California State University Fullerton

CPSC 462



Object Oriented Software Design

Supplementary Specification

for the



Tuffy Flights

System

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| --- | --- | --- |
| **Nathan Marcos** | **Jared Castaneda** | **Jawad Swed** |
| Design Modeling, Implementation | Project Management, Implementation | Business Modeling, Design Modeling |
| [nathanmarcos@csu.fullerton.edu](mailto:nathanmarcos@csu.fullerton.edu) | [jaredcast@csu.fullerton.edu](mailto:jaredcast@csu.fullerton.edu) | [jawadswed@csu.fullerton.edu](mailto:jawadswed@csu.fullerton.edu) |

Revision History:

| Version | Date | Summary of Changes | Author |
| --- | --- | --- | --- |
| 1.0 | 9/23/2020 | * Initial start * Added a lot of requirements * Adding rules * Adjusted numbers in requirements * Added technical standards | Jared Castaneda |
| 2.0 | 10/17/2020 | * Reworked introduction, feature requirements, and functionality requirements | Jared Castaneda |
| 3.0 | 12/7/2020 | * Adjusted the Quality attribute requirements * Updated roles | Jawad Swed  Jared Castaneda |

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# Introduction and Purpose

This document highlights the Tuffy Flights requirements that are not captured in the use cases. Many testable requirements are outlined in this document such as those for quality, interface, reports, and more.

# Feature Requirements List

* Allow users to view and book flights starting at an origin and ending at a destination.
* Allow users to view and select various options for booking a flight such as bags, meals, seat picking, and more.

# Functionality (common across UCs) Requirements

## System Event Logging Requirements

* Error messages displayed to users reveal the text explaining the error, a code, a timestamp, and an option to restart or exit. Error messages are also saved to storage.

## Security Requirements

* User authentication is required with an email. Two factor authentication is enabled. Information is stored behind a security database.

## Other Requirements

* Credit card banking transaction system are required
* Access to currently logged in user’s credentials

# Quality Attribute Requirements

## Usability Requirements

* The User should be able to sign up for an account and start using the system within 5 minutes
  + If the user already has an account, the user should be able to start and use the system within 1 minute
* The user should have the option to change the account password if they forgot it.
* The system must be quickly respond to user requests within 3 seconds 95% of the time.

## Reliability Requirements

* Expected failure rate shall be less than 1 per 5000 requests.
* Recovers a previous state 90% of the time. Flight booking must be restarted 10% of the time.
* Changes in a flight are accurately and quickly updated 95% of the time within 5 minutes of the airline’s update action.

## Performance Requirements

* The System shall respond to flight booking requests within 200 milliseconds, 95% of the time.
* The Recovery time of a previous state shall be within one second, 90% of the time.

## Supportability Requirements

* The system will be able to support receiving out free updates after the initial release.
  + Bug fixes, content updates, security updates, new payment support
* Components shall be implemented as an interface and able to be replaced without rippling effects
* Accessing a components services shall only be through an interface.

## Adaptability Requirements

* The system will be able to support any new third-party payment system. The integration of the new payment system should be done easily with few changes to the source code.

## Configurability Requirements

* System shall be configurable to fit various needs depending on the User
* The system shall work the very minimal system and technical requirements, allowing usage on multiple different systems and devices

# Implementation Constraint Requirements

* System is built on C++ technology. Further developments use C++.
* The System will run on multiple platforms (Windows, Mac, Linux)

# Purchased Component Requirements

* Hard disk drive to store a local database
* Production of gift cards
* Weather API access - for query charges

# Free Open Source Component Requirements

* C++ Development Root – created by Thomas Bettens

# Interface Requirements

## Noteworthy Hardware and Hardware Interface Requirements

* Computer with monitor, mouse, keyboard, a way to connect to internet

## Software Interface Requirements

* Database to store flight and user information
* Tax calculator
* Location, time, and weather services
* Credit card and banking authorization

# Application-Specific Domain (Business) Rule Requirements

| ID | Rule (Requirement) | Changeability | Parent Domain Rule ID |
| --- | --- | --- | --- |
| RULE1 | Cancellation and refund of flights.  Flights must be cancelled before a specific date given by the airline in order to receive money back. If the date has passed, a partial refund may be offered.  Flight can be cancelled with a refund up to one month before the flight. After that, the airline company takes 25% each week from the paid amount. The rest is refunded. | Low. Many airline companies are very strict when it comes to cancellation. | Airline company policy. |
| RULE2 | Earning reward points has a minimum payment amount of $150.  Examples:  A base 100 points are awarded for each way in a flight. Scales the more expensive a flight gets. Every additional $100 spent on a ticket is 50 points. | Medium. More points can be offered during different times of year and during promotions. Depends on the Tuffy Flights development team. | Tuffy Flights policy. |
| RULE3 | Reward points can be used only on certain things.  Examples:  Flights, seat selection, meals, bags, and more can be redeemed using earned reward points. Point prices vary by the airline. | High. More options can be added or removed depending on the airline’s offerings. | Tuffy Flights policy. |
| RULE4 | Delayed flights add 25 points to a user’s account. | Medium. Subject to change depending on if there are promotions or severe circumstances regarding delayed flights. Tuffy Flights is in charge of these rules. | Tuffy Flights policy. |

# Legal Requirements

* Tax must be applied to sales by the law of the location of purchase.
* Passports must be required for international flights.

# Information in Domains of Interest

* Pricing: Rates for flights are set by the airlines. They are subject to change on varying conditions. A common one is that flights get more expensive the sooner the date is.
* Credit and Debit Payment Handling: If a transaction is made with a credit or debit payment card, it needs to be approved by the bank. Sales are to be recorded in a database, updating the balance. Funds are to be transferred after the transaction.
* Limits: There are no limits to how many flights a Customer can book.

# Report Requirements

## Flight Listing

### Description

This report contains values that are put into a flight entry report for the application. Many listings are shown to the User. These values are subject to change. The example shown below is for a round trip flight from Los Angeles to Paris. Green text items inside the report can lead to other pages upon selection.

### Format and Content Requirements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dates | Departure | Destination | Stops | Price, Trip | Weather | Status |
| December 1 – December 20 | Los Angeles - Los Angeles International Airport - LAX | Paris - Charles de Gaulle Airport - CDG | Chicago - O'Hare International Airport - ORD | $1,281  Round Trip | Sunny, 73F | OPEN - BOOK FLIGHT |

## User Info

### Description

This report contains values that go into a user’s authenticated information. Users can view these on their profile page. They are be presented in a top-down order due to only one info entry per user. Green text items inside the report can lead to other pages upon selection.

### Format and Content Requirements

|  |  |
| --- | --- |
| Name | John Doe |
| Email | JohnDoe123@gmail.com |
| Points | 1000 |
| Home Location | Los Angeles, California |
| Flights | December 1 – December 20 – Los Angeles to Paris - $1281 |
| Payment Methods | VISA ending in 1234 |

# Packaging

Application is available for download as a zip. Physical gift cards have a gift card envelope.

# Technical Standards

* Code will be using the most recent stable release of C++, which is C++17.
* Weather API is kept up to date with most recent updates.