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| Section # | 3rd or III |
| Lab # | 2nd |
| Topic # | Models Practice |

**Task:**

The Flight Database stores details about an airline's flights and seat bookings.

Consider the Following requirement List:

* The airline has one or more airplanes.
* An airplane has a model number, a unique registration number, and the capacity.
* An airplane flight has a unique flight number, a departure airport, a destination airport, a departure date and time and an arrival date and time.
* Each flight is carried out by a single airplane.
* A passenger has given names, a surname and a unique email address.
* A passenger can book one or more seats on a flight.
* **For the above mentioned case study**
* **1. Identify the Entities.**
* **2. Specify the attributes for each of the entity.**
* **3. Specify the relationship among entities.**
* **Draw the Conceptual Model, , Logical Model and Physical Model.**

**SOLUTION:**

**Entities:**

* Airplane
* Flight
* Passenger
* Seat Booking

**Attributes:**

* **Airplane**:
  + Model number
  + Unique registration number
  + Capacity
* **Flight**:
  + Unique flight number
  + Departure airport
  + Destination airport
  + Departure date and time
  + Arrival date and time
* **Passenger**:
* Given names
* Surname
* Unique email address
* **Relationships**:
* Seat number
* Passenger (foreign key)
* Flight (foreign key)

**Relationships**:

* An airplane can be assigned to multiple flights.
* A flight is carried out by a single airplane.
* A passenger can book one or more seats on a flight.
* A seat booking is associated with one passenger and one flight.

**Conceptual Model:**

* Airplane 1---\* Flight
* Passenger 1---\* Seat Booking \*---1 Flight

**Logical Model:**

* Airplane (airplane\_id PK, model\_number, registration\_number, capacity)
* Flight (flight\_id PK, flight\_number, departure\_airport, destination\_airport, departure\_datetime, arrival\_datetime, airplane\_id FK)
* Passenger (passenger\_id PK, given\_names, surname, email\_address)
* Seat Booking (seat\_booking\_id PK, seat\_number, passenger\_id FK, flight\_id FK)

**Physical Model:**

CREATE TABLE airplane (

airplane\_id SERIAL PRIMARY KEY,

model\_number VARCHAR(50),

registration\_number VARCHAR(50) UNIQUE,

capacity INTEGER

);

CREATE TABLE flight (

flight\_id SERIAL PRIMARY KEY,

flight\_number VARCHAR(50) UNIQUE,

departure\_airport VARCHAR(50),

destination\_airport VARCHAR(50),

departure\_datetime TIMESTAMP,

arrival\_datetime TIMESTAMP,

airplane\_id INTEGER REFERENCES airplane(airplane\_id)

);

CREATE TABLE passenger (

passenger\_id SERIAL PRIMARY KEY,

given\_names VARCHAR(50),

surname VARCHAR(50),

email\_address VARCHAR(255) UNIQUE

);

CREATE TABLE seat\_booking (

seat\_booking\_id SERIAL PRIMARY KEY,

seat\_number VARCHAR(10),

passenger\_id INTEGER REFERENCES passenger(passenger\_id),

flight\_id INTEGER REFERENCES flight(flight\_id)

);