Air Ticket Reservation System

Project Plan for the Thesis

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Opiframe Oy

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Project Profile

- **Project Title**: Online Air Ticket Reservation System.
- **Project Description**: A passenger can make his/her reservation easily online
- **Development System**: MERN (MongoDB, Express, React, Node.js)
- **Front End Tool**: React
- **Back End Tools**: MongoDB, Express, Node.js
- **Operating Systems**: Linux, Microsoft Windows, Apple iOS
- **Project Duration**: 6 months (hopefully finished before 13.01.2022)
- **Submitted To**: Opiframe Oy and GitHub, https://github.com/mphuttu

Mika Huttunen's GitHub Page

https://github.com/mphuttu

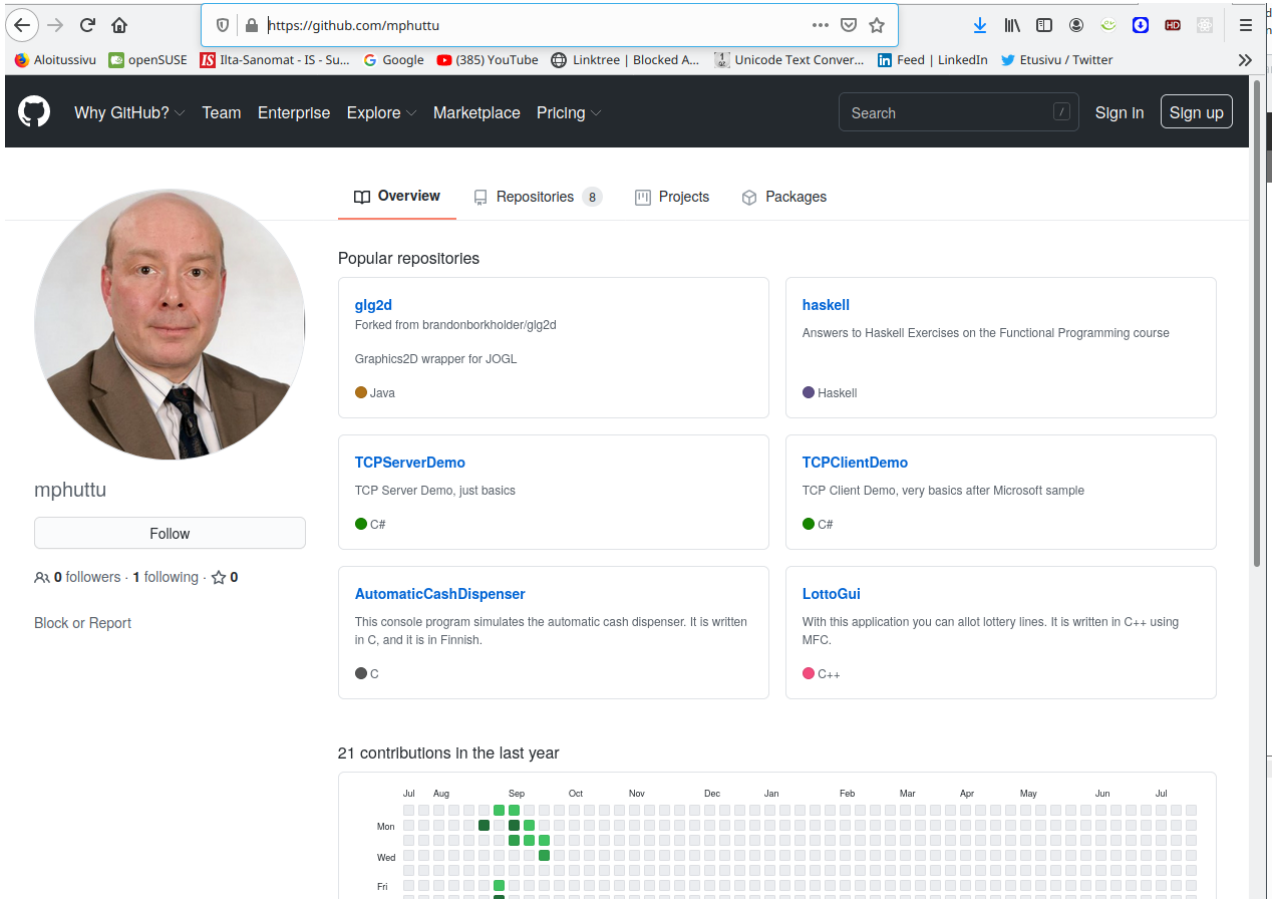

Figure: Some previous projects of Mika

Introduction

- **Reservation**: A customer can reserve his/her air ticket easily on the website.
- **Payment**: For a customer it is possible to reserve for tickets and pay online for the ticket conformation. [Execution of online transactions is probably dropped out]
- **Security**: A customer can view his/her confirmation using the logging in with the user name and the password that were provided during the reservation process.
- **Cancellation**: If a customer needs to cancel his/her reservation for any reason, he/she may without any difficulty cancel out the reservation with the charges on agreed terms.

