Computer Information Systems

Project-Assignment 2 Report

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Husky Air Rental Management System

Table of Contents

1.Business Need…….4

2.Business Requirements…….5

3.Assumptions…….7

4.JBGE Analysis Report…….8

5.Fuctional Model…….11

5.1.Use Case Diagram…….11

5.2.Activity Diagram…….12

5.3.Use Case Description…….14

6.Structural Model…….23

6.1.CRC Cards…….23

6.2.Class Diagram…….28

6.3.Object Diagram…….29

7.Behavioral Model…….31

7.1.Sequence Diagram…….31

7.2.Communication Diagram…….33

7.3.State Machine Diagram…….34

7.4.CRUD Analysis…….35

Business Need

Husky Air offers a full range of flight services to the general public and business clients. Currently, Husky Air tracks plane reservations and flight lessons manually which restricts the number of pilots and pieces of equipment that can be offered for rent. A new electronic reservation system would maintain and track all customer, pilot and plane equipment information, all customer transactions, schedule lessons and plane equipment, and interface with an accounting portion that will include Logbook which can be used by Administration department to generate reports.

Husky Air wants to improve how they operate Rental service by upgrading to a computer based system that matches their needs of growing business. In other words, they want to build a better interface for the customers and instructors. The value gained from doing the program better will be realized as the new model propagates to other business areas within Husky Air. The new system should help office personnel to administer the Rental service program in a similar manner to what they do now, but without the time-consuming manual processes. Less effort will be needed to locate information about Customers(pilots) and Instructors availability because it will all be stored and accessed in one place. The data will be accessible with just a few mouse clicks. Another value gained by improving the process is that the process of matching license eligibility of Customers rentals without Instructors will be more efficient and therefore faster. Since the program is tied so closely to the Husky Air business reputation, there is real value added in improving process efficiency.

The success of this project will have a favorable impact on Husky Air's business operations. Once implemented, a computer based system will help streamline operations and reduce costs. Improvements to the current process used to match potential customers with company aircraft and system will make the process more effective (better match of aircrafts to client training needs) and more efficient (faster response to requests for assistance). As their computer based record keeping system evolves improvements to the supply chain operations may be realized with the implementation of a company intranet accessible to suppliers who are critical to inventory needs, such as suppliers of fuel and aircraft parts. The improvements made in the rental program can serve as a prototype in other business operations areas.

Business Requirements:

1.Customer

1.1 Registration & Login

a. New Users should be able to register into system where they should be able to provide pilot's name, address, phone number and so forth, the pilot's number (system generated) and license type (e.g., student pilot, recreational pilot, private pilot, commercial pilot, certified flight instructor), classifications and whether the pilot is instrument rated (i.e., the pilot is qualified to fly on instruments in instrument meteorological conditions (IMC)).

b. Based on their license or skill set Customers will be able to add the Airmen Certifications of their own

c. Once registered users should be able to login into the system from a browser through internet.

1.2 Check Instructor or Plane Availability

a. User should be able to check for Instructor availability by providing the from and to of date and time for which Instructor is needed and then selecting the Instructor from the list of all the Instructors available in the system

b. User should be able to check for Plane availability by providing the from and to of date and time for which Plane is needed and then selecting the Plane from the list of all the Planes available in the system.

1.3 Plane Recommendation

a. Customer who is of student type while making a reservation, after selecting the instructor and then user should be able to select the plane.

b. based on User logbook history if student already received training in selected plane with instructor feedback as good then System should recommend another plane to the user

ex: If a customer has flown high-wing Cessnas, it is a good idea for an instructor to "checkout" a pilot in another type of plane such as the low wing Pipe

1.4 Plane Eligibility

a. Customer who is of non-student type while making a reservation, not necessary of selecting the instructor and they should be able to directly select the plane after providing the from to of date and time for which it is needed.

b. Based on User Airmen Certification and the Plane description if and only if the User has certification matching with the plane description then system should allow making

the reservation or else User should be noted that they are not allowed to select this plane for reservation

1.5 Making Reservation

a. If User is of Student type then system should make sur user selects one instructor who is available for the time provided

b. If User is of non-student type system should not allow user to select the instructor

c. After the above steps User should be able to select the plane and if User is of student type system should check for recommendation and User may or may not opt for the recommendation, if User is of non-student type system will check for Eligibility and unless the eligibility is met system should not allow the user to make a reservation

d. After the above steps system checks for plane availability and if it is available then User should be able to save their reservation and they should be able to view it again by logging into the system, if not available they can repeat steps b-d for the new plane

e. User should be able to edit their active reservations and through this they should be able to select new date and time, instructor and the plane. During which system once again validates the steps a-d for making a reservation with the new details provided while updating the reservation.

2.Instructor

2.1 Registration & Login

a. New Users should be able to register into system where they should be able to provide pilot's name, address, phone number and so forth, the pilot's number (system generated) and license type as certified flight instructor license number and price per hour.

b. Based on their license or skill set Instructor will be able to add the Airmen Certifications of their own

c. Once registered users should be able to login into the system from a browser through internet.

2.2 Schedule Management

a. Instructor should be able to add the hours for which they will not be available due to their personal reason

b. For which they need to provide the date and time for which they will not be available

c. System will update the time for which reservation has been made on instructor in the same location where instructor manages his schedule except the reason will be updated as reservation and its number

d. So Instructor will be able to view the duration for which they are not available for personal reason or because of reservation at same place which would make it easier for them to manage their schedule

2.3 Client Tracking

a. Every instructor should be able to view they reservations made them as instructor

b. That should contain details of the Student and type of the plane and duration for which they have reserved them

3.Admin/CRM

3.1 Planes Management

a. Admin should be able to add new planes and their details to their rental system.

b. PlaneID should be system generated and plane name will be added by Admin

c. Plane's Class will be added which could be single engine land or sea and multiengine land or sea.

d. Plane's category will be added as either airplanes or rotor craft or glider or balloon.

e. Plane's usage could be either Normal or Acrobatic or Utility.

f. Beside these it should also denote whether it is High performance aircraft and it is a complex aircraft.

g. Admin should be able to add the hours for which Plane will not be available due to their maintenance reason

h. For which they need to provide the date and time for which Plane will not be available

i. System will update the time for which reservation has been made on Admin in the same location where Admin manages Plane schedule except the reason will be updated as reservation and its number

j. So Admin will be able to view the duration for which Planes are not available for maintenance reason or because of reservation at same place which would make it easier for them to manage their schedule

3.2 Logbook and Payment

a. Once customer reaches down the Husky Air rentals, Admin will take reservation number and based on that if it is found plane location is Hanger they will request staff to move it Ramp area and update the same in the Reservation management.

b. If Plane needed refueling or not should be available in the reservation based on that Admin will request staff to take appropriate action

c. Once customer on boards the plane Hobbs in time will be records and once it is parked the Hobbs out time will be records and provided to Admin by the customer during hand over

d. Based on the times provided by Customer system should calculated the Plane rental fee, Instructor rental fee and total amount of the rental service and record those details in the Logbook.

e. Once user pays the amount Admin will updated the payment status in the logbook

3.3 License Management

a. If customer is of student type in the logbook the instructor need to provide the rating for reservation.

b. If the rating is good then Admin will update Airmen certification for the Customer of the plane type that has been used for reservation

c. If it is High performance plane then before updating the Airmen Certification Admin should validate if pilot must have received and logged ground and flight training in a high-performance airplane or an approved simulator. Then update on Airmen certification as Yes for IsHighPerformance field

d. Similarly, a pilot must also receive ground and flight training in a complex aircraft (e.g., a plane with retractable landing gear). Then update on Airmen certification as Yes for IsComplex field

