

CSE202 | Fundamentals of Database Systems

Winter 2021



Project

Application : Airlines Information and Reservation System

Group No. - 6

Team Name : Sky Support



Sky Support

WE GIVE YOU BEST



Group Members :

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1. Introduction / Description

The project aims to develop a database management system for Airlines Information and Reservation system. It will store all the required data related to flights, passengers, airports and travel agencies' discount offers. The application will have various stakeholders and each stakeholder can perform various tasks through this database. This document contains all the required details for this project including all data entities, data types and relationships between them.

2. Stakeholders and their Queries :

2.1 Passengers :

Role : Passengers can log in to their customer account in the application and can perform functions such as booking a ticket after comparing prices from different agencies, editing the passenger details, view details about the flight (flight_no, departure and arrival time, destination, ticket charges, seat_no, class)

Queries :

- Check availability of flights
- Book/Edit flight ticket(s)
- Display passenger details
- Cancel the reserved ticket
- Display the airline details for the flight including total price and discount.

- Login/Edit passenger account credentials

2.2 Airline Companies :

Role :

Airline Companies can set up their account in our application to perform various tasks. They can add new flights, update and cancel already existing flights to provide information for passengers and airport authorities worldwide. For themselves, they can edit their account credentials as per their convenience.

Queries :

- Add New Flight Details
- Edit Existing Flight Details
- View All Flight Details
- Login/Edit Admin Account Credentials
- Cancel Scheduled Flights

2.3 Airports

Role :

Airport staff is responsible for check-in and reservation of flights. They can only allot seats to passengers and edit the flight details. They inform the passengers regarding the time of arrival and time of departure

Queries :

- Listing of flights.
- Check passenger details

- Flight seat allotment
- Check flight details
- View/Edit Staff details
- Display transaction details

2.4 Travel Agencies

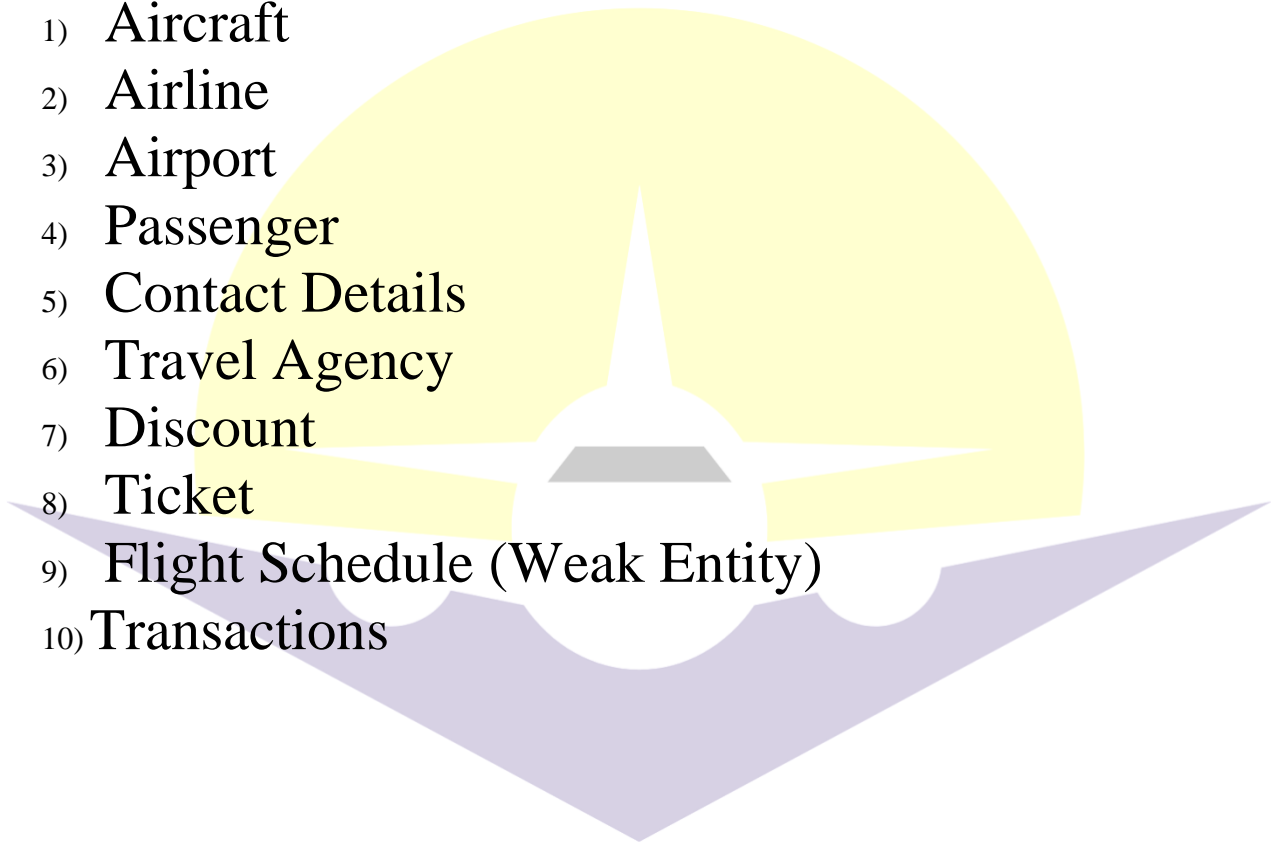
Role :

