Northeastern University
College of Engineering

Expanded Travel Agency

Design Report

Course #: *INFO5100*

Course Name: *Application Engineer & Development*

Professor: *Kal Bugrara*

Submitted By:

Xiyue Suo (NUID: 001348347)

Xi Zhao (NUID:001054333)

Academic Term: *Fall 2020*

Date of Submission: *10/31/2020*

Contents

Project Introduction

Our goal is to design a more powerful travel agency model from assignment 4 project, by adding more travel services. Our travel agency will allow user to book a flight, rent a car, or book a hotel to stay, and we provide support if user needs multiple stops on a travel plan.

Object Model Diagram

There are majorly five stakeholders in this model, including travel agency, users, airliners, local hotels and car rental companies. This object model diagram (Figure 1.1) shows how those components relate to each other, and the data flow inside the system.

Airliners provides their fleet and airplanes information to travel agency, each airliner could own zero or multiple fleets and airplanes. Then travel agency makes flight schedule based on provided plane information. Users log into their account, choose to book a flight with a specific seat.

Similarly, car rental companies have cars for rental in motorcade, those available cars' information will be shared with travel agency, then shows on the travel agency can rental service page. Users log into their account and browse available cars and information such as price, available time, and location. If the user chooses to book the car, the booking information will send to travel agency and car rental companies, thus this car will become unavailable in both places.

Hotel reservation follows and same procedure, local hotels store their facility information in the list and share with travel agency. Then travel agency shows the room availability from multiple hotels in the hotel booking page. Users can find their desired room with either location, price, or hotel facilities.

If user chooses the "multiple stops," other than booking flight, hotel, or car on the services page, he/she will be taken to a "multi-stop" page, in this page, user could add stops by needs. For each stop, travel agency system will call other three services (flight, car, and room reservation), depending on departure time and location, arrival time and location, and stay time. For example, user Peter will leave Seattle on October 1, and stay in the NYC util October 4, then he will go to Boston for a meeting in the Northeastern University, then he will go back to Seattle on October 7. In our travel system, he will add two stops on the "multi-stop" service page, our system will take this claim into at least three needs: the flight from Seattle to NYC, the flight from NYC to Boston, and the flight for him to go back to Seattle from Boston. Thus, the flight ticket service will be called three times to search and list flights. If Peter also needs to book hotels during his travel, the room reservation service will also be called twice, to search his stay in NYC

and Boston. The results will be listed with his flights. Similarly, car rental service will be called if Peter also needs a car during his travel. All of the searches above are based on the travel information Peter entered on the multi-stop service page.
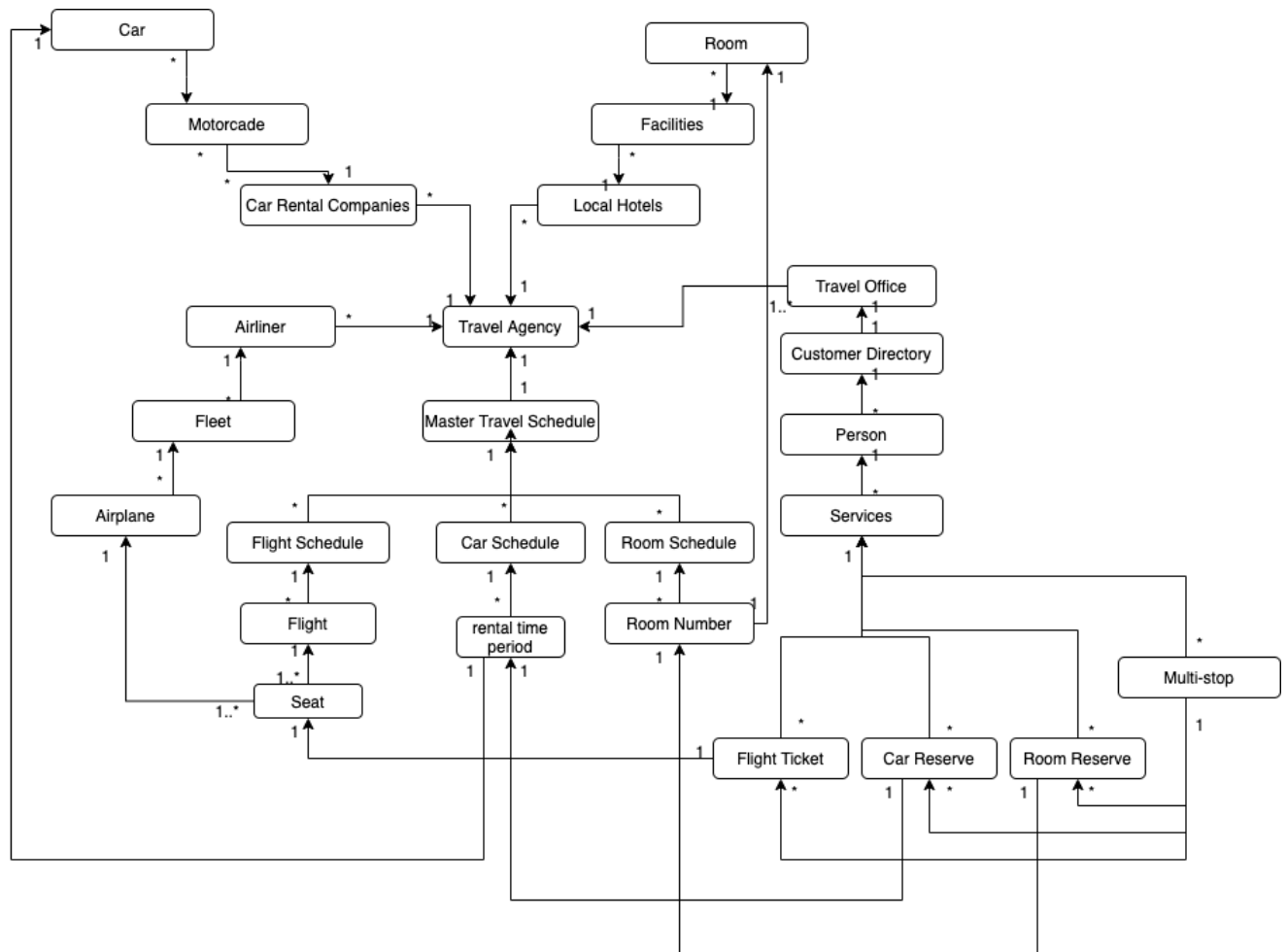