JBGE Analysis

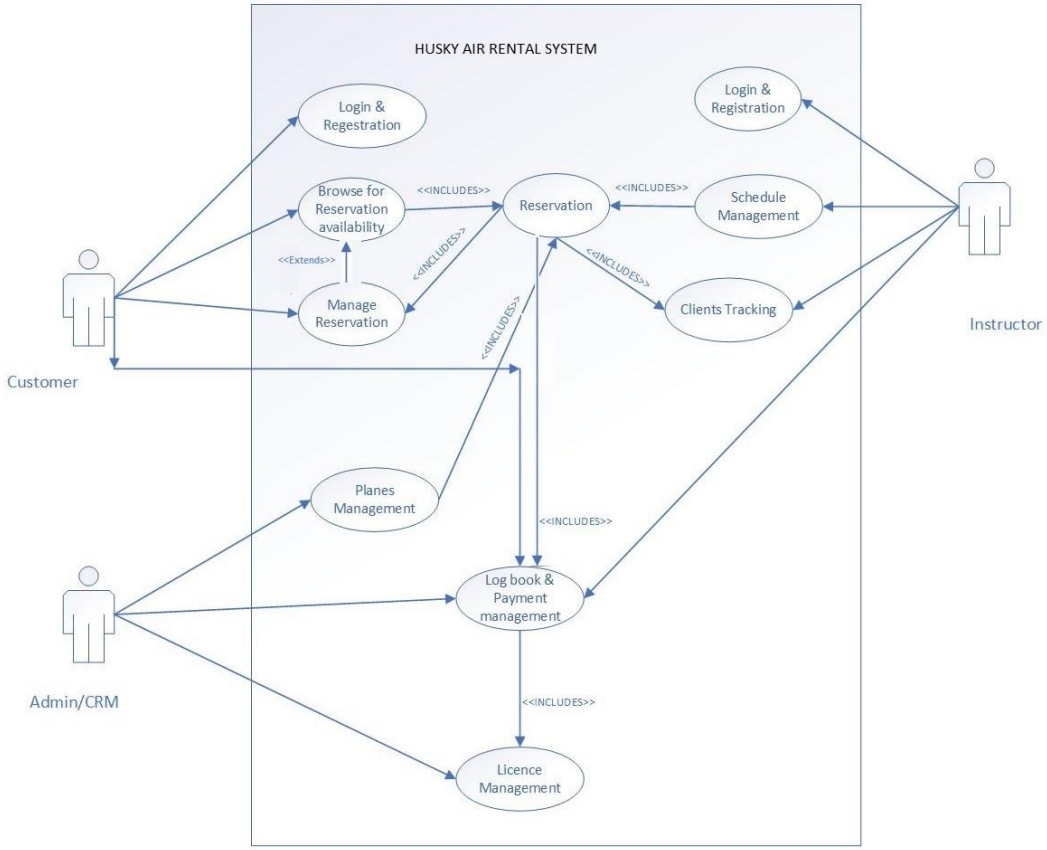
Deliverable	Plan	Actual	Additional Comments
FUNCTIONAL			
Use Case Diagram	1	1	
Use Case Description(s)	9	9	
Activity Diagram(s)	6	2	Because most of the Activity flows are being covered in 2 activity daigrams
STRUCTURAL			
Class Diagram	1	1	
CRC Card(s)	9	9	
Object Diagram(s)	4	2	Avoided scenario where User doesn't met eligibility or doesn't want to go with recommendation of new plane as those are not so different from those produced
BEHAVIORAL			
Sequence Diagram(s)	4	2	Avoided scenario where User doesn't met eligibility or doesn't want to go with recommendation of new plane as those are not so different from those produced
Comms Diagrams(s)	4	2	Avoided scenario where User doesn't met eligibility or doesn't want to go with recommendation of new plane as those are not so different from those produced
State/Transition Diagram(s)	2	2	
CRUDE Analysis	1	1	

Assumptions

1. Only student type customers will be able to make a reservation with Instructor
2. Other than student type Customers will not be able to select Instructor
3. During Registration every user will be able to add all the Airmen certification by themselves.
4. Admin will be updating the certifications only student type customers.
5. For every type of plane with unique combination of plane category, class, usage, High performance and complex the certification will be added by Admin if Customer received good rating from instructor in the Logbook.

Functionoal Model

Use Case Diagram



Use Cases:

1.Login & Reservation(Customer & Instructor)

2.Browse for Reservation Availabilty

3.Instructor Schedule Management

4.Planes Management

5.Reservation

6.LogBook & Payment Management

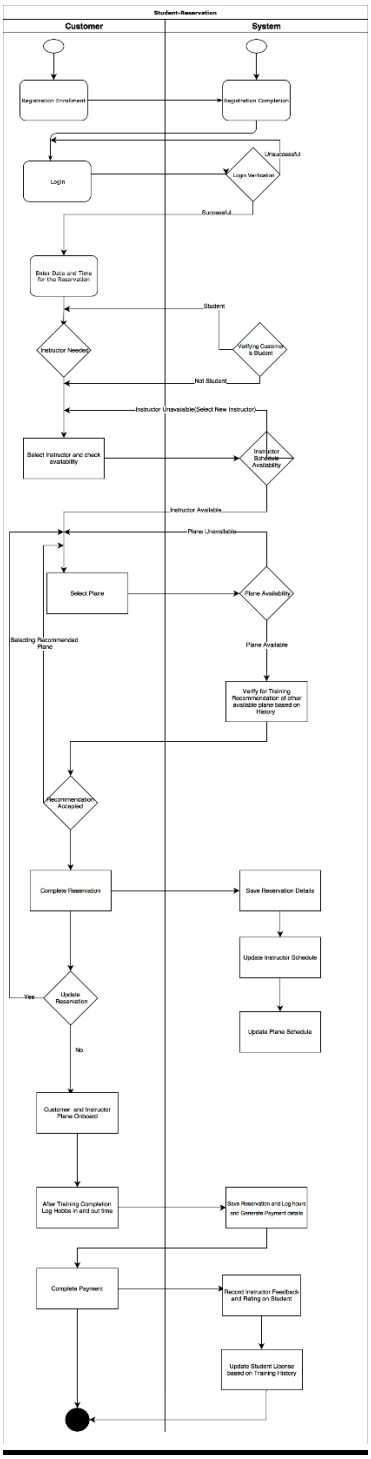
7.LicenseManagement

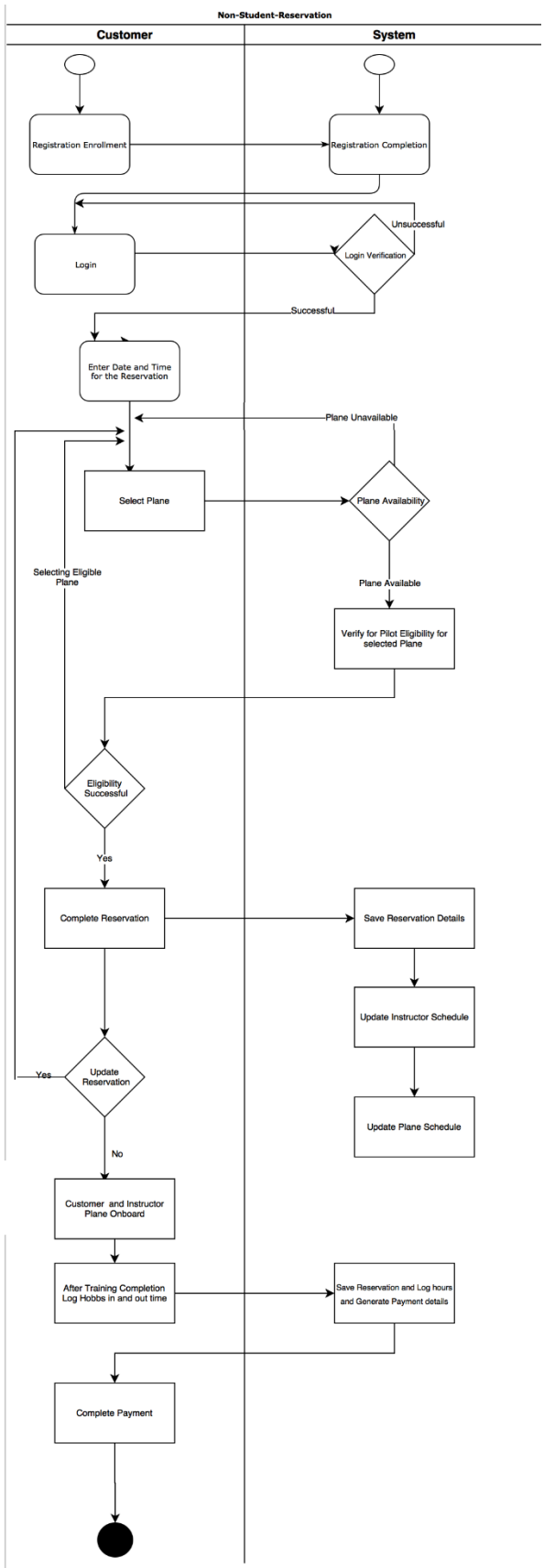
8.Manage Reservation

9.Client Tracking

Activity Diagrams

Providing only two activity diagram which cover every activity performed in Husky Air Rental system(1.Reservation with Instructor made by student type customer 2. Reservation made by non student type customer which doesn't need instructor)


