Let’s Fly

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CST-451 Capstone Project Requirements Document

Grand Canyon University

Instructor: Professor Mark Reha

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**ABSTRACT**

This is a airlines ticket reservation site. The goal is to create an application which user can buy airlines ticket in very reasonable amount. User will enter their origin and destination airport with the desired date of flight and based on that information application will suggest number of available flights matching the description. User can choose from one of the options and specify the number of passenger and finally book the flight using their PayPal account for payment.

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| History and Signoff Sheet |

**Change Record**

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| --- | --- | --- |
| **Date** | **Author** | **Revision Notes** |
| 11/09/2018 | Sunjil Gahatraj | Decided to drop Bitcoin Payment from the application because of lack of SandBox environment and API services |
| 11/11/2018 | Sunjil Gahatraj | Finished writing design document |
| 12/09/2019 | Sunjil Gahatraj | Finished first milestone. Added forms and database to the project |
| 1/15/2019 | Sunjil Gahatraj | Changed project to Maven Project, added N-Layer architect to the structure of application |
| 1/25/2019 | Sunjil Gahatraj | Removed JavaScript date picker because it was causing problem while trying to pick two dates for two way search |
| 2/11/2019 | Sunjil Gahatraj | Changed database from Derby to MySQL database. Added Payment page |
| 3/3/2019 | Sunjil Gahatraj | Added cart system to application so that user can added flight and check out at the end.  Using session |
| 3/3/2019 | Sunjil Gahatraj | Added PayPal payment system to the application |
| 3/20/2019 | Sunjil Gahatraj | Bootstrap forms and footer |
| 3/25/2019 | Sunjil Gahatraj | Deployed application in AWS |
| 4/10/2019 | Sunjil Gahatraj | 1. Added functionality to add multiple flights in the cart  2. Added functionality to display select button on flight search result page to make sure user do not select more than 2 flights |
| 4/13/2019 | Sunjil Gahatraj | 1. Added UserFlight model class  2. Added UserDataService and UserDataAccessInterface to handle user related query  3. Added method in Business service class to add user and flight information in database  4. Once user confirm the information, all the flights associated with user's name with flight information will be stored in database  5. Bootstrapred Flightsearch pages and search result page |
| 4/14/2019 | Sunjil Gahatraj | 1. User can now search, select, add info, view summary, and buy ticket. End to end connectivity  2. Added JSTL if tag to hide purchase button until user confirm the summary  3. User can see their ticket info while filling out personal informatio. Added div in userDetail page to show selected flight detail |
| **Date** | **Author** | **Revision Notes** |
| 9/23/18 | Sunjil Gahatraj | Added wireframe, ER diagram, Component diagram |
| 9/22/2018 | Sunjil Gahatraj | Finished writing functional, non- functional, and technical requirements |
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| **Overall Instructor Feedback/Comments** |

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**Integrated Instructor Feedback into Project Documentation**

Yes  No

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Functional Requirements

**Use Cases**

Describe the sequence of functional actions a project performs with either textual Use Cases, UML Use Case diagrams, or if using Scrum provide a link to the User Stories (see template included in course materials).

1. **Search Flight**

|  |  |  |
| --- | --- | --- |
| **As a(n) <actor>** | **I would like to** | **So that** |
| As a user | I would like to be able to enter a destination airport | So that I can search flight to that airport |
| As a user | I would like to be able to enter an origin airport | So that I can search flight from that airport |
| As a user | I would like to enter a flight date | So that I can search flight on that date |
| As a user | I would like to choose one-way flight | So that I can book for one-way flight |
| As a user | I would like to choose round trip flight | So that I can book round trip ticket |
| As a user | I would like to see warning if the destination airport is not found | So that I can change it |
| As a user | I would like to see warning if the origin airport is not found | So that I can change it |
| As a user | I would like to see warning if the origin airport is left blank | So that I can enter origin airport |
| As a user | I would like to see warning if the destination airport is left blank | So that I can enter destination airport |
| As a user | I would like to see warning if the date is left blank | So that I can enter a date |
| As a system | I need origin airport to be filled out | So that I can perform search |
| As a system | I need destination airport to be filled out | So that I can perform search |
| As a system | I need date to be filled out | So that I can perform search |

