AST6 Airline Online Service

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## Project Overview

Our objective is to develop a web-based application for stakeholders who have recently founded an airline named Airline Services Team-6 (or AST6) and are in need of a website that can provide a booking service to their customers. Because they are new in the market, they want their website to be released as fast as possible, and they are giving us 3 months to accomplish their expectations. Needless to say, they consider efficiency, security, reliability and scalability of the utmost importance. A small list of the features that they find absolutely essential:

* Client:

1. UI is responsive, simple but modern.
2. Console interface for users to manage their flight, special offers and flight history
3. Search functionality that allows users to sort their options by price/layovers/etc

* Server:

1. Fast and accurate response and handling logic operation based on user’s input.
2. Connect client-server workflow to database management system

* Database:

1. Scalable: not specific
2. Secure: user’s information
3. Reliable: data should be available all time
4. Consists of a collection of data related to flights (costs, number of seats, etc)

## 

## System Environment

* 3-tier Architecture diagram:

Client

(ReactJS)

HTTP request

query

AWS (Cloud)

return data

HTTP response

Business layer

(express.js)

Data access layer (mysql

-connector)

Database

(MySQL)

Server (2-layer)

* Hardware: N/A
* Software:

1. MySQL Workbench
2. Visual Studio Code (latest)
3. Node.js (v11.10.1)
4. Internet browser (Chrome, Firefox, Safari)

* RDBMS: MySQL
* Cloud: AWS (EC2)
* Frameworks & its core dependencies

1. Front-end: React (v3.0.1), Redux (latest)
2. Back-end: express.js (v4.16.1) and mysql (connector, v2.17.1)

## 

## Functional Requirements

1. **Users and how users access your system**

There is only one type of user which is customer/ client to our airline services. All the flight information and processes will be pre-set and simulated.

\*\* Users must sign up to start using our services.

* 1. Sign-Up

Users will be prompted to enter some information:

* + - First name, middle initial and last name
    - Gender
    - Date of Birth (DOB)
    - Email. This is important because users will have to use email to sign in our services, to get email confirmation (see 2-factor authentication, page 5), or to reset their password
    - Password (8 characters, 1 special character)
  1. Sign-In
  + Users can sign in using registered email and password
  + If users set 2-factor authentication, they will have to enter a confirmation code sent to their registered email
  1. Reset Password
* The function invokes when users click the ‘Forgot password’ button.
* It will then ask the user to provide the email to receive reset-password link.

## Non-functional Issues

* **Graphical User Interface (GUI)**

We will be building a Graphical User Interface for this application using React, Redux, HTML and CSS3/Bootstrap. To use our application to search for flights, users will have to create an account with sign up form using an ‘Enroll now’ button that will be placed in the center of the page. If they are not signed in and try to access via direct url, they will be redirected to the Welcome page where users can sign in using the form with their registered email and password. Also in the Welcome page, users can reset their password with ‘Forgot password’ using their registered email address. This will allow us to send them a verification email and allow them to change their password.

Once users sign in, they can search for flights using our search bar which will be placed at the top of the page. When they search, they will fill in their departing location and desired destination, as well as departure and return dates. Users will then click search or press enter to start querying for their flights, then the page will display a list of flights matching the given criteria in our database. Users can open up advanced search to refine some search options as well as prioritization for time in day and flight classes. Moreover, users will be able to sort the returned flights by total duration/number of stops and price, they will also be able to set the min and max price when searching so they do not have to view tickets outside of their budget. Having these search options will allow users to find a flight that they need in the most streamlined way. In addition, users can change their profile by clicking a button in the upper right part of user dashboard. This will bring users to profile page that allows them to change their password and change their preferences. There will be a menu on the left of the page that allows them to do things such as manage their flight information, change or upgrade their flight, check-in their flight, or cancel entirely.

1. **Security, access control, …etc**
   1. Authorization
   2. Authentication
   3. Secure sign-in: two-factor authentication (using email to verify)
   4. User’s password is hash-stored in database
   5. Capacity of flight airline
   6. Maintainability of the system
   7. Reliability of booking/flight information
   8. Performance of this booking service (Times, overall experience, and etc)