

Phase II - Relational Schema

route = (route_ID)

leg = (legID, distance, departure_airport[fk1], arrival_airport[fk2])

fk1: departure_airport -> airport.airportID

fk2: arrival_airport -> airport.airportID

flight = (flightID, cost, routeID[fk3], progress, status, next_time, airlineID, tail_num[fk17])

fk3: routeID -> route.routeID

fk17: airlineID, tail_num -> airplane.airlineID, airplane.tail_num

airline = (airlineID, revenue)

person = (personID, firstName, lastName, person_locID[fk8])

fk8: person_locID -> location.locID

pilot = (personID[fk4], taxID, experience, flightID[fk5])

fk4: personID -> person.personID

fk5: flightID -> flight.flightID

license = (license_type, personID[fk16])

fk16: personID -> pilot.personID

passenger = (personID[fk6], miles, funds)

fk6: personID -> person.personID

vacation = (personID[fk7], destination, sequence)

fk7: personID -> passenger.personID

airport = (airportID, name, city, state, country, airport_locID[fk12])

fk12: airport_locID -> location.locID

airplane = (seat_cap, speed, airlineID[fk9], tail_num, airplane_locID[fk13])

fk9: airlineID -> airline.airlineID

fk13: airplane_locID -> location.locID

prop = (airlineID, tail_num[fk10], skids, props)

fk10: airlineID, tail_num -> airplane.airlineID, airplane.tail_num

jet = (airlineID, tail_num[fk11], engines)

fk11: airlineID, tail_num -> airplane.airlineID, airplane.tail_num

location = (locID)

contains = (sequence, routeID[fk14], legID[fk15])

fk14: routeID -> route.routeID

fk15: legID -> leg.legID

Unhandled Constraints:

- A person can't be both a pilot and a passenger at the same time
- An airplane can't be both a propeller-driven and jet-driven airplane
- Ensure that planes are not carrying more than their capacity
- Ensure that a pilot doesn't pilot more than 1 airplane
- Every flight needs at least one pilot
- Jet-driven airplanes need a minimum of 2 pilots
- Ensure that a passenger can afford to pay for the flight cost
- Ensure that a jet-driven system doesn't have a skid
- Ensure that an airplane and its pilot have the same location
- The pilot's tax identifier should follow the "xxx-xx-xxxx" format.
- Ensure that each airplane must have a valid speed and seating capacity (i.e. not negative)
- Ensure that funds and miles are valid (positive numbers)
- Ensure that the countries are abbreviated using the standard three-letter International Bank Account Number (IBAN)
- Ensure that the place's city, state and country is valid
- Ensure that the flight progress state is within the valid range (i.e. from 0 to the number of legs)
- Ensure that the number of people in the plane and airport does not exceed the maximum capacity of the place
- Ensure that the progress ranges from 0 to 6 inclusive
- Ensure that passenger boarding and deplaning are aligned with the current airport and flight status
- Ensure that flights are removed at the end of their routes