Student-Reservation
Customer
System
Registration Enrollment
Registration Completion
Login
Login Verification
Unsuccessful
Successful
Enter Date and Time for the Reservation
Student
Instructor Needed
Verifying Customer is Student
Not Student
Instructor Unavailable(Select New Instructor)
Select Instructor and check availability
Instructor Schedule Availability
Instructor Available
Plane Unavailable
Select Plane
Plane Availability
Selecting Recommended Plane
Plane Available
Verify for Training Recommendation of other available plane based on History
Recommendation Accepted
Complete Reservation
Save Reservation Details
Update Instructor Schedule
Update Reservation
Yes
Update Plane Schedule
No
Customer and Instructor Plane Onboard
After Training Completion Log Hobbs in and out time
Save Reservation and Log hours and Generate Payment details
Complete Payment
Record Instructor Feedback and Rating on Student
Update Student License based on Training History


Non-Student-Reservation
Customer
System
Registration Enrollment
Registration Completion
Login
Login Verification
Unsuccessful
Successful
Enter Date and Time for the Reservation
Plane Unavailable
Select Plane
Plane Availability
Selecting Eligible Plane
Plane Available
Verify for Pilot Eligibility for selected Plane
Eligibility Successful
Yes
Complete Reservation
Save Reservation Details
Update Instructor Schedule
Update Reservation
Yes
Update Plane Schedule
No
Customer and Instructor Plane Onboard
After Training Completion Log Hobbs in and out time
Save Reservation and Log hours and Generate Payment details
Complete Payment

Use Case Descriptions:

These will give details of every use case provided in the Use case diagram

Use Case Name: **Login & Registration**	ID:1	Importance Level:Medium
Primary Actors: Customer or Instructor		
Stakeholders and Interest: Customer: Who is a student pilot, recreational pilot, private pilot, commercial pilot registers in order to make registration Instructor: Who is a certified flight instructor registers in order to be part of student training		
Brief Description: This Use case explains about who all registers into our system and things needed for it		
Trigger: User Enrollment		
Relationships Association: Include: Extend: Generalization:		
Normal Flow of Events 1.User opens the application in the browser. 2.If User didn't register in system earlier then Selects New User to do the registration 3.Enters the FirstName, LastName, Phone Number and Address 4.Users selects his role as either Instructor or Customer 5.If User selects role as Customer then 5.1. select the License type as student pilot or recreational pilot or private pilot or commercial pilot. 5.2. User Enters Yes or No for InstrumentRated 5.3. Enter the Certifications done with fields Plane_Usage, Plane_Category, Pilot_Class 6.If Users select role as Instructor then 6.1. Store the license type as certified flight instructor 6.2. Enter the License Number 6.3. Enters the PricePrHr details 6.4. Enter the Certifications done with fields Plane_Usage, Plane_Category, Pilot_Class 7.Save the Details of Registration 8.Open the Application again in the browser. 9.User is able to login based details Provided during registration		
SubFlows:		
Alternation Exceptional Flow: 1.1If User is already registered User, Verify if user is able to login directly without registration		

Use Case Name: **Browse for Reservation Availabilty**	ID:2	Importance Level:Medium
Primary Actors: Customer		
Stakeholders and Interest: Customer: Who is a student pilot, recreational pilot, private pilot, commercial pilot		
Brief Description: This Use case explains about how a customer tries to find if reservation availability for particular date		
Trigger: Customer would like to make a Reservation		
Relationships Association: Login& Reservation Include: Extend: Generalization:		
Normal Flow of Events 1.User opens the application in the browser. 2.Customer should be able to login successfully 3.Enter the from and to date and time for which Customer would like to make a reservation 4.Select one of Instructor from the list of Instructors available in the system 5.Select the Plane from the list of planes available in the system 6.System Checks for Recommendation or Eligibility of Customer based on Selected Plane and Airmen Certification and Logbook 6.Click Exit to goto Home Page.		
SubFlows: 4.1: System Verifies for the Instructor Availability in the Instructor Schedule. If not available, select New Instructor. 4.2 Verify the newly selected Instructor Availability 5.1: System Verifies for the Plane Availability in the Plane Schedule. If not available, select New Plane. 5.2 Verify the newly selected Plane Availability		
Alternation Exceptional Flow: 4.1. If Customer License type is not student, then skip the Instructor Selection. 4.2. Customer can quit from making reservation if Instructor not available 5.1 If Plane is not available then Customer can select new plane or quit from application 6.1. If Customer License type is student, then based on recommendation Customer can choose new plane 6.2. If Customer License type is non-student and if not eligible to reserve plane selected then has to select new plane again 6.3 Customer can quit from making reservation if doesn't want to go with reservation or eligibility or if plane not available		

Use Case Name: **Instructor Schedule Management**	ID:3	Importance Level:High
Primary Actors: Instructor		
Stakeholders and Interest: Instructor: Who is a certified flight instructor registers in order to be part of student training		
Brief Description: This Use case explains about how an Instructor can manage their Schedule tries to find if reservation availability for particular date		
Trigger: User opens the system in browser		
Relationships Association: Login& Reservation Include: Extend: Generalization:		
Normal Flow of Events 1.Instructor opens the application in the browser. 2. Instructor should be able to login successfully 3.Instructor Select to view schedule Management 4.System Should display the Schedule of Particular Instructor 5.Instructor Enters from and to Date_Time and enters a reason for which no reservations can be made him/her as Instructor. 6.System should save the new schedule details in Instructor Schedule Management records.		
SubFlows: 5.1: If Instructor want to be unavailable for the reservations to be made in particular span then, Enters from and to Date_Time and enters a reason 5.2. If already reservation available for particular period then Instructor enter new span and try to save it.		
Alternation Exceptional Flow: 5.1. If already reservation available for particular period then Instructor can logoff from application		

Use Case Name: **Planes Management**	ID:4	Importance Level:High
Primary Actors: Admin		
Stakeholders and Interest: Admin: who manages adding new planes and their schedule		
Brief Description: This Use case explains about how an admin add new planes into system and manages their schedule		
Trigger: Add new planes and planes maintenance activities		
Relationships Association: Include: Extend: Generalization:		
Normal Flow of Events 1.Admin opens the application in the browser. 2. Admin should be able to login successfully 3.Admin Select to add new planes 4.Add Planes Name 5.Add Plane Class one these values airplanes, rotor craft, glider or balloon 6.Add Plane Category one these values single engine land or sea and multiengine land or sea. 7.Add Plane Usage one these values normal, acrobatic or utility 8.Add if Plane is HighPerformance as Yes or No 9.Add if Plane is Complex as Yes or No 10.Add the Plane rental per hour detail 11.System should save the details in Planes records		
SubFlows: 5.1: Update Plane details 5.2. If already plane is available Admin can update any of the above details and save it		
Alternation Exceptional Flow: 3.1. If Plane already exists and if Admin want to manage the schedule of it 3.2.Admin selects the new from and to time for which plane will be under maintenance ,if for the span already there is a reservation the Admin can enter new time or logoff from system		

Use Case Name: **Reservation**	ID:5	Importance Level:High
Primary Actors: Customer		
Stakeholders and Interest: Customer: Who is a student pilot, recreational pilot, private pilot, commercial pilot Instructor: Who will be as guide for student pilots Planes: which will be reserved by customer		
Brief Description: This Use case explains about how a customer can make a reservation		
Trigger: Customer would like to make a Reservation		
Relationships Association: Login& Reservation Include: Browse for Reservation, Instructor Schedule Management, Plane Schedule Management Extend: Generalization:		
Normal Flow of Events 1.User opens the application in the browser. 2.Customer should be able to login successfully 3.Enter the from and to date and time for which Customer would like to make a reservation 4.Select one of Instructor from the list of Instructors available in the system 5.Select the Plane from the list of planes available in the system 6.System Checks for Recommendation or Eligibility of Customer based on Selected Plane and Airmen Certification and Logbook 6.Click on Save to make a reservation 7.System should make an entry in Instructor schedule for this span selected by Customer so the Instructor won't be available for other reservation in this span 8.System should make an entry in Plane schedule for this span selected by Customer so the Plane won't be available for other reservation in this span		
SubFlows: 4.1: System Verifies for the Instructor Availability in the Instructor Schedule. If not available, select New Instructor. 4.2 Verify the newly selected Instructor Availability 5.1: System Verifies for the Plane Availability in the Plane Schedule. If not available, select New Plane. 5.2 Verify the newly selected Plane Availability		
Alternation Exceptional Flow: 4.1. If Customer License type is not student, then skip the Instructor Selection. 4.2. Customer can quit from making reservation if Instructor not available 5.1 If Plane is not available then Customer can select new plane or quit from application 6.1. If Customer License type is student, then based on recommendation Customer can choose new plane 6.2. If Customer License type is non-student and if not eligible to reserve plane selected, then has to select new plane again 6.3 Customer can quit from making reservation if doesn't want to go with reservation or eligibility or if plane not available		

Use Case Name: **LogBook & Payment Management**	ID:6	Importance Level:High
Primary Actors: Customer , Admin, Instructor		
Stakeholders and Interest: Customer: Who is a student pilot, recreational pilot, private pilot, commercial pilot Instructor: Who will be as guide for student pilots Admin: who will be updating the plane location, refueling and payment status on Logbook		
Brief Description: This Use case explains how the payment is done for particular reservation or training		
Trigger: Customer already made a reservation and reached down the Husky Air rentals.		
Relationships Association: Include: Reservation Extend: Generalization:		
Normal Flow of Events 1.Customer reaches down the Husky Air Rental Office and submits the reservation ID to Admin/CRM. 2.If location of Airplane is in Hanger in Reservation object Admin will call for staff to relocate it to ranger and update Location status to Ramp aread in reservation. 3.If refueling status in reservation is still in status as needed then Admin wil make sure it is refueled and update it to Not needed in reservation 4.If its Instructor based reservation then Both Customer and Instructor on boards the plane and records the Hobbs in time and after parking it they records Hobbs out time 5.Customer reached down the Office and updates the Hobbs in and out time in the Logbook based on which the system Payment details 6.Once the payment has been received Admin updated the payment on Logbook to paid status. 7.After this Instructor will give his rating as Good based on student training performance		
SubFlows: 5.1: System calculates the Plane rental price based on Total duration and its rental fee per hour available in Planes object 5.2. System calculates the Instructor Fee based on Total duration and Instructor per hour fee available in Instructor profile. 5.3. Add up both the payments to calculate the amount		
Alternation Exceptional Flow: 5.2.1. If reservation is made without instructor skip the 5.2 subflow step 7.1.If reservation is made without instructor then skip the 7th step in normal flow.		

Use Case Name: **License Management**	ID:7	Importance Level:High
Primary Actors: Admin/CRM		
Stakeholders and Interest: Admin: who will be updating the plane location, refueling and payment status on Logbook		
Brief Description: This Use case explains Admin updating the Airmen Certification based on Customers Logbook record		
Trigger: Customer finished with rental service for the reservation made and all the details are records in the Logbook and payment has been made for it		
Relationships Association: Include: LogBook & Payment Extend: Generalization:		
Normal Flow of Events 1.Student type of Customer reaches down the Husky Air Rental Office and submits the reservation ID to Admin/CRM. 2.After the flight training has been completed, Customer reaches down the Office and updates the Hobbs in and out time in the Logbook based on which the system Payment details 3.Once the payment has been received Admin updated the payment on Logbook to paid status. 4.After this Instructor will give his rating as Good based on student training performance 5.If the rating is good then Admin will verify the eligibility of customer for certain type of Airmen certification 6.If Customer is found eligible then Customer Id, Plane Usage type. Plane Category, Pliot Class , IsHigh performance , IsComplex details will be updated in Airmen Certification object accordingly.		
SubFlows: 5.1: If the certification is related to High performance airplane then Admin should check customer has logged ground and flight training in a high-performance airplane or an approved simulator with instructor rating for each reservation as good. 5.2. If the certification is related to High performance then Admin should check for a pilot logged that a ground and flight training in a complex aircraft (e.g., a plane with retractable landing gear) with instructor rating for each as good.		
Alternation Exceptional Flow: 1. If customer is non-student type then skip this operation as it wont needed to be updating Airmen certifications for the reservations made by other type of pilots. 5.If the rating given by the instructor is not good then the Admin/CRM can skip the operation of checking for eligibility of customer for new certification		

Use Case Name: **Manage Reservation**	ID:8	Importance Level:High
Primary Actors: Customer		
Stakeholders and Interest: Customer: Who is a student pilot, recreational pilot, private pilot, commercial pilot Instructor: Who will be as guide for student pilots Planes: which will be reserved by customer		
Brief Description: This Use case explains about how a customer can make a reservation		
Trigger: Customer would like to make changes in the active reservations.		
Relationships Association: Include: Reservation Extend: Browse for Reservation Availabilty Generalization:		
Normal Flow of Events 1.User opens the application in the browser. 2.Customer should be able to login successfully 3.Navigate to Available active reservation that were made by the customer. 4.Customer can enter new from and to date and time for which Customer would like to make a reservation 5.Selects existing or new Instructor from the list of Instructors available in the system 6.Select the existing or new Plane from the list of planes available in the system 7.System Checks for Recommendation or Eligibility of Customer based on Selected Plane and Airmen Certification and Logbook 8.Click on Save to make a reservation 9.System should make an entry in Instructor schedule for this span selected by Customer so the Instructor won't be available for other reservation in this span 10.System should make an entry in Plane schedule for this span selected by Customer so the Plane won't be available for other reservation in this span		
SubFlows: 5.1: System Verifies for the Instructor Availability in the Instructor Schedule. If not available, select New Instructor. 5.2 Verify the newly selected Instructor Availability 6.1: System Verifies for the Plane Availability in the Plane Schedule. If not available, select New Plane. 6.2 Verify the newly selected Plane Availability		
Alternation Exceptional Flow: 5.1. If Customer License type is not student, then skip the Instructor Selection. 5.2. Customer can quit from making reservation if Instructor not available 6.1 If Plane is not available then Customer can select new plane or quit from application 7.1. If Customer License type is student, then based on recommendation Customer can choose new plane 7.2. If Customer License type is non-student and if not eligible to reserve plane selected, then has to select new plane again 7.3 Customer can quit from making reservation if doesn't want to go with reservation or eligibility or if plane not available.		

Use Case Name: **Client Tracking**	ID:9	Importance Level: Medium
Primary Actors: Customer or Instructor		
Stakeholders and Interest: Customer: Who make the Reservations with or without instructors Instructor: Who is a certified flight instructor registers in order to be part of student training		
Brief Description: This Use case explains about how an instructor can view all the reservations that are made this user as instructor.		
Trigger: Instructor already registered and Customer has already made a reservation with this user as their instructor.		
Relationships Association: Include: Reservation Extend: Generalization:		
Normal Flow of Events 1.Instructor opens the application in the browser. 2.Instructor goes to client tracking page and clicks on some button like view to get the list of active reservations with this user as instructor. 3.System should get the list of those reservations with this instructor and display the details like from and to date and time and type of plane selected by the customer and the customer details.		
SubFlows:		
Alternation Exceptional Flows:		

Sturcutural Model

CRC Cards

Front

Class Name: Users	**Id:1**	**Type: Concrete, Domain**
Description: User who is registered into Husky Air Rental System		**Associated Use Cases:2**

Responsibilities	**Collaborators**
Login	Customer
Logout	Instructor

Back

Attributes	
UserID	FistsName
LastName	PhoneNumber
Address	
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	
Other Association:	Customer, Instructors

Front

Class Name: Customer	**Id:2**	**Type: Concrete, Domain**
Description: User who makes a reservation ,updates reservation, looks for instructor and plane availability		**Associated Use Cases:4**

Responsibilities	**Collaborators**
MakeReservation	Airmen_Certifications
UpdateReservation	Reservations
BrowseforAvailability	

Back

Attributes	
CustomerID	
LicenseType	
IsInstrumentRated	
Relationships	
Generalization (A Kind Of):	Users
Aggregation (Part-of):	Reservations, Airmen_Certifications

Front

Class Name: Instructor	**Id:3**	**Type: Concrete, Domain**
Description: User who is an instructor for Student tye licensed Customers and Gives rating to Pilots in Logbook		**Associated Use Cases:6**

Responsibilities	**Collaborators**
UpdateSchedule	Airmen_Certifications
ClientReservationTracking	Reservations
PilotRating	Instructor_Schedule
Getinstr	LogBook

