American Travel Bucket List

System Requirements Document

Neo & Wicks Breathtaking Adventure

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Reagan Berhe

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1. Introduction

1.1 Project Title:

American Travel Bucket List

1.1.2 Team Name:

Neo and Wicks Breathtaking Adventure

1.1.3 Date: 12/6/19

1.1.4 Team Members:

Solomon (Reagan) Berhe
Stephen Hampson

1.1.5 Stakeholders:

Mr. Ike Quigley - Adjunct Professor CSC 340 UNCG
University of North Carolina at Greensboro

Honor Code Statement

WE HAVE ABIDED BY THE UNCG *Academic Integrity Policy*
ON THIS ASSIGNMENT.

Student's Signature _____ Date _____

Solomon (Reagan) Berhe

Student's Signature _____ Date 12/06/2019

Stephen Hampson

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1.3 Statement of Purpose

This document is to explain the term project (American Travel Bucket List) by the team Neo and Wicks Breathtaking Adventure to CSC 340 section 01.

1.4 Document Conventions

1.5 Intended Audience

The American Travel Bucket List is intended for users who intended, and have the means to travel in the United States for a vacation but do not have a solid idea of where they want to travel to.

1.6 Jargon and Definitions (terms from outside CSC that may need explained)

IATA (acronym) - International Air Transport Association

City Code - 3 letter code which denotes a specific city according to the IATA.

Airport Code - 3 letter code which denotes a specific airport according to the IATA.

Flight Offers - The flights available for a given origin and destination according to the Amadeus API organized from cheapest to most expensive.

Hotel Offers - The hotel rooms available in a given city according to the Amadeus API.

1.7 Project scope

While the American Travel Bucket List will help users pick a travel destination it will not book flights or a hotel room and will not be updated after 12/31/19

1.8 Technical challenges

Reagan has chosen to work on the UI half of the project in spite of never working with GUI's presenting a challenge in that he needs to learn how to program a GUI. Similarly, Stephen has never worked with API's or json objects and needs to learn how to do so.

1.9 References Citation

IATA - https://www.iata.org/pages/default.aspx

Zip Code Data - public.opendatasoft.com/explore/dataset/us-zip-code-latitude-and-longitude

2. Overall Description

2.1 Product Features

The American Travel Bucket List is a Java desktop app intended to provide vacation/travel suggestions to users. To provide the best travel suggestions, new users are asked during new user registration about their interests in our 5 vacation categories, and again on their interest in traveling to our curated destinations in the categories they select. This data is stored so that on request we can select a random destination that fits the users interests and provide information on the costs involved with taking the selected trip.

Costs associated with the trip are estimated by taking the average of the flight and hotel offers returned by the Amadeus Travel API. This is accomplished by converting the zip code provided by the user during registration into latitude and longitude so that the nearest major airport can be determined. With the user's airport and the stored airport and city code of the destinations we can find the 5 cheapest flights and hotels for the trip and take the average pricing across a wide variety of travel scenarios.

2.2 User characteristics/classes

Users of the American Travel Bucket List are people who like to travel but either cannot decide where they would like to travel or cannot decide.

Users who don't know where they would like to travel are more likely to select all destinations and thoroughly read the location descriptions when a location is selected.

Users who cannot decide where they want to go are more likely to have set categories of places they like and are more interested in the random selection aspect of the program.

2.3 Operating Environment

This program is known to operate on Windows 10 laptops and desktops and Windows 7 desktops.

2.4 Design constraints

The primary design constraint of the American Travel Bucket list has been that the Amadeus API returns limited results in the testing environment. While this hasn't been a problem for finding flight data, it often returns few or no results for hotel queries outside of major cities. This has necessitated the development of API failover but may be mitigated if the project was pushed to the live API environment.

2.5 Assumptions/Dependencies

For the American Travel Bucket List we are assuming that the internet and computers are still working when the program releases.

3. Functional Requirements

3.1 Primary

The primary purpose of the American Travel Bucket List is to select a random travel destination for users and provide the user with information on that destination, including but not limited to travel costs.

3.2 Secondary

As providing information on the selected destination can be considered a primary function the America Travel Bucket List other than saving user responses to keep track of which prefered locations haven't been visited yet.

