

Step 1: Each entity becomes a relation

1. AIRPLANE(airplane_id,[pk] seating_arrangement, luggage_space, network_coverage)
2. FLIGHT(flight_code, [pk]) flight_details)
3. PASSENGER(passenger_id,[pk] title, first_name, last_name, date_of_birth, email, citizenship, passport_number)
4. BOOKING(booking_ref,[pk] comm_email, booking_agent, status, num_passenger, departure_city, destination_city, type)
5. INSURANCE(insurance_type,[pk] cost, coverage_rules)
6. FARETYPE(fare_type,[pk] cancel_charge, changes_charge, baggage, status_credit)
7. BOARDINGPASS(boarding_pass_id,[pk] boarding_gate, passenger_name, flight_code, seat_number, change_changetype)
8. TRIPDETAILS(booking_ref, flight_code, passenger_id,[pk] fare_type, meal_option, baggage, seat_number, f_flyer_point)
9. ACC_HISTORY(membership_number, booking_ref,[pk] point_earned, points_used, points_balance, acc_date)
10. FREQUENT_FLYER(membership_number,[pk] mobile_number, pin, email, first_name, last_name, date_of_birth, joining_date)
11. QUANTAS_CLUB(membership_number,[pk] join_date, expiry_date, joining fee)
12. FLIGHT_SCHEDULE(flight_code, travel_date,[pk] flight_code, start_time, dest_time, travel_time, origin_city, destination_city, availability)
13. BOOKINGRECEIPT(receipt_id,[pk] booking_ref, total_payment, flight_cost, ex_baggage_cost, insurance_cost, discount, tax, payment_status)
14. PAYMENT(payment_MID,[pk] pay_type, pay_details)
15. CHANGEBOOKRECEIPT(receipt_id, [pk] fare_difference, penalty)

Step 2: Each many-to-many relationship becomes a relation

- PAIDBY(receipt_id[fk], payment_MID[fk1],[pk] amount)

Step 2.5: Convert one-to-one relationships (both mandatory and both optional) to relations

- CHECKIN (booking_ref[fk1], flight_code[fk2], passenger_id[fk3], boarding_pass_id,[pk],)
- ENROLL (membership_number [pk], passenger_id[fk])
- PAID_CHANGE(receipt_id[pk], booking_ref[fk])
- PAID (receipt_id[pk], booking_ref[fk])
- BECOMES (membership_number [pk], membership_number [fk])

Step 3: One-to-many Relationships

1. FLIGHT(flight_code [pk], airplane_id [fk] flight_details)
2. FLIGHT_SCHEDULE(flight_code [fk], travel_date [pk], start_time, dest_time, travel_time, origin_city, destination_city, availability)
3. TRIPDETAILS(booking_ref [fk], flight_code[fk2] passenger_id [pk], fare_type[fk3], travel_date[fk4] meal_option, baggage, seat_number, f_flyer_point)
4. BOOKING(booking_ref [pk], comm_email, booking_agent, status, num_passenger, departure_city, destination_city, type, insurance_type [fk], passenger_id [fk2])
5. ACC_HISTORY(booking_ref [pk], points_earned, points_used, points_balance, acc_date, membership_number [fk])
6. FARETYPE(fare_type [pk], cancel_charge, changes_charge, baggage, status_credit)

Step 4: Final Relational Schema

1. AIRPLANE(airplane_id [pk], seating_arrangement, luggage_space, network_coverage)
2. FLIGHT(flight_code [pk], airplane_id [fk], flight_details)
3. PASSENGER(passenger_id [pk], title, first_name, last_name, date_of_birth, email, citizenship, passport_number)
4. BOOKING(booking_ref [pk], comm_email, booking_agent, status, num_passenger, departure_city, destination_city, type, insurance_type [fk], passenger_id [fk2])
5. INSURANCE(insurance_type [pk], cost, coverage_rules)
6. FARETYPE(fare_type [pk], cancel_charge, changes_charge, baggage, status_credit)
7. BOARDINGPASS(boarding_pass_id [pk], boarding_gate, passenger_name, flight_code, seat_number, change_changetype)
8. TRIPDETAILS(booking_ref [fk], flight_code[fk2] passenger_id [pk], fare_type[fk3], travel_date[fk4] meal_option, baggage, seat_number, f_flyer_point)
9. FREQUENT_FLYER(membership_number [pk], mobile_number, pin, email, first_name, last_name, date_of_birth, joining_date)
10. QUANTAS_CLUB(membership_number [pk], join_date, expiry_date, joining_fee)
11. FLIGHT_SCHEDULE(flight_code [fk], travel_date [pk], start_time, dest_time, travel_time, origin_city, destination_city, availability)
12. BOOKINGRECEIPT(receipt_id [pk], booking_ref, total_payment, flight_cost, ex_baggage_cost, insurance_cost, discount, tax, payment_status)
13. PAYMENT(payment_MID [pk], pay_type, pay_details)
14. CHANGEBOOKRECEIPT(receipt_id [pk], fare_difference, penalty)
15. PAIDBY(receipt_id [fk], payment_MID [pk], amount)
16. CHECKIN (booking_ref[fk1], flight_code[fk2], passenger_id[fk3], boarding_pass_id,[pk],)
17. ENROLL (membership_number [pk], passenger_id[fk])
18. PAID_CHANGE(receipt_id[pk], booking_ref[fk])
19. PAID (receipt_id[pk], booking_ref[fk])
20. BECOMES (membership_number_QC [pk], membership_number_FF [fk])

21. ACC_HISTORY(booking_ref [pk], points_earned, points_used, points_balance,
acc_date, membership_number [fk])