

KB TU

FIT

DATABASES

Laboratory work 1. ERD diagram.

International Airport Database

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1. The purpose of the work

To build an ER diagram of the "International Airport" domain, identify entities and attributes, identify relationships and cardinalities, normalize the structure to 3NF, and prepare a document with an ERD and a text description of the solution.

2. Theoretical background

The ER model is a conceptual model that describes entities, their attributes, and relationships.

Normalization is the process of decomposing tables to reduce redundancy: 1NF (atomicity), 2NF (full functional dependence on PK), 3NF (absence of transitive dependencies).

Cardinality is 1:1, 1:M, M:N in ERD it reflects the number of links between records.

3. Identification of entities

airport

airline

flight

passenger

booking

booking_change (reservation change history)

boarding_pass

baggage

baggage_check

security_check

4. Identify Relationships

1. Airport — Flight

One airport (**1**) → many flights (**M**) (as departure airport).

One airport (**1**) → many flights (**M**) (as arrival airport).

2. **Airline — Flight**

One airline (1) → many flights (M).

3. **Flight — Booking**

One flight (1) → many bookings (M).

4. **Passenger — Booking**

One passenger (1) → many bookings (M).

5. **Booking — Boarding_Pass**

One booking (1) → one boarding pass (1).

6. **Booking — Baggage**

One booking (1) → many baggage items (M).

7. **Baggage — Baggage_Check**

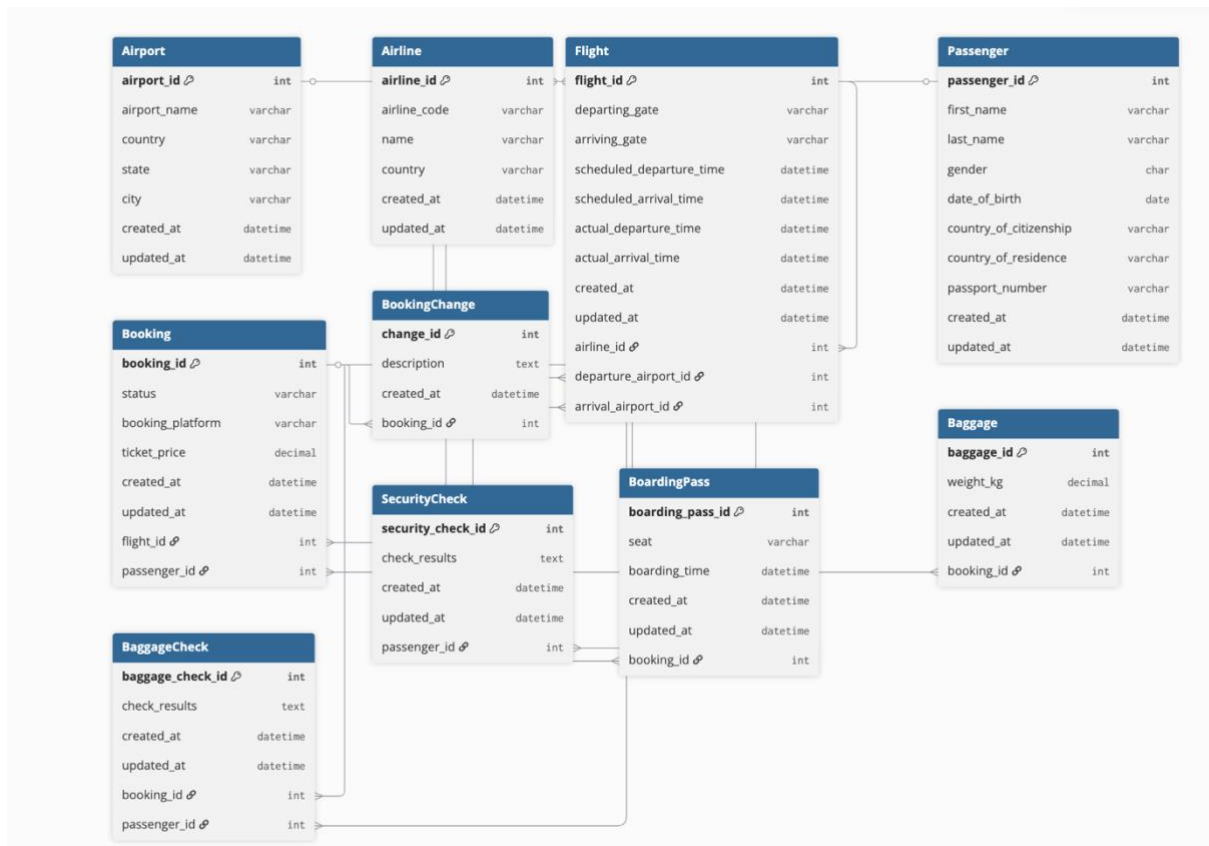
One baggage item (1) → many baggage checks (M).

8. **Booking — Booking_Change**

One booking (1) → many booking changes (M).

9. **Passenger — Security_Check**

One passenger (1) → many security checks (M).



Conclusion

In this lab work, the main entities, attributes, and relationships of the “International Airport” database were identified. The schema was normalized to the Third Normal Form (3NF) to reduce redundancy and maintain data integrity. An ER-diagram was created that clearly shows all entities, their attributes, and relationships. The resulting model provides a clear and consistent structure for managing airport operations data.