



ER SCHEMA

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type_rating(type_rating_id, rating_name)
has_rating(type_rating_id, aircraft_type_id)
aircraft_type(aircraft_type_id, manufacturer)
part_of(aircraft_type_id, aircraft_type_id)
aircraft_type(aircraft_type_id, variant_name, family_id, type_rating_id, manufacturer, max_range)
assigned_type(aircraft_type_id, aircraft_id)
aircraft(aircraft_id, aircraft_type_id, variant_name, family_id, type_rating_id, manufacturer, max_range)
staff(staff_id, first_name, last_name, birth_date, password_hash, role, rank, gender, nationality)
licensed_on(staff_id, type_rating_id)
can_cook(staff_id, dish_id)
operating_on(staff_id, flight_id)
flight(flight_id, date, departure_time, departure_airport, arrival_time, arrival_airport, gate, status, flight_number, boarding_time)
on_aircraft(staff_id, aircraft_id)
connected_flight(ticket_id, seat_number, class)
flight_ticket(ticket_id, seat_number, class)
owns_ticket(ticket_id, passenger_id)
passenger(passenger_id, first_name, last_name, birth_date, gender, nationality, has_allergy, disability_assistance)
guardian(guardian_passport, child_passport)

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Cardinality

Relation	Type	Relation
part_of	(aircraft_family)(aircraft_type)	aircraft_family can have more than 1 aircraft_type
		aircraft_type can only belong to 1 aircraft_family
has_rating	(type_rating)(aircraft_type)	Multiple aircraft_types can share 1 type_rating
		aircraft_type can have multiple type_ratings
assigned_type	(aircraft_type)(aircraft)	aircraft_type can be assigned to more than 1 aircraft
		an aircraft can only have 1 aircraft_type
licensed_on	(staff)(type_rating)	If type_rating may have many staff who are licensed on it
		many staff may be licensed on 1 type_rating
can_cook	(staff)(dish)	A staff can have multiple staff who can cook it
		A staff could cook more than 1 dish
operating_on	(staff)(flight)	A flight can have multiple staff assigned to it
		multiple staff can operate a flight at different times!
on_aircraft	(staff)(aircraft)	A flight may only have 1 aircraft assigned to it
		an aircraft can have multiple flights assigned to it at different times!
connected_flight	(flight_ticket)(flight)	A flight ticket can be associated with multiple flights, allowing round-trip / shared flights
		A passenger may own multiple flight tickets.
owns_ticket	(passenger)(flight_ticket)	A flight ticket can be owned by only 1 passenger

Participation	For partial participation / * = total participation
part_of	(aircraft_family)(aircraft_type)
	an aircraft_family is a parent and parents must be partial to avoid chicken egg problem
has_rating	(type_rating)(aircraft_type)
	an aircraft_type must belong to an aircraft_family
assigned_type	(aircraft_type)(aircraft)
	every aircraft_type must have an aircraft
licensed_on	(staff)(type_rating)
	not every type_rating has staff who are licensed on it
can_cook	(staff)(dish)
	not every type_rating can be cooked by a staff
operating_on	(staff)(flight)
	not every flight has to have staff assigned to it
on_aircraft	(staff)(aircraft)
	every flight must have an aircraft assigned to it
connected_flight	(flight_ticket)(flight)
	every flight ticket must be connected to a flight
owns_ticket	(passenger)(flight_ticket)
	not every passenger has a flight ticket
	every flight ticket is owned by a passenger

Relational Schema

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type_rating(type_rating_id, rating_name)
aircraft_family(family_id, family_name, manufacturer)
aircraft_type(aircraft_type_id, variant_name, family_id, type_rating_id, max_range)
aircraft(aircraft_id, aircraft_type_id, variant_name, family_id, type_rating_id, manufacturer, max_range)
staff(staff_id, first_name, last_name, birth_date, password_hash, role, rank, gender, nationality)
speaks(staff_id, language)
has_rating(staff_id, type_rating_id)
can_cook(staff_id, dish_id)
disk_dish(dish_name)
operating_on(staff_id, flight_id)
flight(flight_id, date, departure_time, departure_airport, arrival_time, arrival_airport, gate, status, flight_number, boarding_time)
connected_flight(ticket_id, seat_number, class)
flight_ticket(ticket_id, passenger_id, seat_number, class)
passenger(passenger_id, first_name, last_name, birth_date, gender, nationality, has_allergy, disability_assistance)
guardian(guardian_passport, child_passport)