1. Flight Search Result

|  |  |  |
| --- | --- | --- |
| **As a(n) <actor>** | **I would like to** | **So that** |
| As a user | I would like to see all available flight matching description | So that I can choose my flight |
| As a user | I would like to see the date of the flight | So that I can choose flight on desired date |
| As a user | I would like to see the total flight time | So that I know how total flight time |
| As a user | I would like to see layover | So that I know the total hours of layover |
| As a user | I would like to see to meal options | So that I know if the meal is included or need to be purchased |
| As a user | I would like to see connection flight airport | So that I know where I stop for connecting airport |
| As a user | I would like to see aircraft type | So that I know the aircraft type I am flying |
| As a user | I would like to see message there in no flight available matching the description | So that I can look for alternative  flight |
| As a user | I would like to see the price of each flight | So that I can compare the pros and cons for paying different prices |
| As a user | I would like to be able to go back to flight search page if I want to | So that I can make changes if required |
| As a user | I would like my flight destination airport to be displayed | So that I know the destination I am flying to |
| As a user | I would like my origin airport to be displayed | So that I know the origin airport I am flying from |
| As a user | I would like to see flight date display | So that I know the date I am booking my flight for |
| As a user | I would like to be able to select desired flight | So that I can book the flight |
| As a system | I need to generate all flights that matching description | So that user can choose desired flight |
| As a system | I need to generate layover in flight description | So that user can view the layover information |
| As a system | I need to generate connecting flight information | So that user can view connecting flight information |
| As a system | I need to generate total flight time | So that user can view total flight time information |
| As a system | I need to generate aircraft type | So that user knows the aircraft they are flying |
| As a system | I need to generate the price for each flight | So that user can get the price information |

1. Flight Booking/conformation

|  |  |  |
| --- | --- | --- |
| **As a(n) <actor>** | **I would like to** | **So that** |
| As a user | I would like to be able to see the flight date | So that I know the date I am booking my flight for |
| As a user | I would like my flight destination airport to be displayed | So that I know the destination I am flying to |
| As a user | I would like my origin airport to be displayed | So that I know the origin airport I am flying from |
| As a user | I would like to be able to see the ticket price | So that I know the amount I am going to pay |
| As a user | I would like to see the flight number | So that I can share the information with family and friends |
| As a user | I would like to be able the confirm the booking | So that I can move forward with payment |
| As a system | I need to generate the flight date based on user’s previous selection | So that user can be sure about the flight date |
| As a system | I need to generate total layover duration | So that user can know the total hours they are going to stop at the connecting airport |
| As a system | I need to generate connecting flight information | So that user can view connecting flight information |
| As a system | I need to generate display total flight time | So that user can view total flight time information |
| As a system | I need to generate display aircraft type | So that user knows the aircraft they are flying |
| As a system | I need to generate the price for each flight | So that user can get the price information |
| As a system | I need to show the destination airport information | So that the user knows the airport they are flying to |
| As a system | I need to show the origin airport information | So that the user knows the airport they are flying from |

1. Flight payment

|  |  |  |
| --- | --- | --- |
| **As a(n) <actor>** | **I would like to** | **So that** |
| As a user | I would like to be able to enter my first name | So that I can verify myself at the airport |
| As a user | I would like to be able to enter my last name | So that I can verify myself at the airport |
| As a user | I would like to be able to enter my phone number | So that I can be notified if anything changes |
| As a user | I would like to be able to enter my email address | So that I can get ticket confirmation email |
| As a user | I would like to see warning if the first name field is left blank | So that I can fill it out |
| As a user | I would like to see warning if the last name field is left blank | So that I can fill it out |
| As a user | I would like to see warning if the phone number field is left blank | So that I can fill it out |
| As a user | I would like to see warning if the email field is left blank | So that I can fill it our |
| As a system | I need first name field to be field out | So that I can book the ticket for right person |
| As a system | I need last name field to be filled out | So that I can book the ticket for the right person |
| As a system | I need date of birth field to be filled out | So that I can book the ticket for the right person |
| As a system | I need email field to be filled out | So that I can send confirmation email |
| As a system | I need phone number field to be filled out | So that I can notify user if anything changes |
| As a system | I need to generate warning if the first name filed is left blank | So that user can fill it out |
| As a system | I need to generate warning if the last name filed is left blank | So that user can fill it out |
| As a system | I need to generate warning if the date of birth filed is left blank | So that user can fill it out |
| As a system | I need to generate warning if the email filed is left blank | So that user can fill it out |
| As a system | I need to generate warning if the phone number filed is left blank | So that user can fill it out |
| As a user | I would like to be able to enter my PayPal’s account username | So that I can pay for my flight |
| As a user | I would like to be able to enter my PayPal’s account password | So that I can pay for my flight |
| As a user | I would like to see warning if the PayPal account username name field is left blank | So that I can fill it out |
| As a user | I would like to see warning if the PayPal account password field is left blank | So that I can fill it out |
| As a system | I need PayPal account username field to be filled out | So that I can process the payment |
| As a system | I need PayPal account password field to be filled out | So that I can process the payment |
| As a user | I would like to see a warning if my PayPal account username and password do not match | So that I can update my username and password input |
| As a system | I need to generate warning if the PayPal account username and password do not match | So that user can update their username and password entries |
| As a user | I would like to see warning if the system could not find my PayPal account | So that I can contact PayPal |
| As a system | I need to generate warning if the user’s PayPal account could be found | So that user knows about the reason for failed payment attempt |
| As a user | I would like to see the message/warning if my transition gets declined | So that I know the reason for declined payment |
| As a system | I would like generate warning/message if user’s payment gets declined | So that user knows the reason for declined payment |
| As a user | I would like to see the total flight cost | So that I know the expected transition from PayPal account |
| As a user | I would like to see the flight detail | So that I know I am booking the correct flight |
| As a system | I need to generate total flight cost | So that user knows the expected payment amount |
| As a system | I need to generate flight detail | So that user knows the information they are booking |