Back

Attributes	
InstructorID	
InstructorLicenseNumber	
PricePerHour	
Relationships	
Generalization (A Kind Of):	Users
Aggregation (Part-of):	Reservations,Instructor_Schedule,Airmen_Certification
Other Association:	LogBook

Front

Class Name: Airmen_Certification	**Id:4**	**Type: Concrete, Domain**
Description: Contains details of Certifications achieved by Customers and Instructors		**Associated Use Cases:2**

Responsibilities	**Collaborators**
GetUserCertifications	Customers
GetPlaneEligibility	Instructors

Back

Attributes	
CustomerorInstructorID	Plane_Category
Plane_Usage	Pilot_Class
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Customer, Instructor
Other Association:	

Front

Class Name: Instructor_Schedule	**Id:5**	**Type: Concrete, Domain**
Description: Instructor Schedule records when Instructor not available due to reservation or other reason will be recorded in this class		**Associated Use Cases:3**

Responsibilities	**Collaborators**
UpdateSchedule	Instructor
PilotRating	Reservation

Back

Attributes	
InstructorID	Date_Time_From
Date_Time_To	Reason
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Instructor
Other Association:	Reservations

Front

Class Name: Plane	**Id:6**	**Type: Concrete, Domain**
Description: Contains details about Planes and their descriptions		**Associated Use Cases:3**

Responsibilities	**Collaborators**
GetPlaneReservations	Reservations
GetPlaneFee	Plane_Schedule

Back

Attributes	
PlaneID	PlaneName
Class	IsHighPerformance
Category	IsComplex
	PricePrHr
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Reservations, Plane _Schedule
Other Association:	

Front

Class Name: Plane_Schedule	**Id:7**	**Type: Concrete, Domain**
Description: Plane Schedule records when Plane not available due to reservation or other reason will be recorded in this class		**Associated Use Cases:6**

Responsibilities	**Collaborators**
GetPlaneAvailability	Plane
	Reservations

Back

Attributes	
PlaneID	Date_Time_From
Date_Time_To	Reason
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Plane
Other Association:	Reservations

Front

Class Name: Reservation	**Id:8**	**Type: Concrete, Domain**
Description: Customers Select Duration of Reservation, Instructor (Optional for Non Students) and Plane based on availability and all those get managed in this clas		**Associated Use Cases:4**

Responsibilities	**Collaborators**
GetCustomerReservation	Customer
GetPlaneReservation	Instructor
GetInstructorReservation	Plane
	Instructor_Schedule
	Plane_Schedule
	Logbook

Back

Attributes

ReservationID	CustomerID
PlaneID	InstructorID
Date_Time_From	Date_Time_To
Plane_Location	IsRefuelingRequired
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Customer, Instructor, Plane
Other Association:	Instructor_Schedule, Plane_Schedule, Logbook

Front

Class Name: Logbook	**Id:9**	**Type: Concrete, Domain**
Description: Customer who made reservation will enter Hobbs in and out time based on which payment is calculated and paid. Based on Logbook Entries and Instructor Rating , Airmen Certification will be updated if necessary trainings are completed		**Associated Use Cases:2**

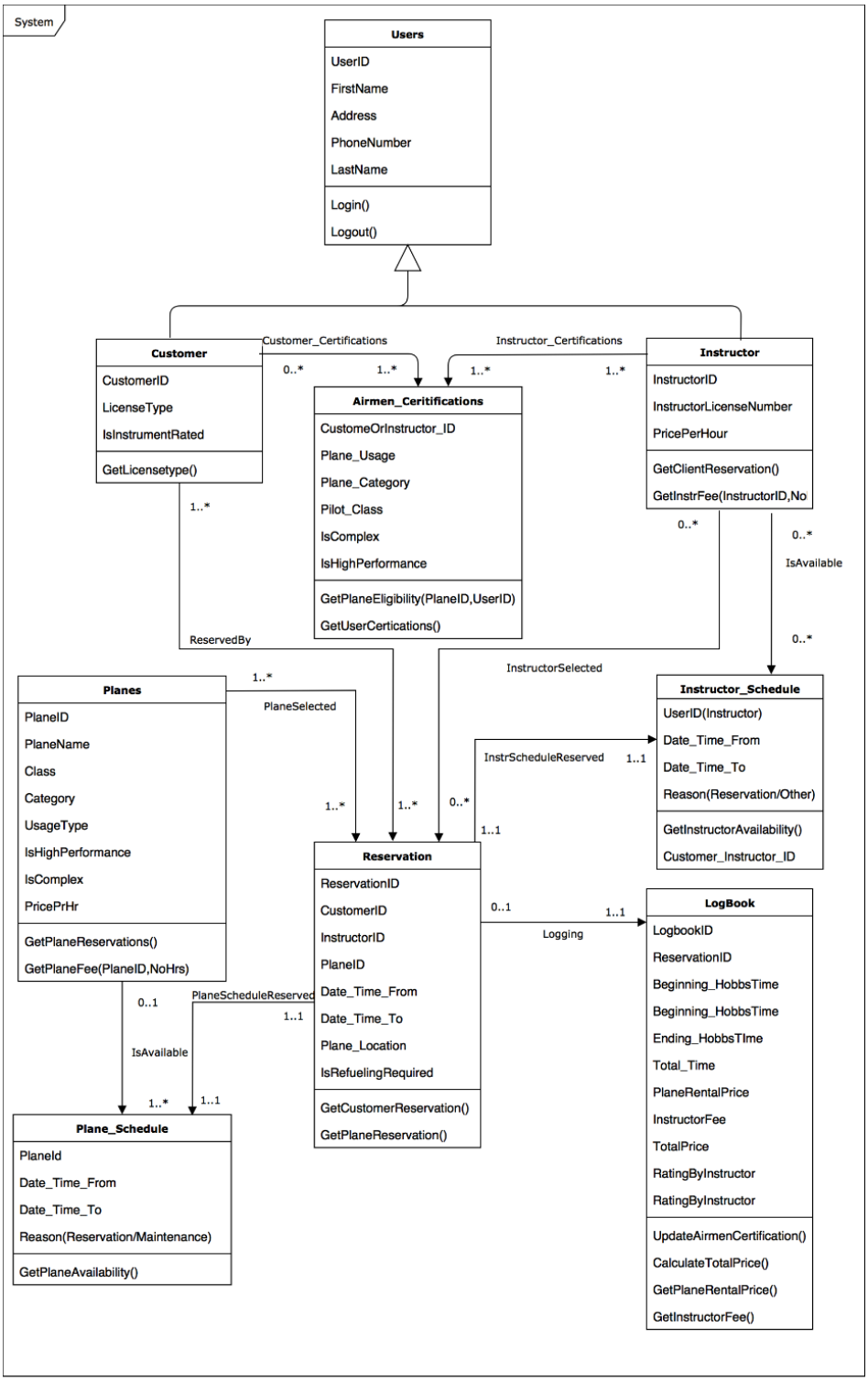
Responsibilities	**Collaborators**
UpdateAirmenCertification	Reservations
CalCulateTotalPrice	
GetPlaneRentalFee	
GetInstructorFee	

Back

Attributes	
LogbookID	ReservationID
Beginning_Hobbs_Time	Ending_Hobbs_Time
TotalTime	PlaneRentalPrice
InstructorFee	TotalPrice
InstructorRating	
Relationships	
Generalization (A Kind Of):	
Aggregation (Part-of):	Reservations
Other Association:	