Travel Agencies can also set up their account on our application. They can offer a discount on various flights for customers. They can easily cancel or edit any previous discount offered by them on any flight. They can analyze their company's profit by analyzing how many customers are booking flights worldwide through their agency with the help of our database system. And also, they change their agency's account credential in our application as per their convenience.

Queries :

- Offer discounts on flights
- Check Flight Details
- Edit/Cancel previously offered discount
- Check passengers details
- Login and Edit Account Credentials

3. Entities :

- 
- 1) Aircraft
 - 2) Airline
 - 3) Airport
 - 4) Passenger
 - 5) Contact Details
 - 6) Travel Agency
 - 7) Discount
 - 8) Ticket
 - 9) Flight Schedule (Weak Entity)
 - 10) Transactions

1)

4. Entities with their relative attributes :

1) Aircraft :

Field	Data type	Description	Constraint
AC_ID	INT	Unique Aircraft ID	Primary Key
Capacity	INT	Number of Seats Available	NOT NULL
Company	INT	Airline ID from Airlines table	Foreign Key
Mfg_date	DATETIME	Manufactured Date	NOT NULL

2) Airline :

Field	Data type	Description	Constraint
AL_ID	INT	Unique Airline ID	Primary Key
Name	VARCHAR(32)	Name of the Airline Companies	NOT NULL
Origin	VARCHAR(32)	Name of the country	NOT NULL
Total_Planes	INT	Total number of aircrafts owned by Airline Company	NOT NULL
Password	VARCHAR(16)	Login Credential for Database	NOT NULL

3) Airport :

Field	Data type	Description	Constraint
Ap_id	INT	Unique Airport ID	Primary key
Name	VARCHAR(128)	Name of the Airport	NOT NULL
City	VARCHAR(64)	City in which Airport is Situated	NOT NULL
Country	VARCHAR(64)	Country in which Airport is situated	NOT NULL
Contact	INT	Contact_ID from Contact-Details Table	Foreign Key
Password	VARCHAR(16)	Login Credential for Database	NOT NULL

4) Passenger :

Field	Data type	Description	Constraint
P_ID	INT	Passenger's Unique ID	Primary Key
First_name	VARCHAR(16)	Passenger's first name	NOT NULL
Middle_name	VARCHAR(16)	Passenger's middle name	
Last_name	VARCHAR(16)	Passenger's last name	
DOB	DATE	Passenger's date of birth	NOT NULL
Age	INT	Passenger's Age	NOT NULL
Gender	VARCHAR(16)	Passenger's Gender	NOT NULL
Address	VARCHAR(64)	Passenger's Address	NOT NULL
Nationality	VARCHAR(16)	Passenger's Nationality	NOT NULL
Contact	INT	Contact_ID from contact details table	Foreign Key
Password	VARCHAR(32)	Login Credential for Database	NOT NULL

