Transform the EER model to relational tables.

Here are some friendly notes:

* Updates for the first time in each step are highlighted by **blue colour**.
* Foreign keys are highlighted by **magenta colour** in the final table list.

**STEP 1: Regular Entities**

AIRCRAFT (AircraftID)

CUSTOMER (customerID, name, address, country, email, phone, passportNum, DOB)

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel)

LOCATION (airportCode, country, Address, Phone)

MODEL (modelID, economySeats, businessSeats, firstClassSeats, cargeCapacity, fuelCapcity, length, wingspan, serviceHours)

ROUTE (routeID, description)

STAFF (staffID, name, address, email, phone, passportNum)

TICKET (ticketNum, mealChoice, medicalCondition, seatNum, classCode, luggageLimit)

**STEP 2: Weak Entities**

AIRCRAFT (AircraftID)

CUSTOMER (customerID, name, address, country, email, phone, passportNum, DOB)

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel)

IRREGULAR\_EVENT (*FlightID*, eventNumber, eventDateTime, eventDescription)

LOCATION (airportCode, country, Address, Phone)

MODEL (modelID, economySeats, businessSeats, firstClassSeats, cargeCapacity, fuelCapcity, length, wingspan, serviceHours)

ROUTE (routeID, description)

STAFF (staffID, name, address, email, phone, passportNum)

TICKET (ticketNum, mealChoice, medicalCondition, seatNum, classCode, luggageLimit)

**STEP 3: 1 to 1 Relationships**

No 1 to 1 relationship

**STEP 4: 1 to N Relationships**

AIRCRAFT (AircraftID, *modelID*)

CUSTOMER (customerID, name, address, country, email, phone, passportNum, DOB)

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel, *routeID*)

IRREGULAR\_EVENT (*FlightID*, eventNumber, eventDateTime, eventDescription)

LOCATION (airportCode, country, Address, Phone)

MODEL (modelID, economySeats, businessSeats, firstClassSeats, cargeCapacity, fuelCapcity, length, wingspan, serviceHours)

ROUTE (routeID, description, *deptAirportCode*, *arrivAirportCode*)

STAFF (staffID, name, address, email, phone, passportNum)

TICKET (ticketNum, mealChoice, medicalCondition, seatNum, classCode, luggageLimit, *FlightID*, *customerID*)

**STEP 5: N to N Relationships**

No N to N relationship

**STEP 6: Multivalued Attributes**

No multivalued attribute

**STEP 7: N-ary (N>2) Relationships**

No N-ary relationship

**STEP 8: Transformation of Specialisation**

CUSTOMER (customerID, name, address, country, email, phone, passportNum, DOB)

IRREGULAR\_EVENT (*FlightID*, eventNumber, eventDateTime, eventDescription)

LOCATION (airportCode, country, Address, Phone)

MODEL (modelID, economySeats, businessSeats, firstClassSeats, cargeCapacity, fuelCapcity, length, wingspan, serviceHours)

ROUTE (routeID, description, *deptAirportCode*, *arrivAirportCode*)

STAFF (staffID, name, address, email, phone, passportNum)

TICKET (ticketNum, mealChoice, medicalCondition, seatNum, classCode, luggageLimit, *FlightID*, *customerID*)

**STAFF’s specifications going with 8A:**

PILOT (*staffID*, prevHrsPilotExp)

FLIGHT\_ATTENDANT (*staffID*)

**AIRCRAFT’s specifications going with 8A:**

SH\_AIRCRAFT (*AircraftID*, mailCargoCapacity)

LH\_AIRCRAFT (*AircraftID*, noOfMedPacks, noOfDefibrillators)

**FLIGHT’s specification going with 8C:**

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel, *routeID*, haulType)

**STEP 9: Transformation of Union**

No union type relationship

**SECOND ITERATION of 2-7 after Steps 8 and 9:**

**STEP 2:** no weak entity

**STEP 3:** no 1 to 1 relationship

**STEP 4:** 1 to N relationships

The FLIGHT relation is modified:

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel, *routeID*, haulType, *AircraftID*, *captainStaffID*, *firstOfficerStaffID*)

**STEP 5:** N to N relationships

ADDITIONAL\_PILOT relation is created:

ADDITIONAL\_PILOT (*FlightID*, *staffID*, activityCode, activityDesc)

HOSTS relation is created:

HOSTS (*FlightID*, *staffID*)

**STEP 6:** multivalued attributes

PILOT\_QUAL is created:

PILOT\_QUAL (*staffID*, qualifications)

**STEP 7:** no ternary relationship

**FINAL TABLE LIST:**

CUSTOMER (customerID, name, address, country, email, phone, passportNum, DOB)

STAFF (staffID, name, address, email, phone, passportNum)

LOCATION (airportCode, country, Address, Phone)

MODEL (modelID, economySeats, businessSeats, firstClassSeats, cargeCapacity, fuelCapcity, modelLength, wingspan, serviceHours)

AIRCRAFT (AircraftID, *modelID*)

SH\_AIRCRAFT (*AircraftID*, mailCargoCapacity)

LH\_AIRCRAFT (*AircraftID*, noOfMedPacks, noOfDefibrillators)

ROUTE (routeID, description, *deptAirportCode*, *arrivAirportCode*)

FLIGHT (FlightID, estDeptDateTime, actDeptDateTime, actArrivDateTime, avgSpeed, avgHeight, estDuration, estFuel, haulType, *routeID*, *AircraftID*, *captainStaffID*, *firstOfficerStaffID*)

IRREGULAR\_EVENT (*FlightID*, eventNumber, eventDateTime, eventDescription)

PILOT (*staffID*, prevHrsPilotExp)

PILOT\_QUAL (*staffID*, qualifications)

FLIGHT\_ATTENDANT (*staffID*)

ADDITIONAL\_PILOT (*FlightID*, *staffID*, activityCode, activityDesc)

HOSTS (*FlightID*, *staffID*)

TICKET (ticketNum, mealChoice, medicalCondition, seatNum, classCode, luggageLimit, *FlightID*, *customerID*)