Non-Functional Requirements

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| --- | --- | --- | --- |
| **Function** | **As a(n) <actor>** | **I would like to** | **So that** |
| Backup | As a database administrator | I would like to backup sales data in every 24 hours | So that I do not loose data |
| Database | As a system | I would like to store user’s information on database | So that I can use them when needed |
| Backup | As a database administrator | I would like to backup sales data in every 24 hours | So that the data loss is minimum in case of database failure |
| Backup | As a developer | I would like to backup my application after each update or changes | So that I can revert to stable version if latest version is unstable |
| Certification | As an application owner | I would like my application to be certified by different antivirus companies | So that user can trust the application |
| Data integrity | As a database administrator | I would like to be provided accurate and consistence data all the time | So that I can use them to make application better and reliable |
| Deployment | As a developer | I would like to host my application in Tom Cat server | So, I can be sure my application is running in very compatible server with Spring framework |
| Disaster recovery | As an application owner | I would like my application to run on at least two servers one primary and another secondary | So that I can pull data and use another one in case of disaster |
| Documentation | As an application owner | I would like my application well documented | So that I can refer to documentation if I need to make any changes |
| Documentation | As a developer | I would like my application to be commented | So that I can refer to comment while making changes |
| Documentation | As a developer | I would like to have Java doc for my application | So that I can refer to it while making changes |
| Documentation | As a database administrator | I would like my database layer to be well commented | So that I can refer to it while making changes |
| Documentation | As a database administrator | I would like have Java doc of database layer | So that I can refer to it while making changes |
| Maintainability | As a developer | I would like to have 10 min unannounced downtime in every two weeks | So that I can apply changes |
| Maintainability | As a database administrator | I would like to have 10 min unannounced downtime once in 30 days | So that I can apply changes |
| Performance | As an application architect | I would like to have 5 min session while processing payment | So that I can put the application will put seat back to market if the payment could not be processed |
| Performance | As an application architect | I would like to get flight search response back in maximum 10 seconds | So that I can make sure user are presented with up to date flight options |
| Platform | As an application architect | I would like the application to run on windows operating system | So that windows user can use it |
| Platform | As an application architect | I would like the application to run on Mac OS | So that mac user can use it |
| Platform | As an application architect | I would like the application to run on Android OS | So that Android user can use it |
| Platform | As an application architect | I would like the application to run on all major web browser | So that maximum number user can use it |
| Stability | As an application architect | I would like the application to be stable | So that user can have good experience while using it |
| Security | As an application architect | I would like to have secure payment transition | So that user can trust the company with their money |
| Testability | As an application architect | I would like to test the application for process maximum number of search result in 5 seconds | So that I can find out the application’s processing limit |
| Testability | As an application architect | I would like to test the application for data mining from an unauthorized user | So that I can be sure our data is secure |
| Testability | As a developer | I would like to test the User Interface (UI) effectiveness | So that I can be sure our UI is easy to navigate |

Technical Requirements

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| --- | --- | --- |
| **Technology** | **Detail** | **Version/site** |
| Spring Framework | Spring Framework is the Java based application framework. | 5.0 |
| Eclipse Java EE IDE for Web Developers | IDE for Java Enterprise web development | Oxygen. 3a |
| Tomcat Server | Deployment server that support Java Servlets and JSPs. | 8.5 |
| MySQL database | It is an open source relational database implemented entirely in Java and available under the Apache License | 10.14.2.0 |
| Java version | This the java version that need to be supported by server and client device | 7 |
| Apache Tile | This is a template composition framework | 3.0.8 |
| JSP Standard Tag Library (JSTL) | Leverage the tags to use conditional statements in the JSP pages | 1.2 |
| Github | Repository to manage code | Latest |
| Bootstrap | Make web application responsive | 4.0 |
| MVC design pattern | Separate Model, View, and Controller to make code more manageable and less dependent | N/A |
| N-Layer Architect | Design pattern that separate Presentation, client, business, data access layers to make code more manageable and less dependent | N/A |
| API service | API service to use BrainTree payment gateway | N/A |