5) Contact Details :

Field	Data type	Description	Constraint
C_ID	INT	Unique Contact ID	Primary Key
Phone No.	VARCHAR(16)	Phone Number	NOT NULL
Telephone	VARCHAR(16)	Telephone Number	
Email	VARCHAR(32)	Email Address	NOT NULL
Street_num	VARCHAR(16)	Street Number	NOT NULL
Street_name	VARCHAR(64)	Street Name	NOT NULL
Building_num	VARCHAR(16)	Building Number	NOT NULL
City	VARCHAR(32)	City Name	NOT NULL
State	VARCHAR(32)	State Name	NOT NULL
Zip	INT	ZIP Code	NOT NULL
Country	VARCHAR(64)	Country Name	NOT NULL

6) Travel Agency :

Field	Data type	Description	Constraint
TravelAg_ID	INT	Unique Travel Agency ID	Primary Key
Discount	Weak entity	Discount from discount table	Foreign Key
Name	VARCHAR(64)	Name of the Travel Agency	NOT NULL
Contact	INT	C_ID from Contact Details table	Foreign Key
Password	VARCHAR(16)	Login Credential for Database	NOT NULL

7) Discount :

Field	Data Type	Descriptions	Constraints
TravelAG_ID	INT	Unique Travel Agency ID	Foreign Key
Title	VARCHAR(32)	Label to know Discounts	NOT NULL
Amount	INT	Discount amount in %	NOT NULL
Description	VARCHAR(128)	Discount remarks and details	

8) Ticket :

Field	Data type	Description	Constraint
Booking_id	INT	Unique Booking ID	Primary key
Flight Schedule	Weak Entity	Flight Schedule ID (All details)	Foreign key
Passenger_id	INT	Passenger Unique ID	Foreign key
Seat_no	VARCHAR(8)	Seat Allotted to the passenger	NOT NULL
Airline_class	BIT	Business/Economy/First class	NOT NULL

Airfare	INT	Airfare ID from Airfare Table	Foreign Key
Status	BIT	Confirmed/Unconfirmed	NOT NULL

9) Flight Schedule (Weak Entity) :

Field	Data type	Description	Constraint
Flight_id	INT	Unique Aircraft ID	Foreign Key
Departure	INT	Time and date of departure	NOT NULL
Arrival	INT	Time and date for arrival	NOT NULL
Date	DATETIME	Date on which flight will depart	NOT NULL
Origin	INT	Origin Airport and Location (Airport ID)	Foreign Key
Destination	INT	Destination Airport and Destination(Airport ID)	Foreign Key
Route Code	VARCHAR(32)	Unique route code generated using source and destination of flight	NOT NULL
Airfare	INT	Airfare of the flight	NOT NULL

10) Transactions :

Field	Data type	Description	Constraint
T_ID	INT	Transaction ID	NOT NULL
Ticket	INT	Ticket ID from Ticket Table	Foreign Key
Total	INT	Total Amount Paid	NOT NULL
P_ID	INT	Passenger_ID	Foreign Key