4. Technical Requirements

4.1 Operating Systems/Compatibility

The American Travel Bucket List works completely on Windows PC's running Windows 7 or 10. With the currently implemented database solution the ATBL does not appear to work on Mac OS.

4.2 Interface Requirements

4.2.1 User interface

The Ameican Travel Bucket List displays on a computer monitor and uses a keyboard and mouse to interact.

4.2.2 Hardware Interface

Outside normal PC operation the only hardware required by the American Travel Bucket List is an active network connection for API calls.

4.2.3 Software Interface (any software the program interacts with on the same pc

The American Travel Bucket List requires no outside software when packaged for distribution.

4.2.4 Communications Interface (API's)

The American Travel Bucket List uses the Amadeus API and its java SDK to obtain estimated flight costs and hotel pricing as well as determining the closest airport to a given latitude and longitude.

5. Nonfunctional Requirements

5.1 Performance Requirements

The American Travel Bucket List can be used by one user at a time per computer it is installed on, though it can be installed on multiple computers. There is however, no limit to how many users can use the program at different times.

5.2 Safety and Recovery

The primary ways a user can cause the American Travel Bucket List to error out are the user providing the wrong name, providing the wrong zip code, answering false to all locations, or the API calls returning no results. Providing the wrong user name simply prompts the user to go back and try again or begin new registration, while answering false to all locations cause the program to select 5 random locations for the user. The other two error points however, are connected with both errors being API failover.

Providing an incorrect zip code would cause the Amadeus API to return no results for flight offers, which will cause the program to default to the devAPI which returns estimates calculated from the lowest flight price found at program creation and a range value determined by averaging the price of flights available at the same time, subtracting the base price, and multiplying by two. While this process is inherently random it does provide a solid estimate while preventing the program from crashing due to API failure. This error is also prevented by a check to the local zip code file during registration to ensure zip code inputs are valid.

5.3 Security Requirements

The American Travel Bucket List doesn't directly use any form of security. Login is by the user's name only and data is stored in unencrypted text on the user's computer. It should be noted however that the Amadeus API uses a connection secured with OAuth creating access token from an API key and API secret.23

5.4 Policy Requirements

5.5 Software Quality Attributes

5.5.1 Availability

With API failover the American Travel Bucket List is available at all times with or without an internet connection, though results are more accurate with an active connection who's uptime is outside of our control.

5.5.2 Correctness:

While the results of flight and hotel pricing are accurate as returned by the Amadeus api, these don't always represent the options users would select for their vacation. As such, the American Travel Bucket List accept up to five values from Amadeus and takes the average to provide a better estimate of the end costs. Though this no longer represents the exact cost of an available flight or hotel, it more accurately reflects user needs.

5.5.3 Maintainability

We do not plan to upgrade or maintain The American Travel Bucket List past the UNCG Fall 2019 semester.

5.5.4 Reusability (maybe a clear data function) (split locations into text file)

Though many portions or the code can and are used between segments, most are related to data management with the biggest exceptions to this being the Locations view (NewUserLocation.fxml) and the generalized FxmlLoader. While the FxmlLoader was generalized so that it can load any of our fxml view based on its relative file path, the locations view file has been anonymized such that every time it is loaded the labels are initialized to values set by the main and locations controllers from enumeration. Furthermore, with an index variable set by the main controller and tracked by the location controller we ensure that the values set by the toggle groups apply appropriately.

Reusable code for data management is best seen in 3 line save method we separated out as it was used extensively throughout the program and in the loadFile method from the LoadData class. This code takes a filepath stub and a name as parameters so that it can be used to load the primary data from user files and location files. This method however cannot be used for all of our data loading needs as User data files contain a unique file mapping data structure that location file do not.

5.5.5 Portability

The American Travel Bucket List is not known to work on any platforms other than the Netbeans Java IDE.

5.6 Process Requirements

5.6.1 Methodology

This project was completed using a combination of waterfall and agile methodologies taught in the Fall 2019 CSC - 340 class at UNC Greensboro.

5.6.2 Time Constraints:

9/30/19 Code presentations begin (1st pass)

12/9/19 Project Presentation

5.6.3 Cost and Delivery Date

The American Travel Bucket list will be delivered on or before 12/09/19 and is not expected to ever surpass the API call per month need for per call pricing to occur and thus will incur no cost beyond equipment bought prior to the project.