Why the System Is Needed?

- **Fast Service**: The booking system is fast providing the passenger the reservation in time.
- **Browsing the Flights**: The passenger is able to see the flight time table on his/her computer.
- **No Need to Visit the Airport**: The passenger can get the flight information without visiting the airport far from his/her home or office.

Features

- **Usability**: Easy to use user interface (UI).
- **Security**: The reservation system is secured by demanding the logging in of the user.
- **Flight Search**: The user can search for the specific flight.
- **Cancellation**: The user may easily cancel out the reservation with charges applied for cancellation, if for some reason the cancellation is needed.
- **Viewing Time Table**: The customer gets information about baggage, airport, airbus, and airport tips about pets and healthy travelling. [Optional]
- **Administrator Part**: In the separate Administrator part it is possible to manage airbus, flight scheduling and the administrator account itself. [Optional]

Modules and Process

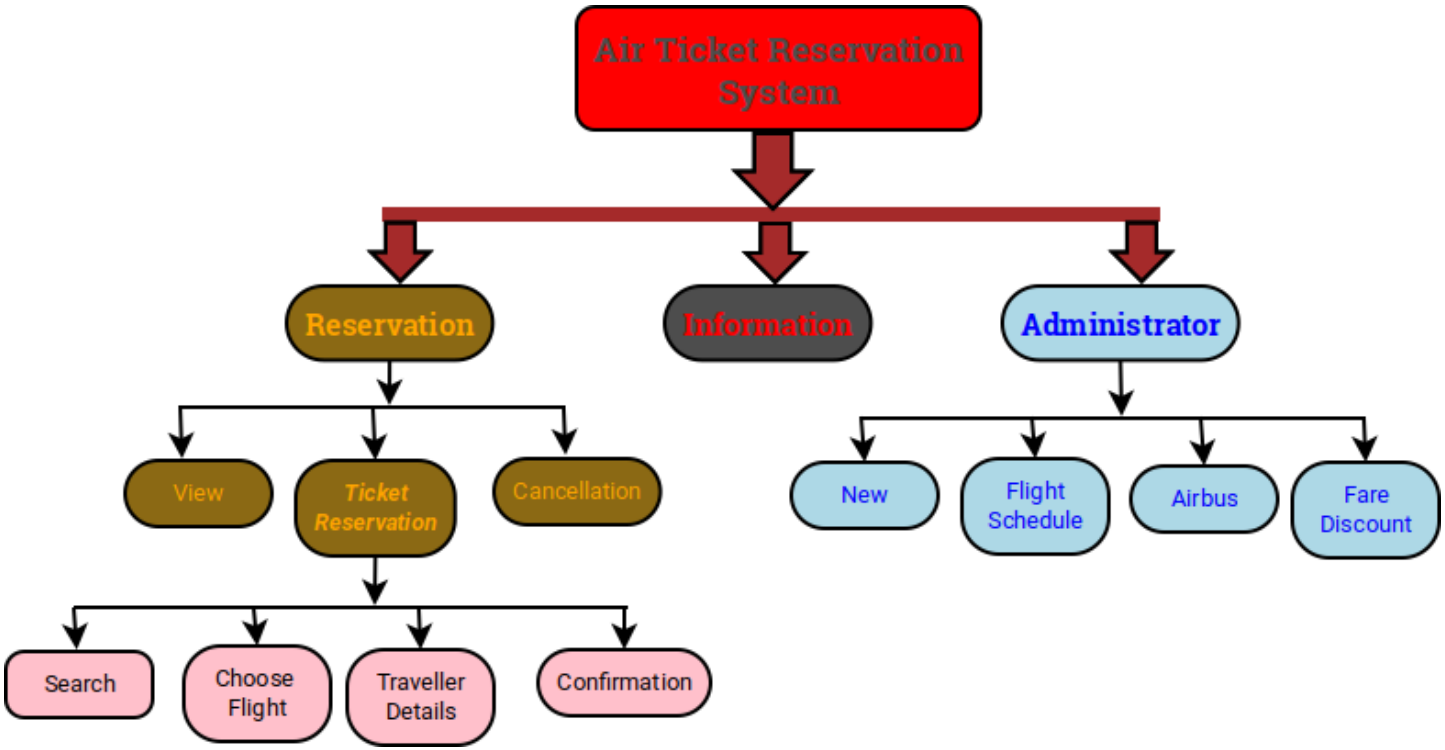

Figure: Diagrammatic Plan of the Air Ticket Reservation System.