5. Relationships :

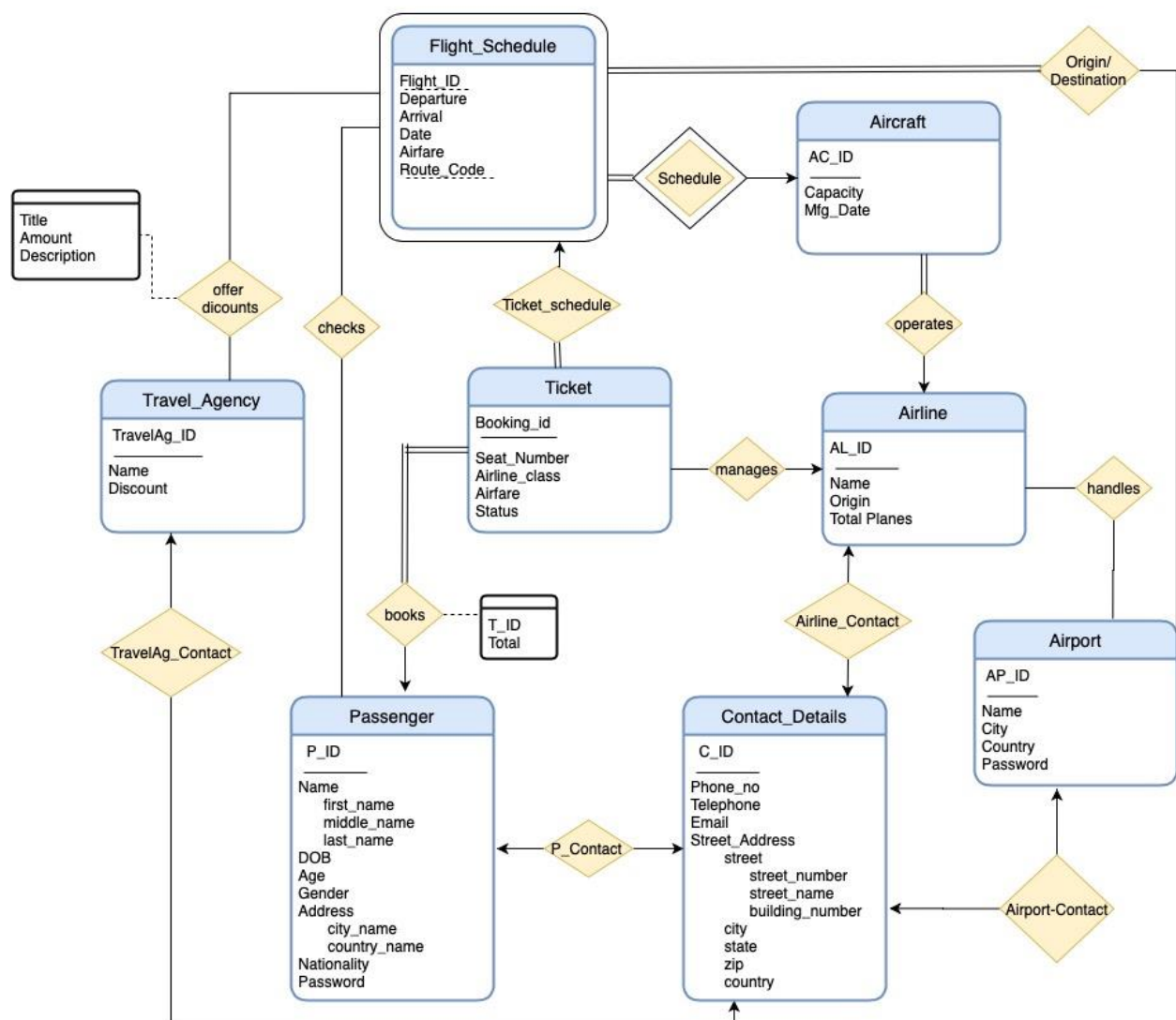
S.No	Entities	Relationship	Cardinality
1	Airline and Aircraft	One to many	1 : M
2	Airport and Airline	Many to Many	M : N
3	Airline and Ticket	One to Many	1 : M
4	Passenger and Ticket	One to Many	1 : M
5	Flight Schedule and Ticket	One to Many	1 : M
6	Airport and Flight Schedule	Many to Many	M : N
7	Travel Agency and Flight Schedule	Many to Many	M : N
8	Airport and Contact Details	One to One	1 : 1
9	Airline and Contact Details	One to One	1 : 1
10	Passenger and Contact Details	One to One	1 : 1
11	Travel Agency and Contact Details	One to One	1 : 1
12	Aircraft and Flight Schedule	One to Many	1 : M

