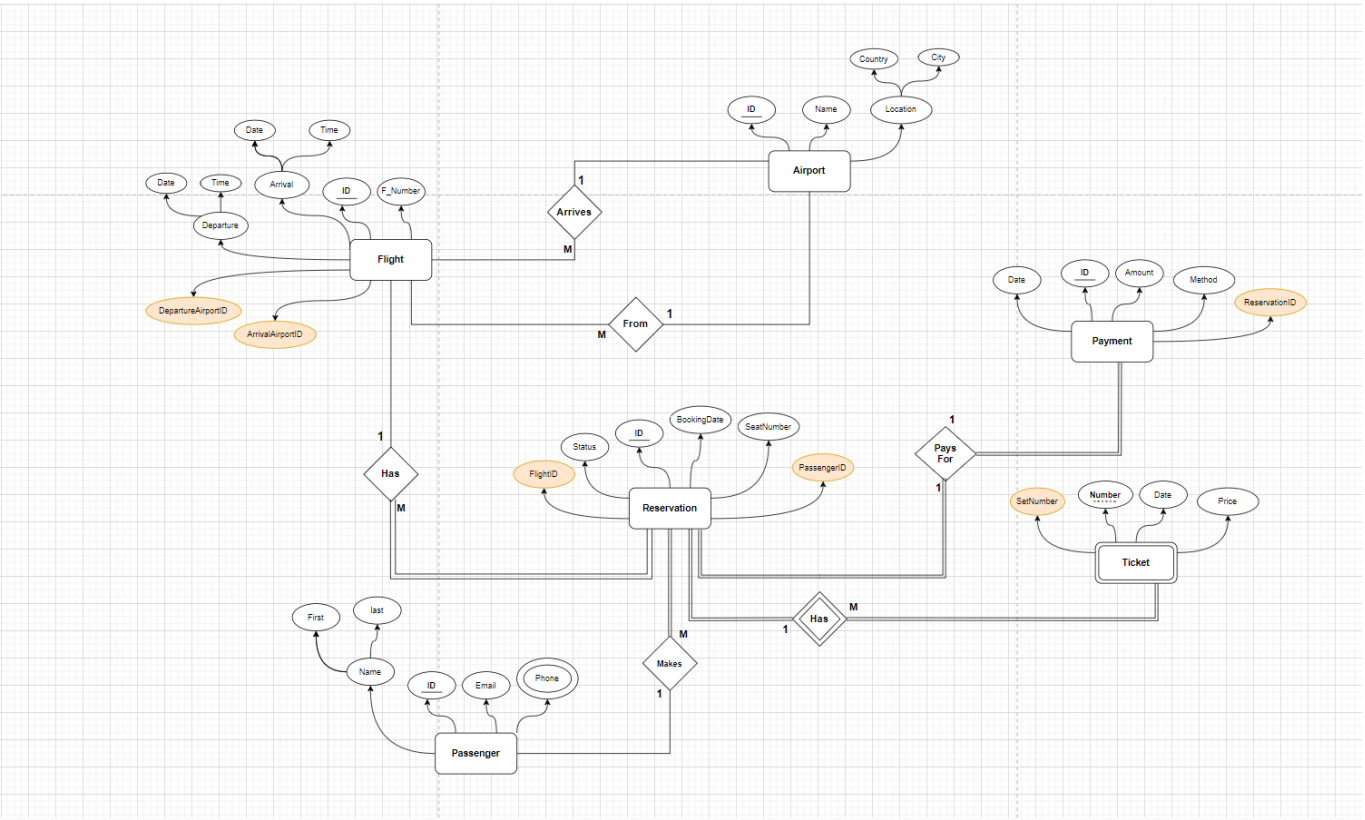
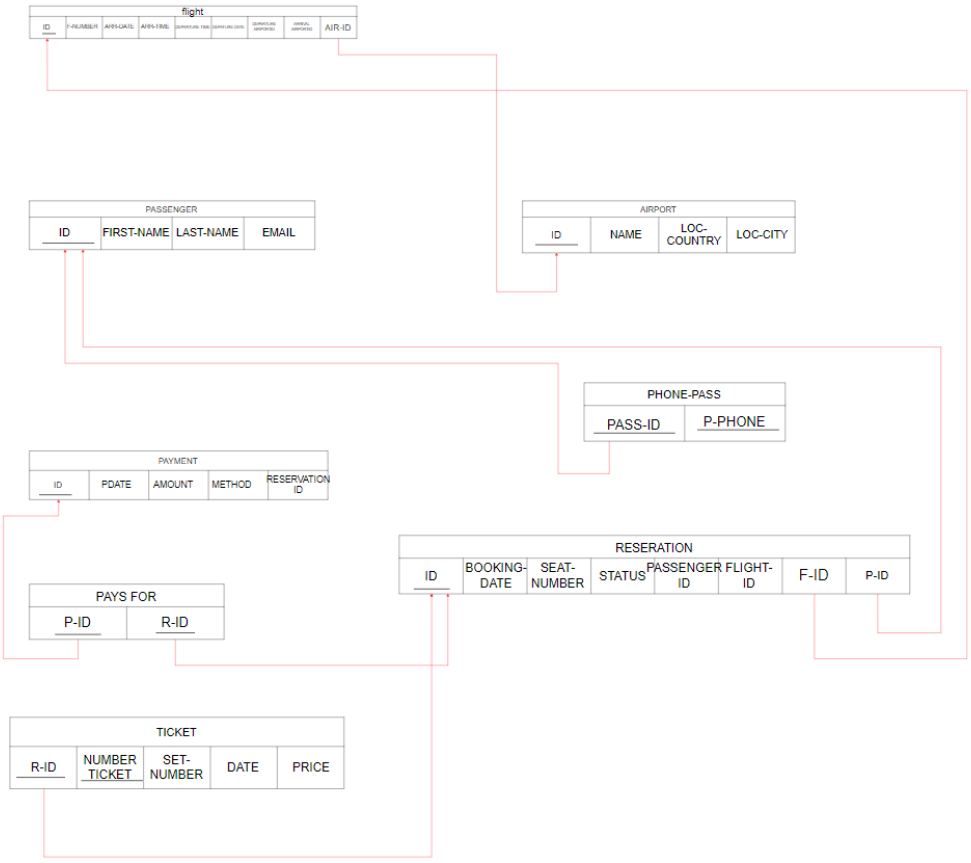
# ERD:


Country
City
ID
Name
Location
Airport
Date
Time
Arrival
ID
F_Number
Date
Time
Departure
Flight
1
Arrives
M
DepartureAirportID
ArrivalAirportID
From
M
1
Date
ID
Amount
Method
ReservationID
Payment
1
Has
M
Status
ID
BookingDate
SeatNumber
FlightID
PassengerID
Reservation
1
Pays For
1
SetNumber
Number
Date
Price
Ticket
First
last
Name
ID
Email
Phone
Passenger
M
Makes
1
1
Has
M

## Schema:


flight
ID
F-NUMBER
AIR-ID
PASSENGER
ID
FIRST-NAME
LAST-NAME
EMAIL
AIRPORT
ID
NAME
LOC-COUNTRY
LOC-CITY
PHONE-PASS
PASS-ID
P-PHONE
PAYMENT
ID
PDATE
AMOUNT
METHOD
RESERVATION ID
RESERATION
ID
BOOKING-DATE
SEAT-NUMBER
STATUS
PASSENGER ID
FLIGHT-ID
F-ID
P-ID
PAYS FOR
P-ID
R-ID
TICKET
R-ID
NUMBER TICKET
SET-NUMBER
DATE
PRICE

# Documentation

# 1. Entities & Attributes

## Passenger

PassengerID (PK): Unique identifier for each passenger.

FullName (Composite: FirstName, LastName): Passenger’s full name.

Email: Passenger’s email address.

PhoneNumber (Multivalued): One or more phone numbers.

## Reservation

ReservationID (PK): Unique identifier for each reservation.

BookingDate: Date when the reservation was made.

SeatNumber: The seat assigned to the passenger.

PassengerID (FK): References the passenger who made the reservation.

FlightID (FK): References the flight associated with the reservation.

## Ticket (Weak Entity)

ReservationID (PK, FK): References the reservation (part of composite key).

TicketNumber (Partial Key): Distinguishes tickets under the same reservation.

IssueDate: Date when the ticket was issued.

Price: Ticket price.

## Flight

FlightID (PK): Unique identifier for each flight.
FlightNumber: Airline flight code/number.
Departure (Composite: DepartureDate, DepartureTime): Departure information.

Arrival (Composite: ArrivalDate, ArrivalTime): Arrival information.

DepartureAirportID (FK): References the airport of departure.

ArrivalAirportID (FK): References the airport of arrival.

## Airport

- AirportID (PK): Unique identifier for each airport.

AirportName: Name of the airport. - Location (Composite: City, Country): Location details of the airport.

## Payment

- PaymentID (PK): Unique identifier for each payment.

PaymentDate: Date of the transaction. Amount: Total amount paid. - Method: Payment method (Credit Card, Cash, etc.).

ReservationID (FK): References the reservation being paid.

# 2. Relationships & Cardinalities

1. Passenger – makes – Reservation (1 : M): One passenger can make many reservations, but each reservation belongs to exactly one passenger. 2. Reservation – has – Ticket (Identifying, 1 : M): One reservation can contain multiple tickets. Ticket is a Weak Entity, dependent on Reservation. 3. Flight – has – Reservation (1 : M): One flight can have multiple reservations, but each reservation is for one flight only. 4. Flight – departs from – Airport (M : 1): Multiple flights can depart from the same airport, but each flight departs from exactly one airport. 5. Flight – arrives at – Airport (M : 1): Multiple flights can arrive at the same airport, but each flight arrives at exactly one airport. 6. Reservation – paid by – Payment (1 : 1 or 1 : M): One reservation can have one or multiple payments, depending on whether partial payments are allowed.

# 3. Assumptions

Each passenger must have a unique PassengerID.
A reservation cannot exist without both a Passenger and a Flight. - Tickets cannot exist independently and are tied to a reservation.
Each flight must have exactly one departure airport and one arrival airport. - A payment is always linked to a reservation, and no orphan payment can exist.
PhoneNumber is multivalued since a passenger may have multiple contact numbers.
FullName, Location, Departure, and Arrival are composite attributes for clarity and normalization.