Reservation Modules

- **Ticket Reservation**: This module handles air ticket reservation process. The reservation process could be accessed easily, and it is user friendly.
- **View Reservation**: This module handles the processes, that are related to how to view the reservation of the passenger. The user after filling in the information is able to view his/her flight schedule and seat number.
- **Cancellation**: In this module, the cancellation process is handled.

Information Modules

- The information about baggage, airport, air bus, and the airport tips regarding pets and healthy travelling are provided by this module.
- The service for viewing the time table for the flight is provided by this module.

Administrator Modules

- **Airbus**: The Airbus details are managed by this module.
- **Flight schedule**: The schedule of the flight is managed by this module.
- **New**: In this module, it is handled the process of creating a new administrator account.
- **Fare-discount**: The fare-discount for different age groups is managed by this module.

Data Flow Diagram – Context Level Diagram

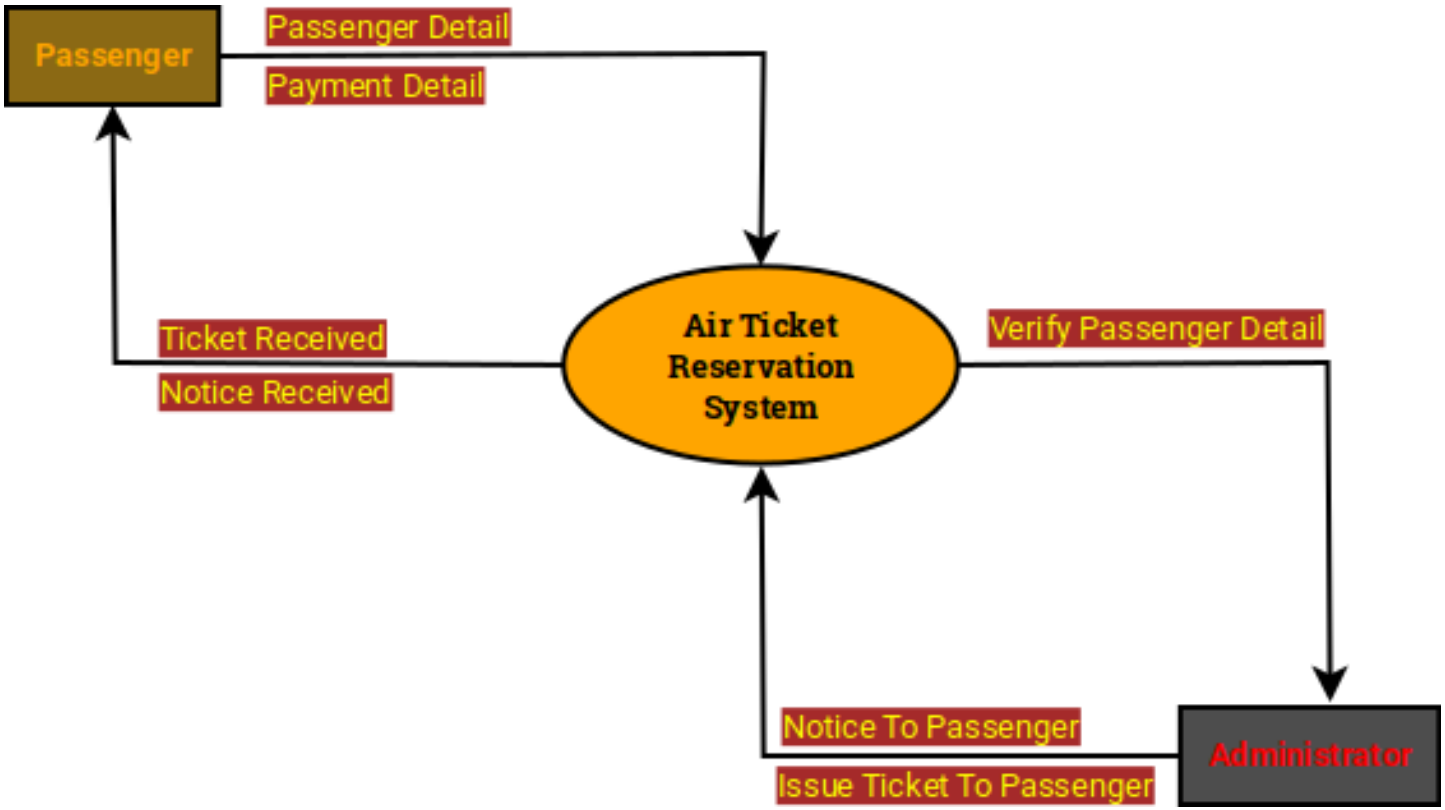

Figure: Context Level Diagram

Data Flow Diagram – First Level Diagram

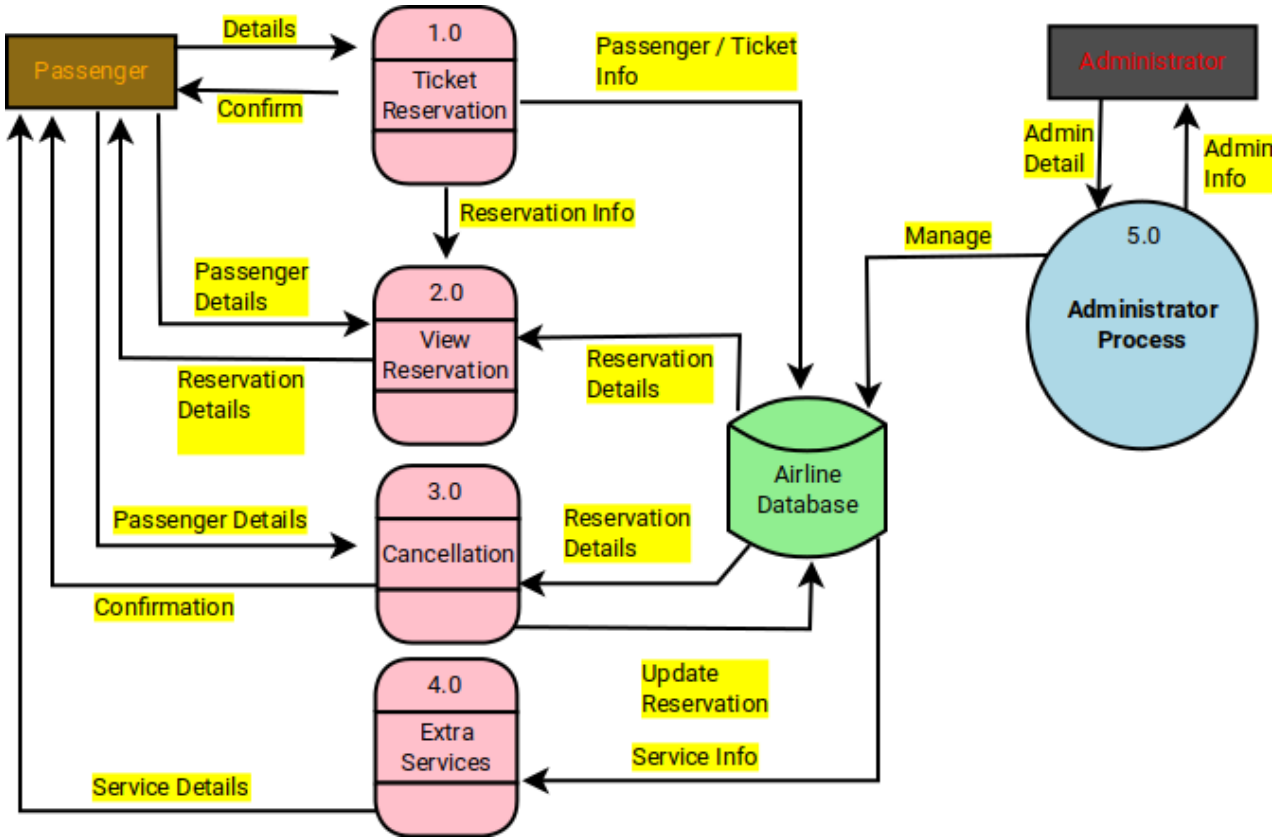

Figure: First Level Diagram

Data Flow Diagram – Second Level Diagram

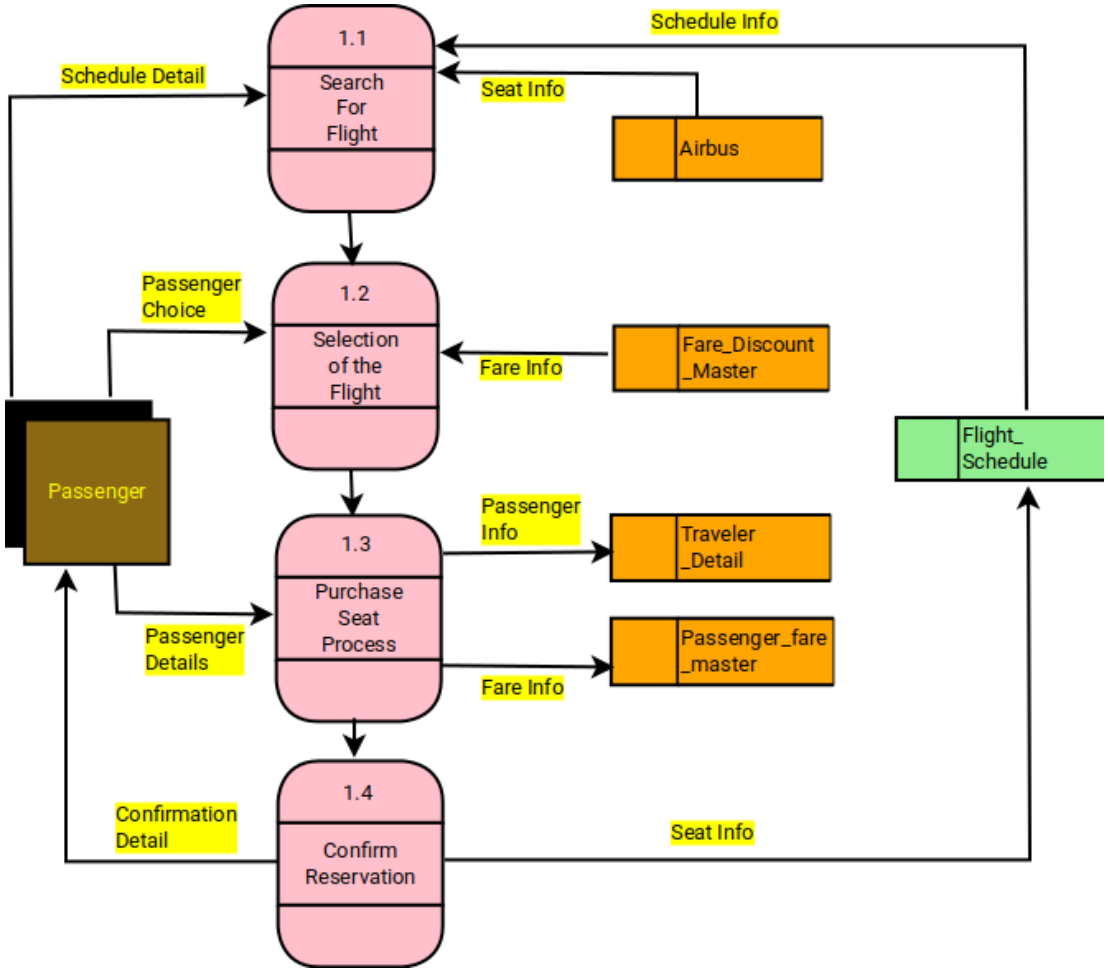

Figure: Second Level Diagram — Ticket Reservation

Data Flow Diagram – Extra Services Process

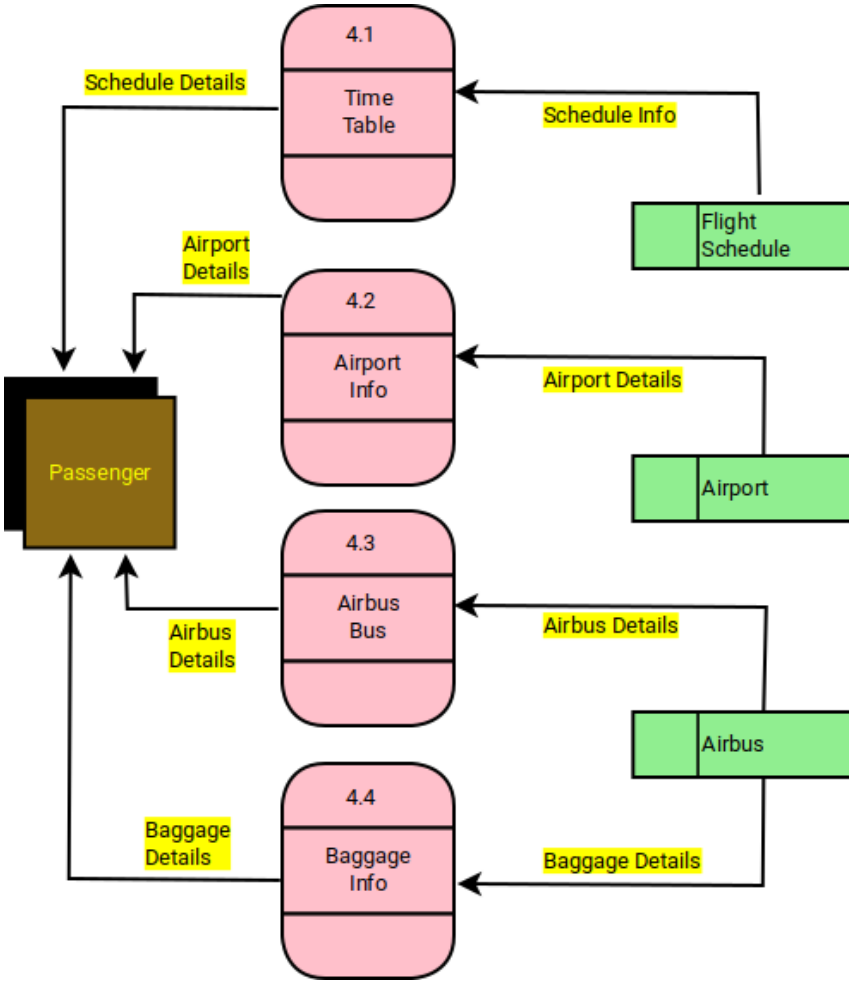

Figure: Extra Services Process

Data Flow Diagram – Administrator Process

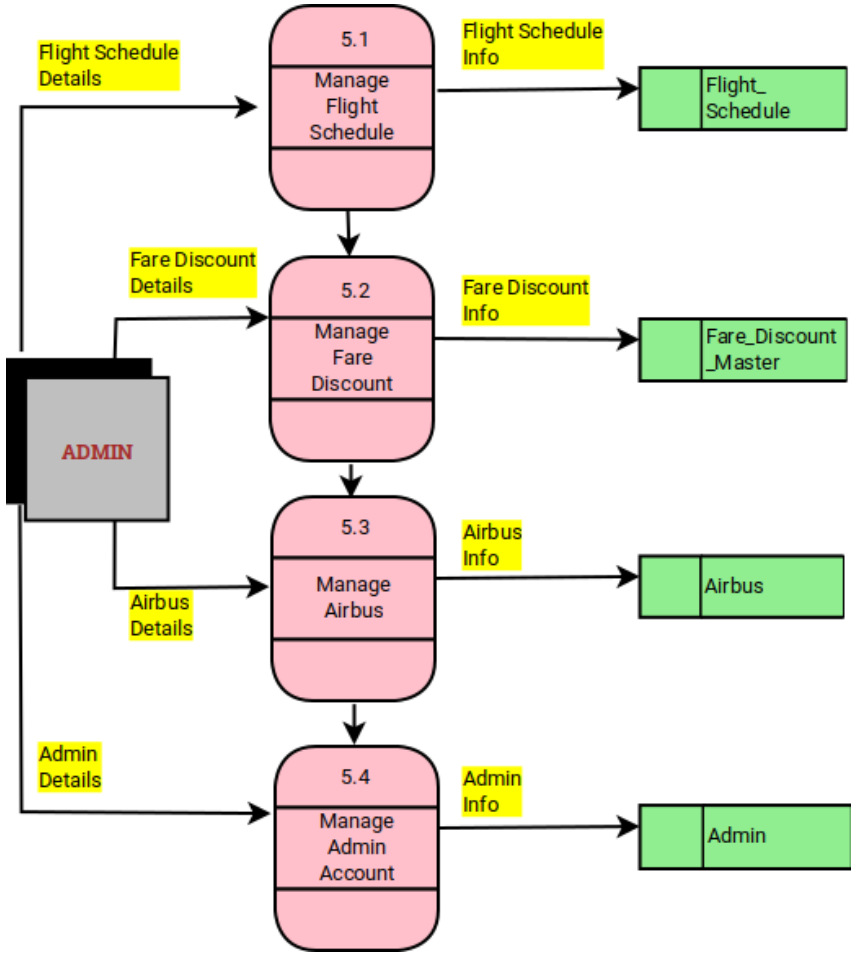

Figure: Administrator Process

Entity Relationship Diagram

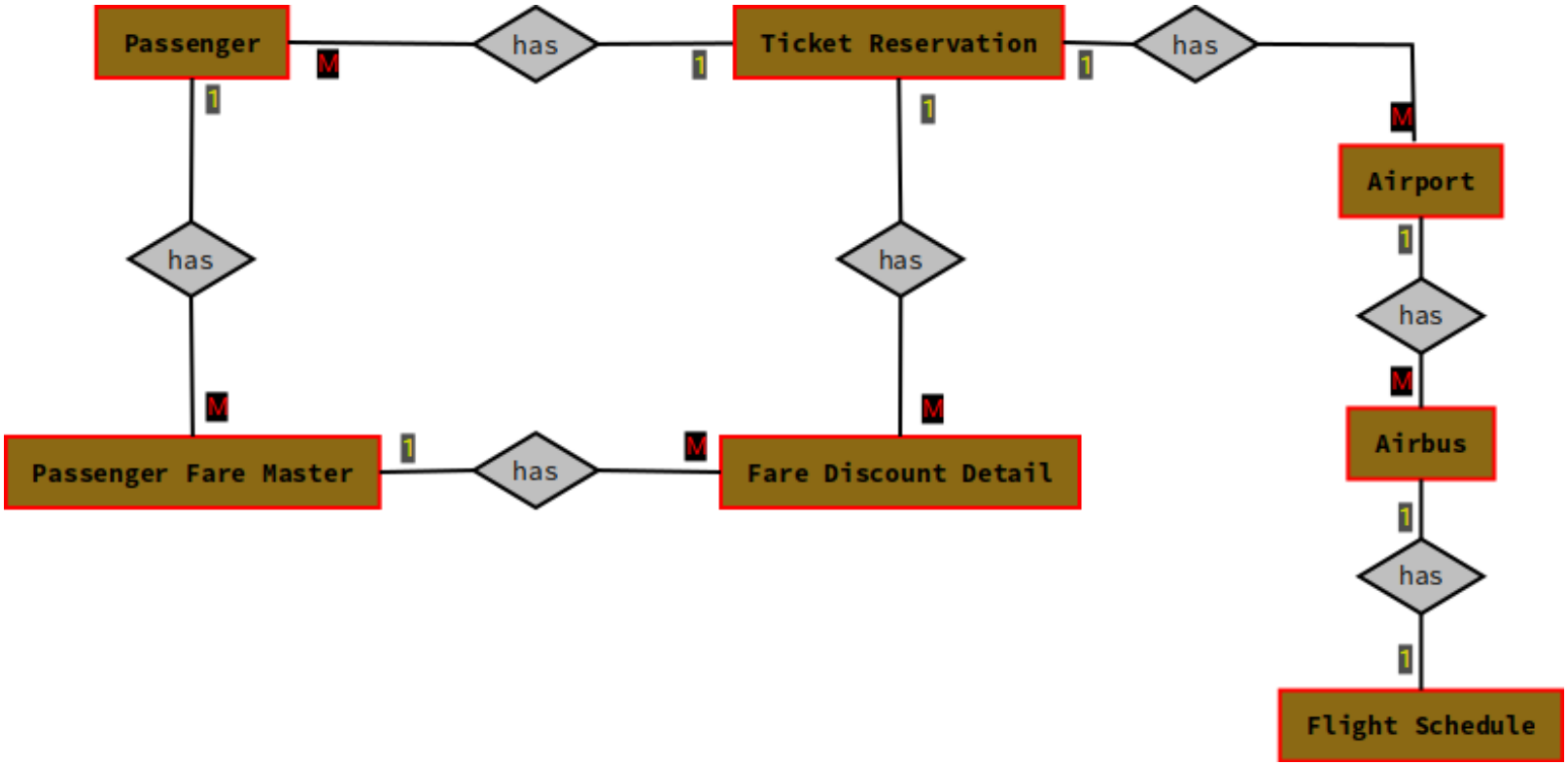

Figure: Entity Relationship Diagram

Data Dictionary – Admin

Column Name	Data Type	Constraint	Description
Admin Id	Number(10)	Primary Key	Administrator's Id
Admin Name	Varchar(20)	Not Null	Name
Admin Password	Varchar(10)	Not Null	Administrator's Password
Question	Text	Not Null	Secret Question
Answer	Text	Not Null	Secret Answer

Table: Data Dictionary: Admin

Data Dictionary – Airbus

Column Name	Data Type	Constraint	Description
Airbus_no	Number(10)	Primary Key	Airbus Number
Economy_capacity	int	Not Null	Economy Class Capacity
First_Capacity	int	Not Null	First Class Capacity

Table: Data Dictionary: Airbus

Data Dictionary – Passenger Fare Master

Column Name	Data Type	Constraint	Description
Pasfare_id	Number(50)	Primary Key	Passenger Fare Id
Pass_id	Number(50)	Foreign Key	Passenger Id
Creditcard_no	Number(30)	Not Null	Passenger Account Number
Card_password	Nchar(10)	Not Null	Passenger Account Password
Amount	Number(10)	Not Null	Amount of Payment