6. E-R Diagram :

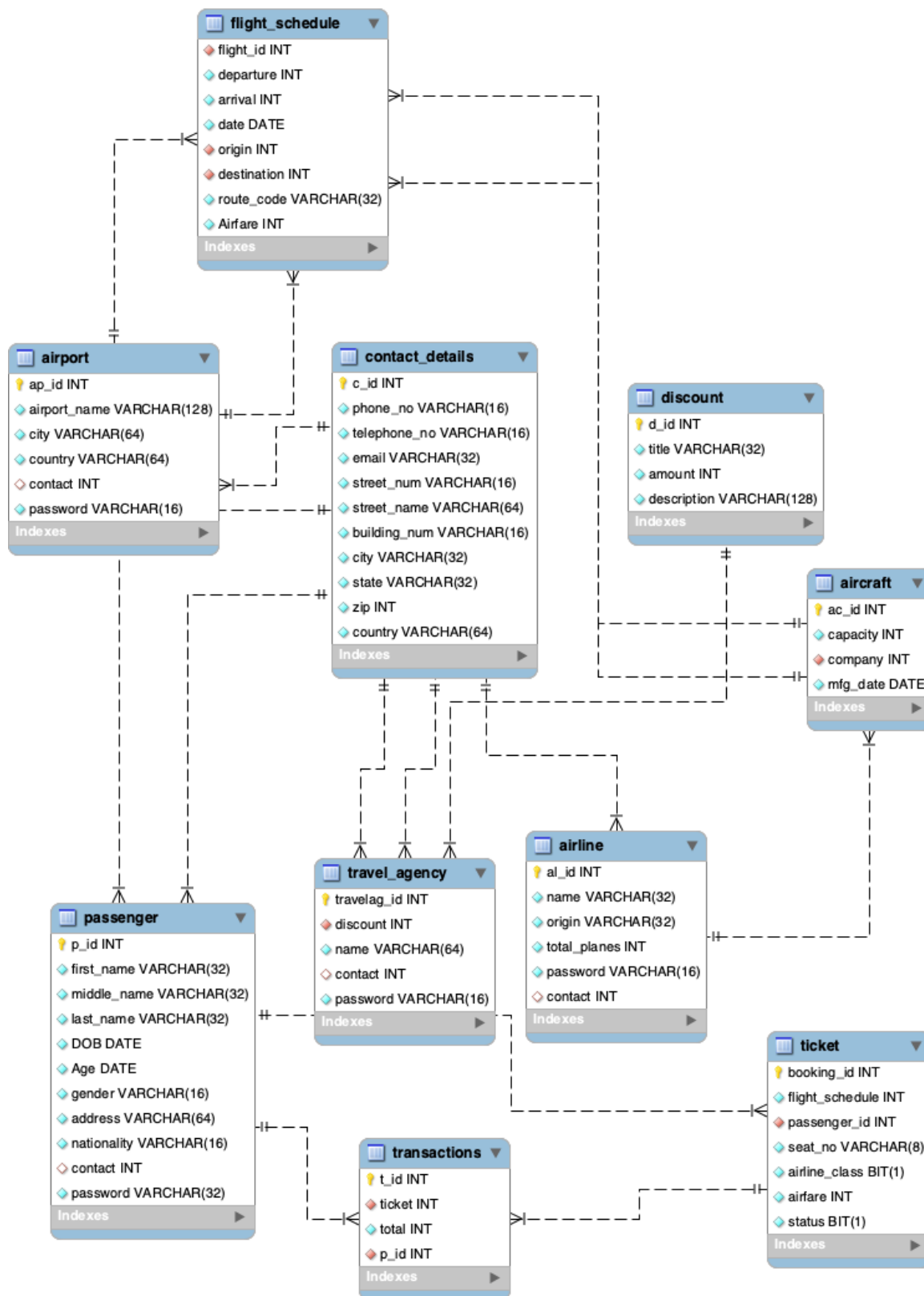
(PDF Version Also Submitted)

Entity - Relationship Diagram (Sky Support)

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7. Schema Diagram :



8. Work Distribution :

Roll No.	Name	Work
2019396	Vanshika Gupta	Identification of Stakeholders and their roles, Schemas Structure
2019347	Yugansh Sharu	Project Idea, Table creation and Data Population Queries
2019430	Kunal Kunal	Identification of Stakeholders and their roles, Schemas Structure
2019384	Ritesh Panwar	E-R Diagram, Logical Database Design/Creation and Work in Progress Document
2019432	Manvik Arya	Project Idea, Table creation and Data Population Queries

(All the Members contributed equally in reviewing the work done by other members through meetings. Everyone had equal contribution till now.)