



### ER SCHEMA

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aircraft_type(aircraft_type_id, aircraft_type, manufacturer, max_range)
assigned_type(aircraft_type_id, aircraft_id)
aircraft(aircraft_id, aircraft_type_id, pilot_capacity, cabin_crew_capacity, passenger_capacity)
staff(staff_id, first_name, last_name, birth_date, password_hash, role, rank, gender, nationality)
licensed_on(staff_id, aircraft_id)
can_cook(staff_id, dish_id)
dish(dish_id, dish_name)
operating_on(staff_id, flight_id)
flight(flight_id, departure_time, departure_airport, arrival_time, arrival_airport, gate, status, flight_number, boarding_time)
connected_flight(flight_id, ticket_id)
flight_ticket(ticket_id, flight_id, passport_number, sent_number, class)
owns_ticket(passport_number, flight_ticket_id)
passenger(passport_number, first_name, last_name, birth_date, gender, nationality, has_allergy, disability_assistance)
  
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### Cardinality

Relation	Type	Reason
assigned_type	M(aircraft_type)N(aircraft)	an aircraft type may be assigned to more than 1 aircraft an aircraft can only have 1 aircraft type
licensed_on	M(aircraft_type)N(staff)	an aircraft type may have many staff who are licensed on it every staff can be licensed on the same aircraft type
can_cook	M(dish)N(staff)	a dish can have multiple staff who can cook it a staff could cook more than 1 dish
operating_on	M(flight)N(staff)	a flight can have multiple staff assigned to it a staff can be assigned to multiple flights at different times
on_aircraft	T(flight)M(aircraft)	a flight may only have 1 aircraft assigned to it an aircraft may have multiple flights assigned to it at different times
connected_flight	M(flight_ticket)N(flight)	a flight ticket can be associated with multiple flights allowing transfers / shared flights a flight can have multiple flight tickets
owns_ticket	M(passenger)N(flight_ticket)	a passenger may own multiple flight tickets a flight ticket can be owned by only 1 passenger

### Participation

Relation	Type	Reason
assigned_type	M(aircraft_type)T(aircraft)	Not every aircraft type has to have an aircraft every aircraft has to have a type
licensed_on	M(aircraft_type)T(staff)	Not every aircraft type has staff who are licensed on it Not every staff has a license on an aircraft type
can_cook	M(dish)T(staff)	Not every dish can be cooked by a staff Not every staff is able to cook
operating_on	T(flight)M(staff)	Every flight has to have staff assigned to it Not every staff is assigned to a flight
on_aircraft	T(flight)T(aircraft)	Every flight must have an aircraft assigned to it Not every aircraft is assigned to a flight
connected_flight	T(flight_ticket)M(flight)	Every flight ticket must be connected to a flight Not every flight has flight tickets
owns_ticket	M(passenger)T(flight_ticket)	Not every passenger has a flight ticket Every flight ticket is owned by a passenger

### Relational Schema

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aircraft_type(aircraft_type_id, aircraft_type, manufacturer, max_range)
aircraft(aircraft_id, aircraft_type_id(PK), pilot_capacity, cabin_crew_capacity, passenger_capacity)
staff(staff_id, first_name, last_name, birth_date, password_hash, role, rank, gender, nationality)
speaks(staff_id, language)
licensed_on(staff_id, aircraft_type_id)
can_cook(staff_id, dish_id)
dish(dish_id, dish_name)
operating_on(staff_id, flight_id)
flight(flight_id, departure_time(PK), date, departure_time, departure_airport, arrival_time, arrival_airport, gate, status, flight_number, boarding_time)
connected_flight(flight_id, ticket_id)
flight_ticket(ticket_id, passport_number(PK), sent_number, class)
passenger(passport_number, first_name, last_name, birth_date, gender, nationality, has_allergy, disability_assistance)
  
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### SNAPSHOT

aircraft_type					aircraft				
aircraft_type_id	aircraft_type	manufacturer	max_range (km)		aircraft_id	aircraft_type_id	pilot_capacity	cabin_crew_capacity	passenger_capacity
1	B-747-400ER	Boeing	8,000		1	1	2	6	200
2	B-747-300	Boeing	6,500		2	1	2	6	234
3	A-380-800	Airbus	9,800		3	2	2	9	290
4	A-350-900	Embraer	8,000		4	2	2	3	160
5	A-320neo	Embraer	6,500		5	2	2	3	160

  

staff					can_cook				
staff_id	first_name	last_name	birth_date	password_hash	role	rank	gender	nationality	
1	James	Bond	01/02/1940	123456789	Pilot	Junior	Male	Turkish	
2	John	Doe	21/08/1978	987654321	Assigned	Senior	Female	Turkish	
3	Samuel	Chen	10/05/1999	123456789	Pilot	Senior	Male	Turkish	
4	Sharon	Nguyen	10/07/2008	987654321	Passenger	Junior	Female	Turkish	
5	David	Wright	10/07/2006	123456789	Pilot	Junior	Male	Turkish	

  

speaks					operating_on				
staff_id	language	staff_id	aircraft_type_id		staff_id	dish_id	staff_id	flight_id	
1	English	1	1		1	1	1	1	
1	Turkish	1	2		1	2	1	2	
2	English	2	1		2	1	2	2	
2	Turkish	2	2		2	2	2	2	

  

flight					connected_flight				
flight_id	aircraft_id	date	departure_time	departure_airport	arrival_time	arrival_airport	gate	status	flight_number
1	1	20/10/2024	03:30	IST	06:30	LHR	12A	OnTime	AA201
2	1	20/10/2024	05:45	LHR	09:45	IST	5B	Delayed	AA201
3	2	10/10/2024	03:30	LHR	06:30	IST	5B	OnTime	AA202
4	4	20/10/2024	12:30	SJV	2:30	LHR	3C	Delayed	AA203
5	5	20/10/2024	11:00	SJV	1:00	LHR	1A	Delayed	AA206

  

flight_ticket					passenger				
flight_id	ticket_id	passport_number (PK)	sent_number	class	passport_number	first_name	last_name	birth_date	gender
1	1	1	194060401650	12A	Business	James	Bond	01/02/1940	Male
1	2	2	194060401650	5B	Business	John	Doe	21/08/1978	Female
1	3	3	194060401650	32A	Business	Samuel	Chen	10/05/1999	Male
2	2	4	194060401650	01C	Business	Sharon	Nguyen	10/07/2008	Female

  

passenger					flight_ticket				
passport_number	first_name	last_name	birth_date	gender	has_allergy	disability_assistance	nationality		
1	James	Bond	01/02/1940	Male	yes	yes	Turkish		
2	John	Doe	21/08/1978	Female	no	yes	Turkish		
3	Samuel	Chen	10/05/1999	Male	yes	yes	Turkish		
4	Sharon	Nguyen	10/07/2008	Female	no	no	Turkish		
5	David	Wright	10/07/2006	Male	no	no	Turkish		