

Identify Entities

From your description, the entities are:

Airport

Flight

Airline

Booking

BookingChange (to store modifications)

BoardingPass

Baggage

BaggageCheck

Passenger

SecurityCheck

Attributes (with PKs, FKs, datatypes)

Airport

airport_id (PK, int)

airport_name (varchar)

country (varchar)

state (varchar)

city (varchar)

created_at (datetime)

updated_at (datetime)

Flight

flight_id (PK, int)

airline_id (FK → Airline)

departure_airport_id (FK → Airport)

arrival_airport_id (FK → Airport)

departing_gate (varchar)

arriving_gate (varchar)

scheduled_departure_time (datetime)

scheduled_arrival_time (datetime)

actual_departure_time (datetime)

actual_arrival_time (datetime)

created_at (datetime)

updated_at (datetime)

Airline

airline_id (PK, int)

airline_code (varchar, unique)

name (varchar)

country (varchar)

created_at (datetime)

updated_at (datetime)

Booking

booking_id (PK, int)

flight_id (FK → Flight)

passenger_id (FK → Passenger)

status (varchar)

booking_platform (varchar)

ticket_price (decimal)

created_at (datetime)

updated_at (datetime)

BookingChange

change_id (PK, int)

booking_id (FK → Booking)

change_details (varchar)

created_at (datetime)

BoardingPass

boarding_pass_id (PK, int)

booking_id (FK → Booking)

seat (varchar)

boarding_time (datetime)

created_at (datetime)

updated_at (datetime)

Baggage

baggage_id (PK, int)

booking_id (FK → Booking)

weight_kg (decimal)

created_at (datetime)

updated_at (datetime)

BaggageCheck

baggage_check_id (PK, int)

baggage_id (FK → Baggage)

booking_id (FK → Booking)

passenger_id (FK → Passenger)

check_results (varchar)

created_at (datetime)

updated_at (datetime)

Passenger

passenger_id (PK, int)

first_name (varchar)

last_name (varchar)

gender (varchar)

date_of_birth (date)

country_of_citizenship (varchar)

country_of_residence (varchar)

passport_number (varchar, unique)

created_at (datetime)

updated_at (datetime)

SecurityCheck

security_check_id (PK, int)

passenger_id (FK → Passenger)

check_results (varchar)

created_at (datetime)

updated_at (datetime)

Relationships

Airline – Flight: One-to-Many (1 airline → many flights)

Airport – Flight: One-to-Many (airport as departure/arrival → many flights)

Passenger – Booking: One-to-Many (1 passenger → many bookings)

Flight – Booking: One-to-Many (1 flight → many bookings)

Booking – BoardingPass: One-to-One (1 booking → 1 boarding pass)

Booking – Baggage: One-to-Many (1 booking → many baggage items)

Baggage – BaggageCheck: One-to-One (each baggage is checked once)

Passenger – BaggageCheck: One-to-Many (passenger may have many checks)

Passenger – SecurityCheck: One-to-Many (passenger may have many checks)

Booking – BookingChange: One-to-Many (1 booking → many changes)

Normalization

Each table is in 3NF:

No repeating groups (1NF).

All non-key attributes depend on the whole key (2NF).

No transitive dependencies (3NF).

ER-Diagram:

