

1. Airline

- Attributes: airline_name (PK)

2. Airplane (Weak Entity of Airline)

- Attributes:
 - airline_name (FK, references Airline)
 - airplane_id
 - number_of_seats
 - manufacturing_company
 - model_number
 - manufacturing_date
 - age (derived attribute, calculated as $\text{YEAR}(\text{CURDATE}()) - \text{YEAR}(\text{manufacturing_date})$)
- **Primary Key:** (airline_name, airplane_id)
- **Foreign Key:** airline_name references Airline(airline_name)

3. Airport

- Attributes:
 - airport_code (PK)
 - name
 - city
 - country
 - number_of_terminals
 - airport_type (domestic, international, both)

4. Flight (Weak Entity of Airline)

- Attributes:
 - airline_name (FK, references Airline)
 - flight_number
 - departure_datetime
 - departure_airport (FK, references Airport)
 - arrival_airport (FK, references Airport)
 - base_price
 - status (on-time, delayed, canceled)
 - price (derived attribute, calculated as $\text{base_price} * \text{demand factor}$)
 - **Primary Key:** (airline_name, flight_number, departure_datetime)

- **Foreign Keys:**
- airline_name references Airline(airline_name)
- departure_airport references Airport(airport_code)
- arrival_airport references Airport(airport_code)

5. Customer

- Attributes:
 - email (PK)
 - password
 - first_name
 - last_name
 - date_of_birth
 - building_number
 - street
 - apartment_number
 - city
 - state
 - zip_code
 - passport_number
 - passport_expiration
 - passport_country

6. Ticket

- Attributes:
 - ticket_id (PK)
 - airline_name (FK, references Flight through airline_name)
 - flight_number (FK, references Flight through flight_number)
 - departure_datetime (FK, references Flight through departure_datetime)
 - email (FK, references Customer)
 - sold_price
 - purchase_datetime
 - card_number
 - name_on_card
 - card_expiration_date
 - passenger_first_name
 - passenger_last_name
 - passenger_dob
 - **Primary Key:** ticket_id

- **Foreign Keys:**
- (airline_name, flight_number, departure_datetime) references Flight(airline_name, flight_number, departure_datetime)
- email references Customer(email)

7. Rates (Relationship between Customer and Flight for Ratings)

- Attributes:
 - email (FK, references Customer)
 - airline_name (FK, references Flight through airline_name)
 - flight_number (FK, references Flight through flight_number)
 - departure_datetime (FK, references Flight through departure_datetime)
 - rating (1-5)
 - comments
 - **Primary Key:** (email, airline_name, flight_number, departure_datetime)
 - **Foreign Keys:**
 - email references Customer(email)
 - (airline_name, flight_number, departure_datetime) references Flight(airline_name, flight_number, departure_datetime)

8. AirlineStaff

- Attributes:
 - username (PK)
 - password
 - first_name
 - last_name
 - date_of_birth
 - airline_name (FK, references Airline)
 - **Foreign Key:** airline_name references Airline(airline_name)

9. MaintenanceProcedure

- Attributes:
 - procedure_id (PK)
 - airline_name (FK, references Airplane)
 - airplane_id (FK, references Airplane)
 - start_datetime
 - end_datetime

- **Foreign Key:** (airline_name, airplane_id) references Airplane(airline_name, airplane_id)