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 & Software:

1. Apache2
2. Visual Studio Code (latest)
3. OpenVPN

* RDBMS: MySQL community server (v8.0.17)
* Host: Home server
* Frameworks & its core dependencies

1. Node.js (v11.10.1), npm (v6.7.0)
2. Front-end: React (v3.0.1), Redux (latest)
3. 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.

1. **Describe each functionality/features, functional processes and I/O(s)**
   1. Search for flight:
      1. Using start and destination
      2. Dates
      3. Preference (lowest price)
      4. Apply special offers
      5. Classes (First class, economy plus, economy…)
   2. Prioritize flight fares

i. Based on price range

ii. Based customer review/rate

iii. Based on duration/number of stops

iv. Based on its classes

* 1. Reserve flight

i. Allow user to enter passport information, credit card information, and etc.

ii. Allow user to reserve the menu plan

* 1. Change flight using user console

i. Promote the class fare with reasonable fees

ii. Add one/more people into this journey

* 1. Cancel reservation using user console

i. Cancel reservation

ii. Fee is subject to charge

* 1. Check-in (24 hours before flight) and get seat number using user console

## Non-functional Issues

1. **Graphical User Interface (GUI)**
   1. Web browser
   2. Mobile device’s browser
   3. GUI is built with React, HTML5 and CSS3
2. **Security, access control, …etc**
   1. Authorization:
   2. Authentication: J
   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)