Class Diagram

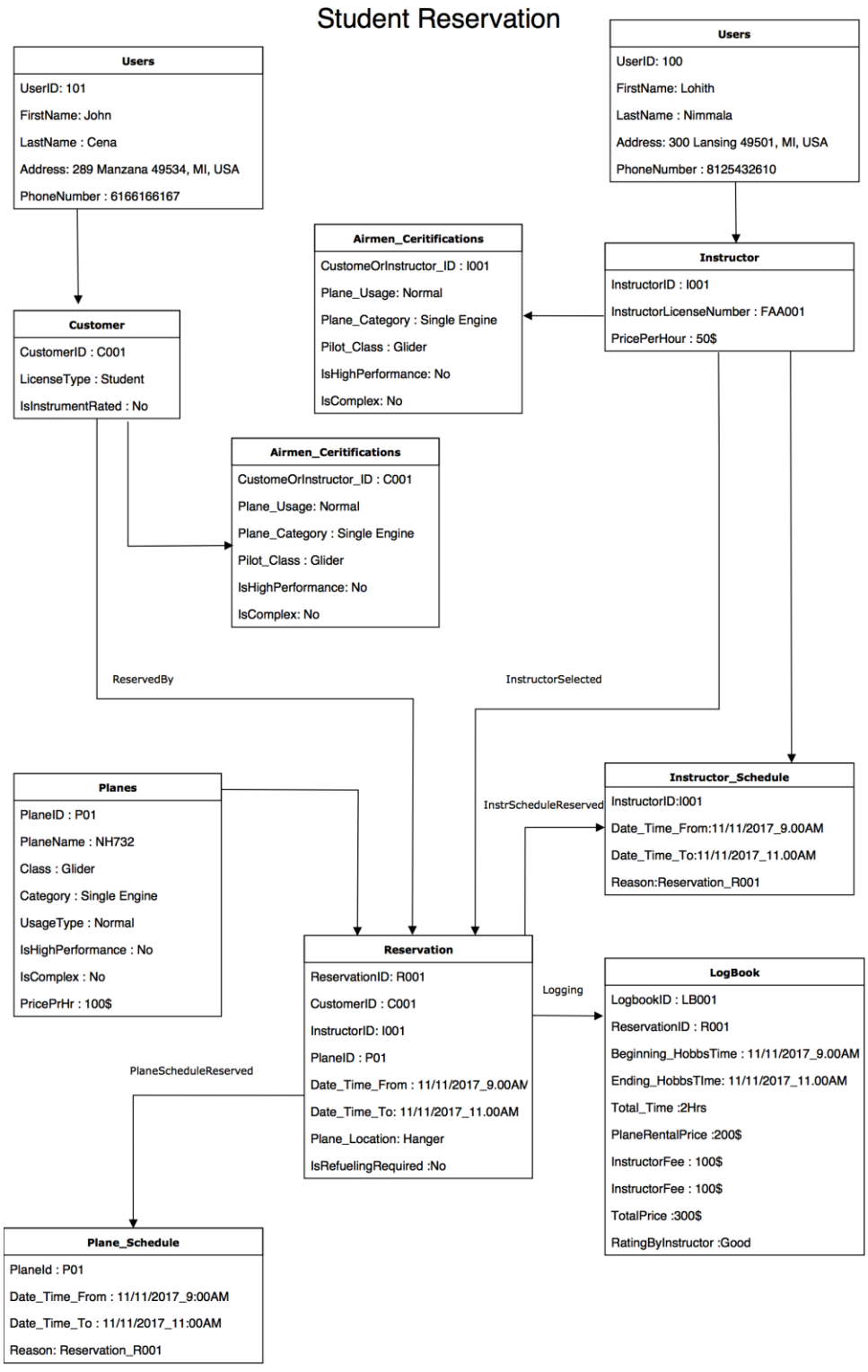
Husky Air Rental System -Class Diagram



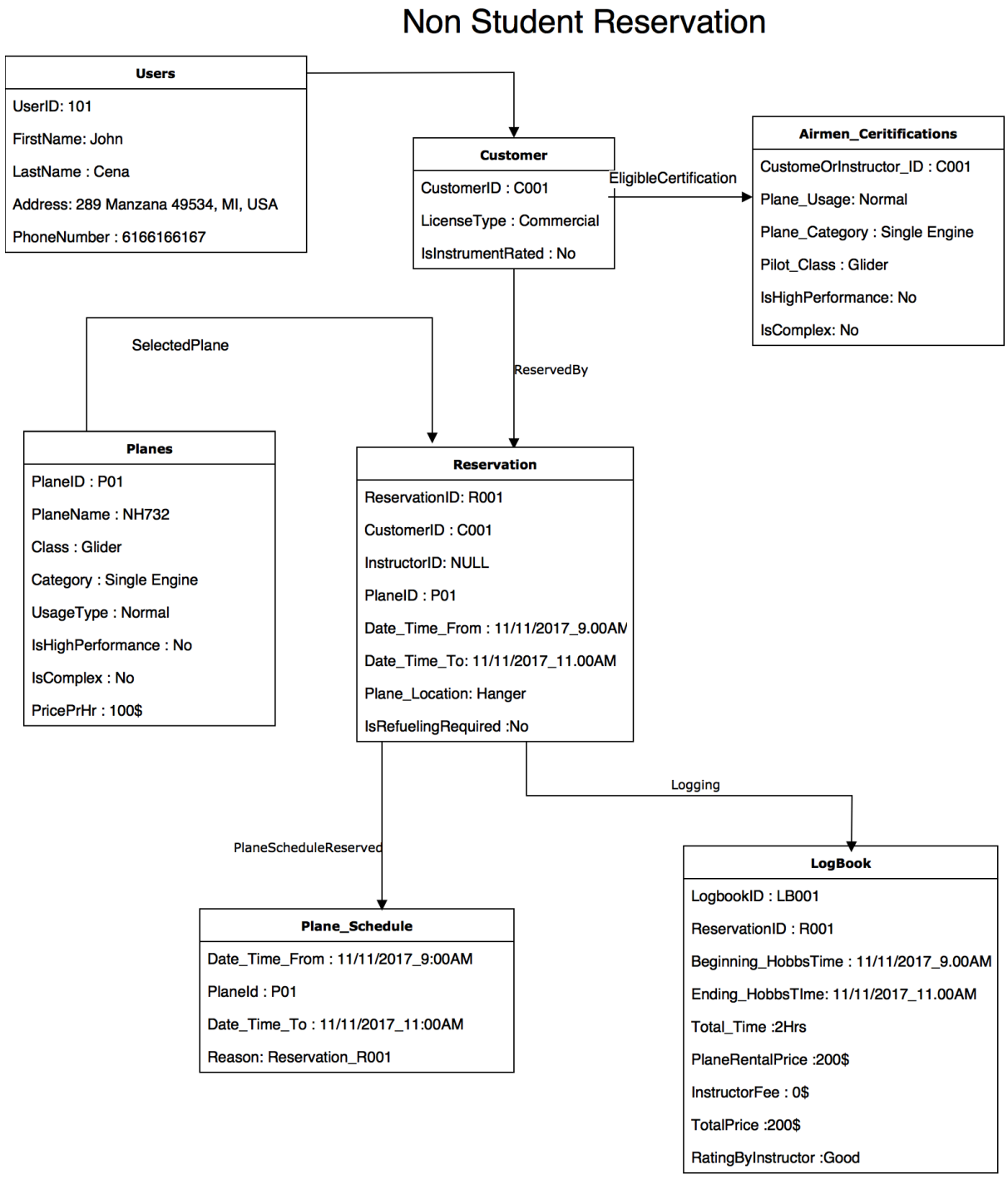
Object Diagram

Object diagrams explains about

1. Reservation made by Student type Customer with instructor



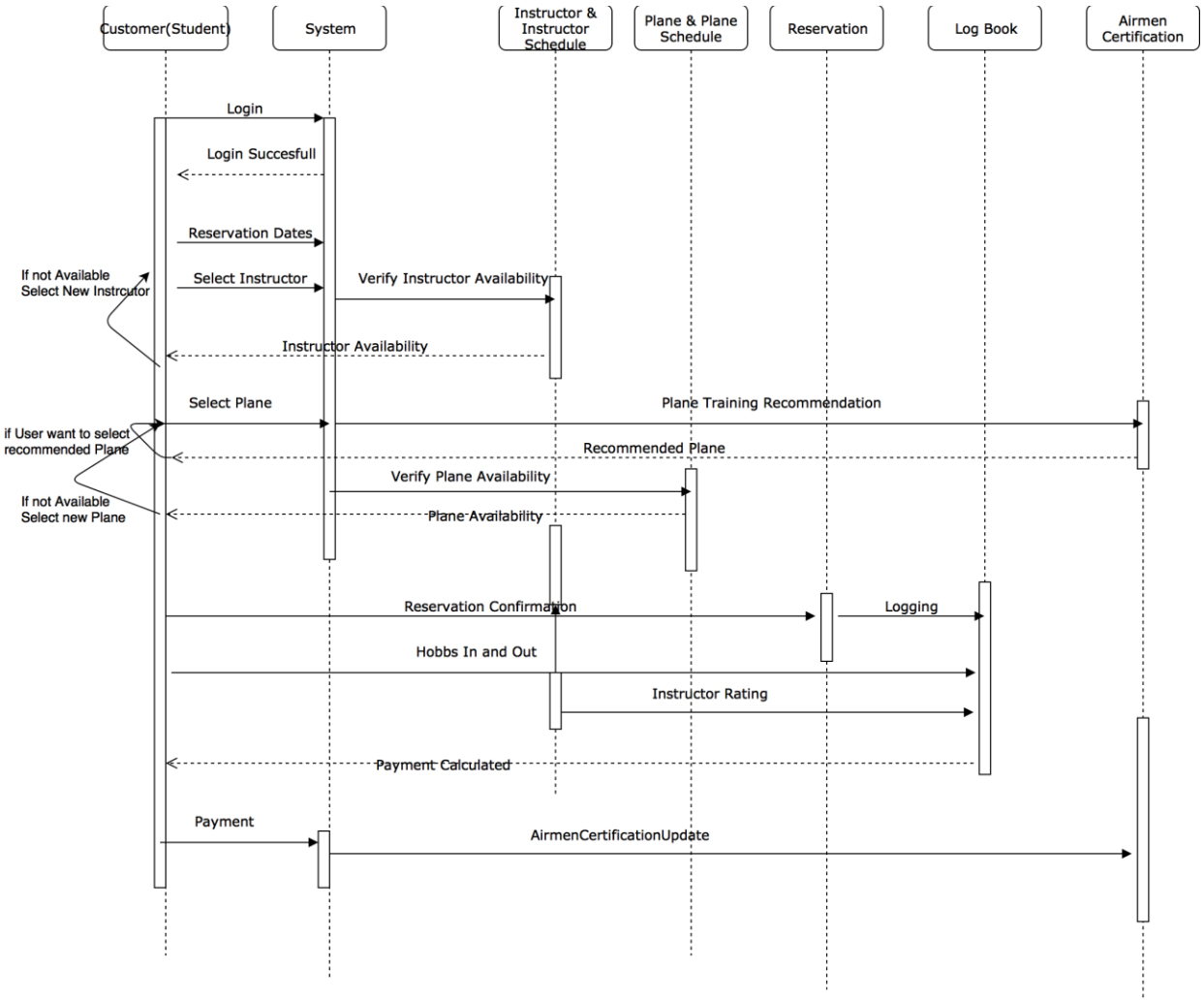
2. Reservation made by non-student type Customer without instructor



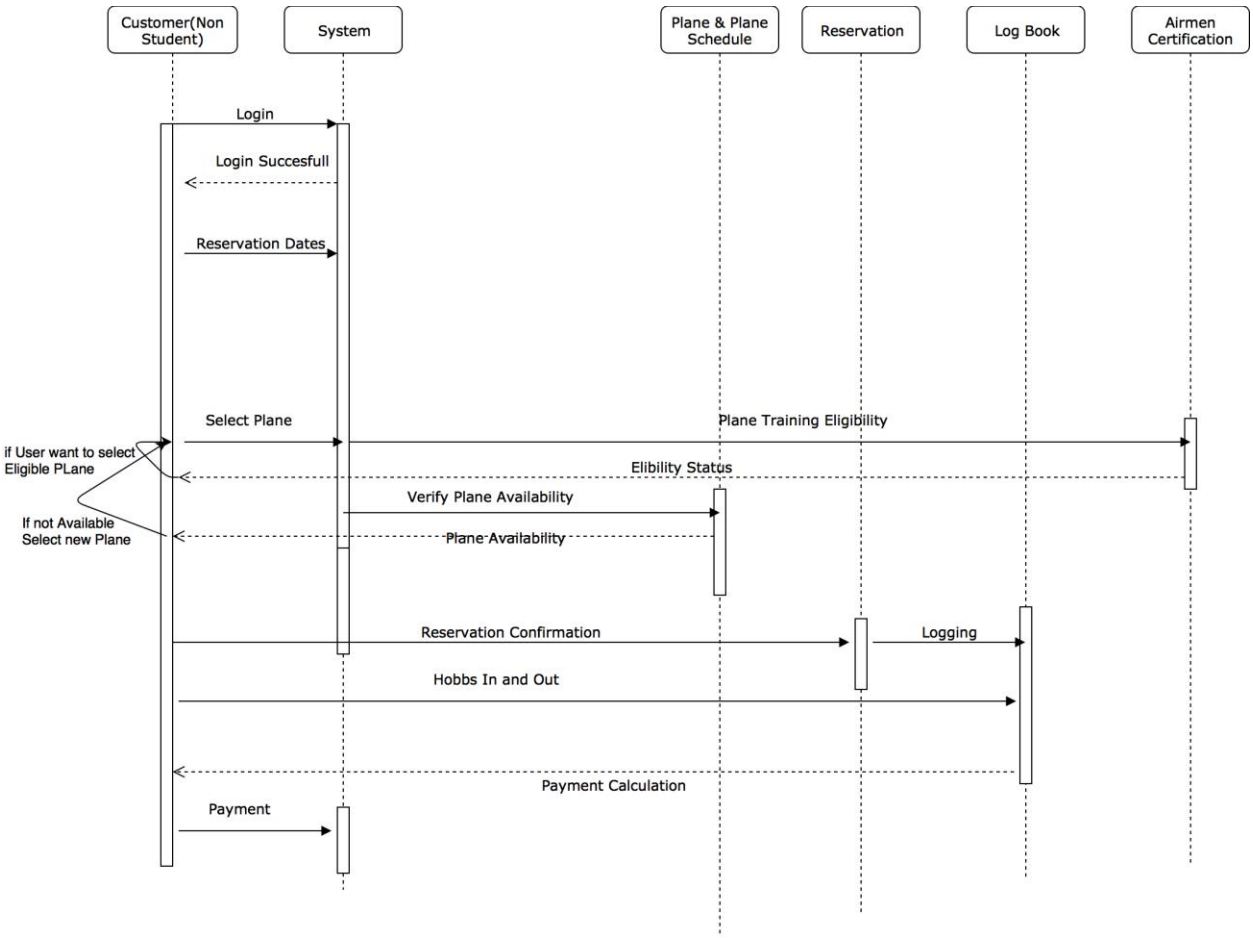