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SNAPSHOT		aircraft_family		aircraft_type		aircraft								
type_rating	aircraft	family_id	family_name	manufacturer	variant_name	family_id	pilot_capacity	seats	max_range	aircraft_id	aircraft_type_id	pilot	seats	max_range
1	2022/02/24	1	2022	Boeing	737	1	200	1	8,000	1	1	Male	200	234
2	2022/02/24	2	2022	Boeing	737	1	200	1	8,000	2	1	Female	200	235
3	2022/02/24	3	2022	Airbus	A320	2	180	2	8,000	3	2	Male	180	236
4	2022/02/24	4	2022	Boeing	737	4	200	4	8,000	4	3	Female	200	237
5	2022/02/24	5	2022	Boeing	737	4	200	4	8,000	5	4	Male	200	238
						5	1	1	8,000	6	5	Male	200	239
						6	1	1	8,000	7	6	Female	200	240
						7	1	1	8,000	8	7	Male	200	241
						8	1	1	8,000	9	8	Female	200	242
						9	1	1	8,000	10	9	Male	200	243
						10	1	1	8,000	11	10	Female	200	244
						11	1	1	8,000	12	11	Male	200	245
						12	1	1	8,000	13	12	Female	200	246
						13	1	1	8,000	14	13	Male	200	247
						14	1	1	8,000	15	14	Female	200	248
						15	1	1	8,000	16	15	Male	200	249
						16	1	1	8,000	17	16	Female	200	250
						17	1	1	8,000	18	17	Male	200	251
						18	1	1	8,000	19	18	Female	200	252
						19	1	1	8,000	20	19	Male	200	253
						20	1	1	8,000	21	20	Female	200	254
						21	1	1	8,000	22	21	Male	200	255
						22	1	1	8,000	23	22	Female	200	256
						23	1	1	8,000	24	23	Male	200	257
						24	1	1	8,000	25	24	Female	200	258
						25	1	1	8,000	26	25	Male	200	259
						26	1	1	8,000	27	26	Female	200	260
						27	1	1	8,000	28	27	Male	200	261
						28	1	1	8,000	29	28	Female	200	262
						29	1	1	8,000	30	29	Male	200	263
						30	1	1	8,000	31	30	Female	200	264
						31	1	1	8,000	32	31	Male	200	265
						32	1	1	8,000	33	32	Female	200	266
						33	1	1	8,000	34	33	Male	200	267
						34	1	1	8,000	35	34	Female	200	268
						35	1	1	8,000	36	35	Male	200	269
						36	1	1	8,000	37	36	Female	200	270
						37	1	1	8,000	38	37	Male	200	271
						38	1	1	8,000	39	38	Female	200	272
						39	1	1	8,000	40	39	Male	200	273
						40	1	1	8,000	41	40	Female	200	274
						41	1	1	8,000	42	41	Male	200	275
						42	1	1	8,000	43	42	Female	200	276
						43	1	1	8,000	44	43	Male	200	277
						44	1	1	8,000	45	44	Female	200	278
						45	1	1	8,000	46	45	Male	200	279
						46	1	1	8,000	47	46	Female	200	280
						47	1	1	8,000	48	47	Male	200	281
						48	1	1	8,000	49	48	Female	200	282
						49	1	1	8,000	50	49	Male	200	283
						50	1	1	8,000	51	50	Female	200	284
						51	1	1	8,000	52	51	Male	200	285
						52	1	1	8,000	53	52	Female	200	286
						53	1	1	8,000	54	53	Male	200	287
						54	1	1	8,000	55	54	Female	200	288
						55	1	1	8,000	56	55	Male	200	289
						56	1	1	8,000	57	56	Female	200	290
						57	1	1	8,000	58	57	Male	200	291
						58	1	1	8,000	59	58	Female	200	292
						59	1	1	8,000	60	59	Male	200	293
						60	1	1	8,000	61	60	Female	200	294
						61	1	1	8,000	62	61	Male	200	295
						62	1	1	8,000	63	62	Female	200	296
						63	1	1	8,000	64	63	Male	200	297
						64	1	1	8,000	65	64	Female	200	298
						65	1	1	8,000	66	65	Male	200	299
						66	1	1	8,000	67	66	Female	200	300
						67	1	1	8,000	68	67	Male	200	301
						68	1	1	8,000	69	68	Female	200	302
						69	1	1	8,000	70	69	Male	200	303
						70	1	1	8,000	71	70	Female	200	304
						71	1	1	8,000	72	71	Male	200	305
						72	1	1	8,000	73	72	Female	200	306
						73	1	1	8,000	74	73	Male	200	307
						74	1	1	8,000	75	74	Female	200	308
						75	1	1	8,000	76	75	Male	200	309
						76	1	1	8,000	77	76	Female	200	310
						77	1	1	8,000	78	77	Male	200	311
						78	1	1	8,000	79	78	Female	200	312
						79	1	1	8,000	80	79	Male	200	313
						80	1	1	8,000	81	80	Female	200	314
						81	1	1	8,000	82	81	Male	200	315
						82	1	1	8,000	83	82	Female	200	316
						83	1	1	8,000	84	83	Male	200	317
						84	1	1	8,000	85	84	Female	200	318
						85	1	1	8,000	86	85	Male</		