Figure 1.1 Object Model Diagram

Car Rental Company

getMotorcade(); ArrayList<Motorcade>;

Airliner stores and sends fleet and airplane in the ArrayList.

Motorcade

getCar (); ArrayList<Car>;

Motorcade is like the fleet of an airliner. This class stores a list of cars that are provided to travel agency for rental.

Car

AvailableTime; String carModel; String VIN

Car class stores basic information of each car, such as its model, plate, and VIN.

Travel Agency

List<Airliner>; List<CarRentals>; List<Hotels>; List<Customer>

Travel agency has all data from service providers and customers.

Master Schedule

Master Schedule stores all service schedules.

Travel Office

Travel office deals with the data share between travel agency and customers.

Customer Directory

ArrayList<Account>;

Travel Customer stores all customer accounts, allowing customer to log into their accounts and browse travel services.

Person

ArrayList<reservations>;

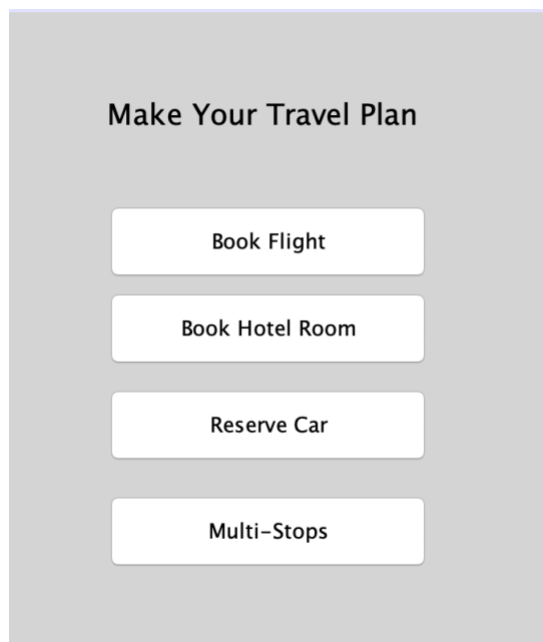User enters his/her account, and able to manage his reservations here.

Services

User can choose different services here, such as rents a car, book a flight, book a room, even make a multi-stop travel.

Multi-Stop

User could add multiple stops as needs.

GUI Design

A couple of important initial GUI designs of this travel agency platform is illustrated as below.

Make Your Travel Plan

Book Flight

Book Hotel Room

Reserve Car

Multi–Stops

Customer is able to choose from book a flight, a hotel, a car or multiple stops travel plan.

Multi-Stops Travel

From	Seattle	10/01/2020			
To	NYC	10/04/2020	☐ Hotel	☐ Rent a car	– Delete this stop
To	Boston	10/07/2020	☐ Hotel	☐ Rent a car	– Delete this stop
To	Seattle		☐ Hotel	☐ Rent a car	– Delete this stop

+ Add a stop

Users could add multiple stops, also they could choose to reserve a hotel room or a car at the same time. Then they will make the reservation step by step.

Choose Your Flight From SEA–BOS

FlightNumber	Departure	Destination	Time

Choose   Next

Peter will make reservation for his first flight from Seattle to Boston. Flight schedule are provided by airliners.

Hotel search results for Peter's stay in NYC. Hotel information are shared by local hotels with travel agency.

Peter will reserve a car while in NYC. Available cars are provided by local car rental companies, to our travel agency system.

Confirm Your Multi-Stops Travel Plan

Seattle	10/01/2020	Flight DL889 From SEA-NYC 8:00am $888
NYC	10/01/2020 – 10/04/2020	JEEP Cherokee at NYC $400
	10/01/2020 – 10/04/2020	AAA Hotel at NYC $444
BOS	10/04/2020	Flight UA123 From NYC-BOS 12:00pm $100
	10/04/2020 – 10/07/2020	GOOD Hotel at BOS $400
Seattle	10/07/2020	Flight UA777 From BOS-SEA 12:35pm $200

Total is : $ 3456   Confirm

This confirmation page for Peter's multiple stops plan, with his choices for every stop. Once Peter confirms his travel plan, this plan will be saved to his account, as well as shared with travel agency.

Summary

This expanded travel agency model will give customers more services to make travel plan. Each customer is able to see the flight schedule, rental car's information, and hotel availability from travel agency page. Those information were shared by service providers with travel agency, who is serves as intermediary agent to help with transactions between customers and companies. Therefore, reasonable data flow is the key for us to solve this business problem.