Behavioral models

Sequence Diagrams

Sequecne diagram of Student Reservation with Instructor and Updating Airmen Certification of Sudent based on LogBook record

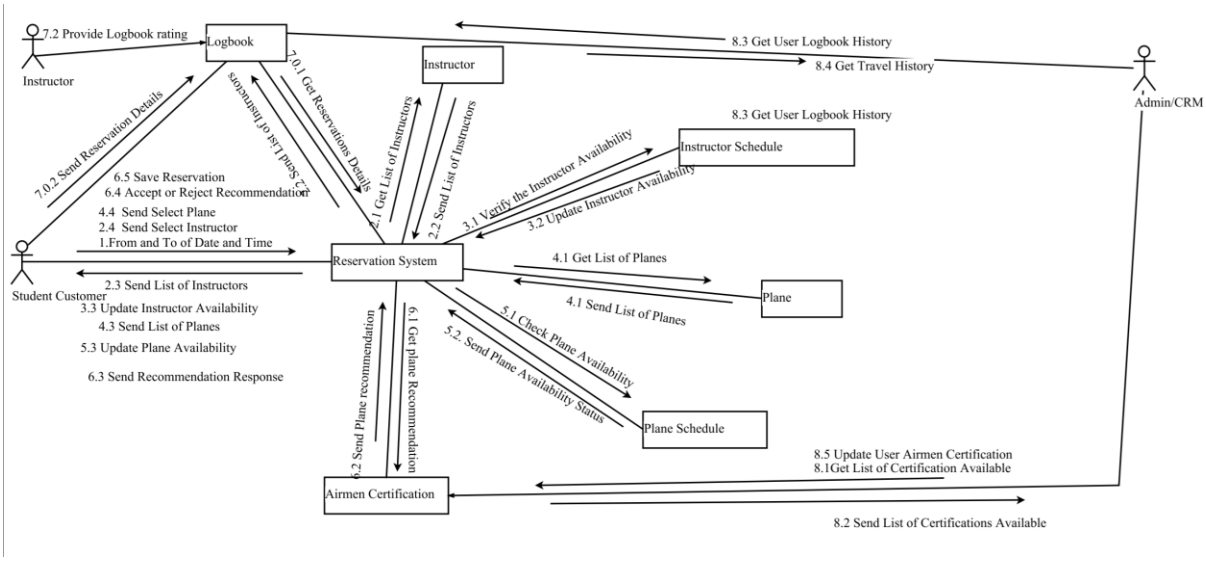


Sequence diagram of Non Student type customer reservation without Instructor and verifies customer eligibility of selected plane based on customer Airmen Certification