Table: Data Dictionary: Passenger Fare Master

Data Dictionary – Flight Schedule

Column Name	Data Type	Constraint	Description
Flight_no	Number(10)	Primary Key	Flight Number
Airbus_no	Number(10)	Foreign Key	Airbus Number
Route_description	Text	Not Null	Route Description
Depart_date	Date/Time	Not Null	Date of Departure Description
Depart_time	Date/Time	Not Null	Time of Departure Description
Journy_hour	Number(10)	Not Null	Journey Hour, Duration of the fligh
Fare_economy	Text	Not Null	Economy Fare Description
Fare_first	Text	Not Null	First Class Fare Description
Economy_booked	int	Allow Null	Economy Booked
First_booked	int	Allow Null	First Class Booked

Table: Data Dictionary: Flight Schedule

Data Dictionary – Passenger Details

Column Name	Data Type	Constraint	Description
Pass_id	Number(10)	Primary Key	Passenger Id
Pass_name	Varchar(50)	Not Null	Passenger Name
Pass_city	Varchar(50)	Not Null	City Name of the Passenger
Pass_pin	Number(10)	Not Null	Passenger Pin Code
Pass_tno	Number(50)	Not Null	Passenger Telephone Number
Pass_email	Nvarchar(50)	Not Null	Passenger E-Mail Address
Flight_no	Number(10)	Not Null	Flight Number
Class	Varchar(50)	Not Null	Class/Cabin
From_name	Varchar(50)	Not Null	From the Airport Name
Depart_date	Date/Time	Not Null	Date of Departure
Depart_time	Date/Time	Not Null	Time of Departure
To_name	Varchar(50)	Not Null	To the Airport Name
Seat_no	Number(10)	Not Null	Seat Number
Login_name	Nchar(10)	Not Null	Login Name
Password	Nchar(10)	Not Null	Login Password

Table: Data Dictionary: Passenger Details

Data Dictionary – Fare Discount Details

Column Name	Data Type	Constraint	Description
Fare_disId	Number(50)	Primary Key	Fare Discount Id
Economy_adults	Number(10)	Not Null	Percentage of Discount of Adult in economy cabin
Economy_senior	Number(10)	Not Null	Percentage of Discount of Senior in economy cabin
Economy_children1217	Number(10)	Not Null	Percentage of Discount of Children (age 12-17) in economy cabin
Economy_children511	Number(10)	Not Null	Percentage of Discount of Children (age 5-11) in economy cabin
Economy_children24	Number(10)	Not Null	Percentage of Discount of Children (age 2-4) in economy cabin
Economy_infantsseat	Number(10)	Not Null	Percentage of Discount of Infant (in Seat) in economy cabin
Economy_infantslap	Number(10)	Not Null	Percentage of Discount of Infant (in Lap) in economy cabin
First_adults	Number(10)	Not Null	Percentage of Discount of Adult in First class cabin
First_senior	Number(10)	Not Null	Percentage of Discount of Senior in First class cabin
First_children1217	Number(10)	Not Null	Percentage of Discount of Children (age 12-17) in First class cabin
First_children511	Number(10)	Not Null	Percentage of Discount of Children (age 5-11) in First class cabin
First_children24	Number(10)	Not Null	Percentage of Discount of Children (age 2-4) in First class cabin
First_infantsseat	Number(10)	Not Null	Percentage of Discount of Infant (in Seat) in First class cabin
First_infantslap	Number(10)	Not Null	Percentage of Discount of Infant (in Lap) in First class cabin

Table: Data Dictionary: Fare Discount Details

Data Dictionary – Cancellation Details

Column Name	Data Type	Constraint	Description
Pass_id	Number(50)	Foreign Key	Passenger Id
Pass_tno	Number(50)	Not Null	Passenger Telephone Number
Flight_no	Number(10)	Not Null	Flight Number
Seat_no	Number(10)	Not Null	Seat Number
Cancel_date	Date/Time	Not Null	Cancellation Date
Cancel_charge	Number(10)	Not Null	Cancellation Charge

Table: Data Dctionary – Cancellation Details

Data Dictionary – Airport Details

Column Name	Data Type	Constraint	Description
Airport_id	Number(50)	Primary Key	Airport Id
City	Varchar(20)	Not Null	Airport City
Airport_name	Varchar(40)	Not Null	Airport Name

Table: Data Dictionary: Airport Details