31.2 The first column shall contain a String of letters representing the name of an airline.
- 31.3 The second column shall contain a 4 digit integer, as specified in Section 14, which shall represent the arrival time.
- 31.4 The third column shall contain a 4 digit integer, as specified in Section 14, which shall represent the departure time.
- 31.5 The fourth column shall contain a String of character representing the departure airport name 3 letters or more.
- 31.6 The fifth column shall contain a String of character representing the arrival airport name with 3 letters or more.
- 31.7 The sixth column shall contain a Float number with two decimal place which representing the price of route. (Example 999.99)

External Interface Requirements – GUI Interface

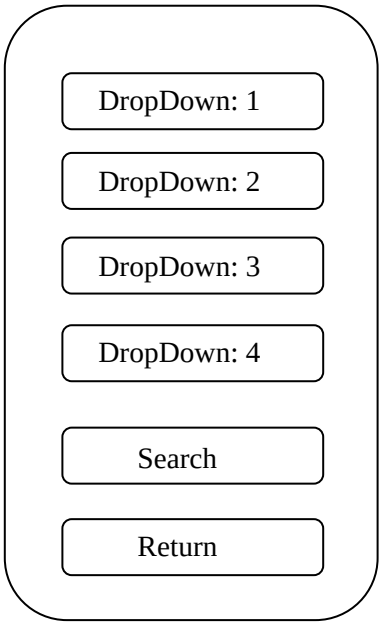
Initial & Return Screen



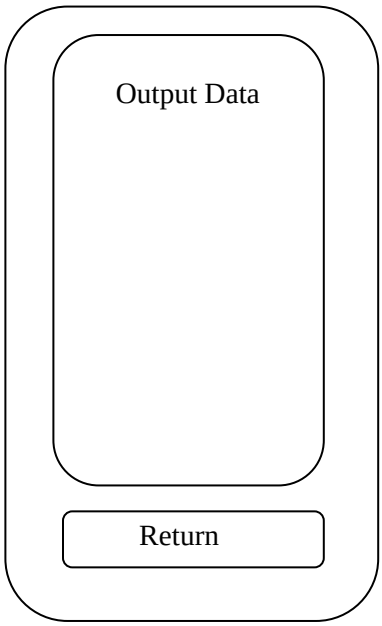
Import Screen



Search Screen



Results Screen



Add/Close Screen