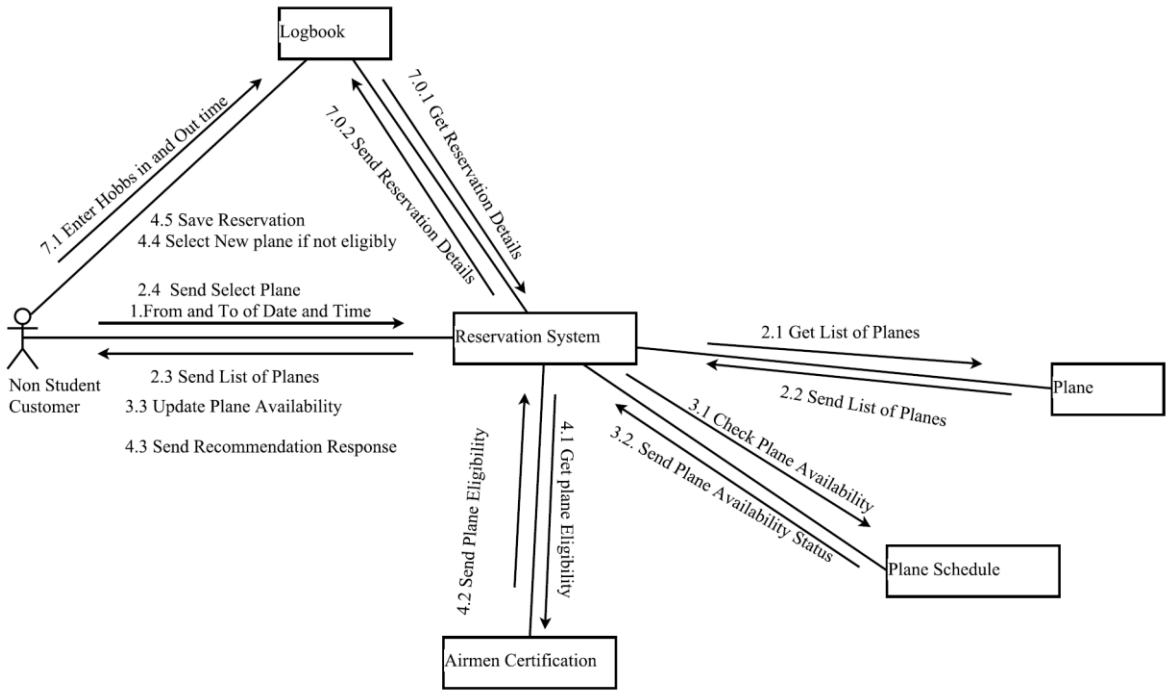


COMMUNICATION DIAGRAMS

Student Reservation communication diagram

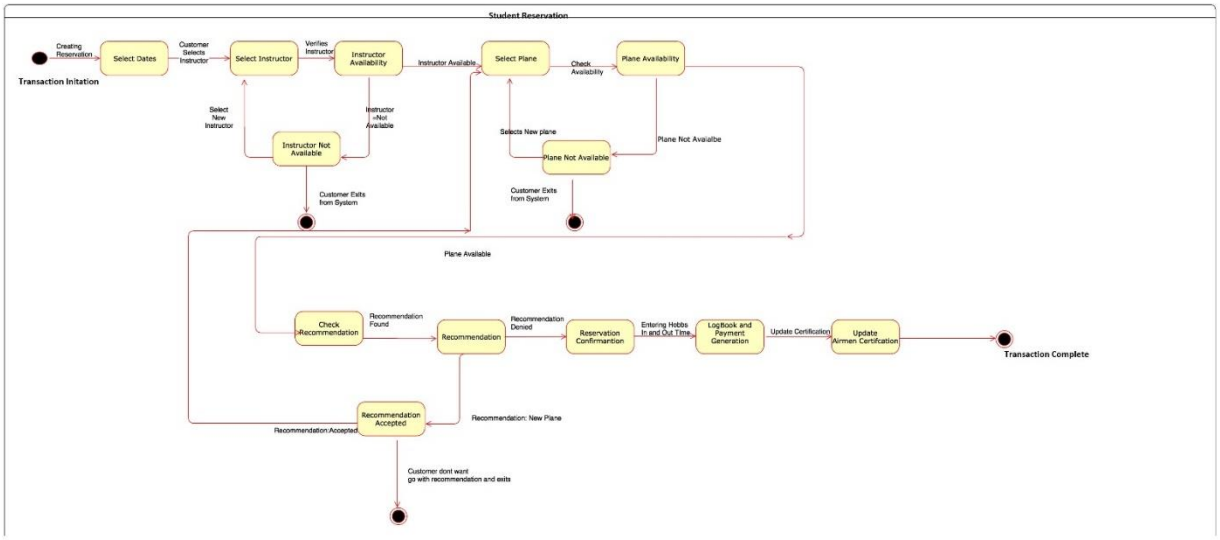


Non-Student Reservation communication Diagram

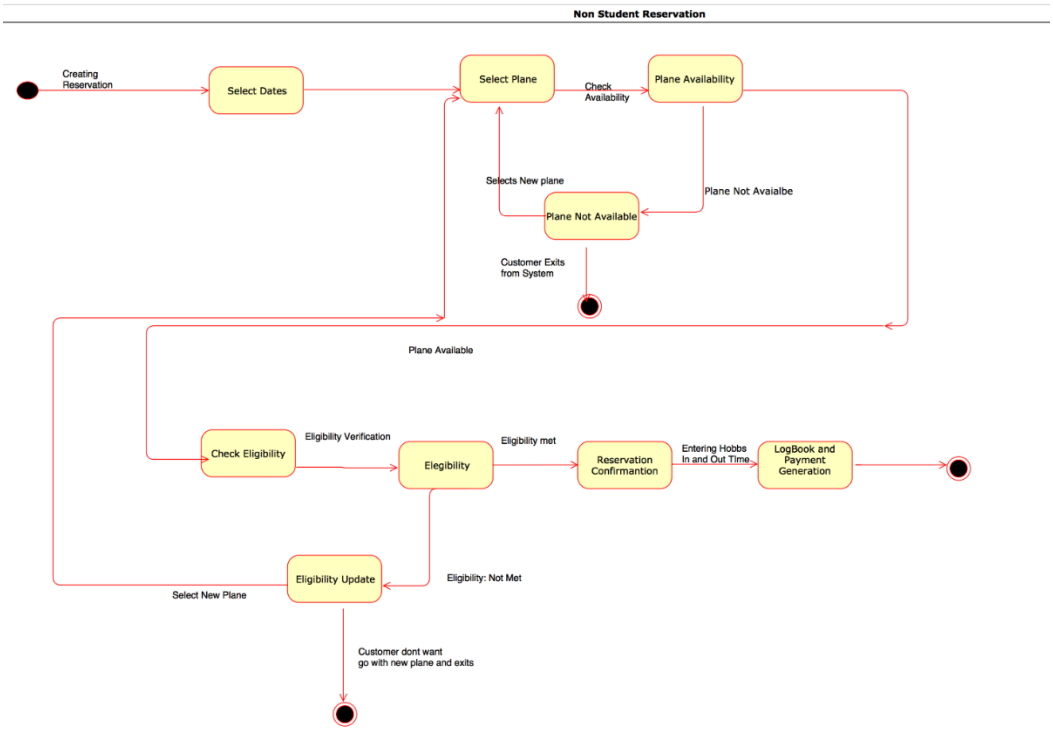


State Machine Diagrams

State Machine diagram of Student Reservation with Instructor and Updating Airmen Certification of Sudent based on LogBook record



State Machine diagram of Non Student type customer reservation without Instructor and verifies customer eligibility of selected plane based on customer Airmen Certification



CRUD Analysis

	Customer	Instructor	Instructor Schedule	Plane	Plane Schedule	Reservation	LogBook	Airmen Certification
Customer	CRUD	R	R	R	R	CRUDE	CRUD	R
Instructor	R	CRUD	CRUD			R	RU	
Admin	R	R	R	CRUD	CRUD	R	RU	CRUD
Reservation	R	R	R	R	R	CRUDE		R
LogBook							CRUD	CRU