Activity 10

UD2

David Nagy György

1r DAM BD

Angela Maria Solarte Bolaños

ÍNDICE

Objective

Analyze the Travel Agency case to identify entities, subentities, and possible weak entities; determine their attributes and keys; establish and justify the relationships with their cardinalities (minimum and maximum) based on the prompt; and represent everything in a complete Entity–Relationship Diagram (ERD).

Case Study: Travel Agency

The travel agency wants to design a database to computerize the management of its customers, employees, trips, and bookings.

Within the agency there are different people involved, and for all of them the system should record basic information such as ID (DNI), first name, last name, and phone number. Among these people are customers, for whom the system also stores email and country of residence, and employees, for whom the employee number and hire date are recorded.

Within the group of employees, there are two roles with different functions. On the one hand, there are travel agents, responsible for managing trips and assisting customers from a specific office. On the other hand, there are tour guides, who accompany groups during trips and record their primary language. A single employee cannot be both an agent and a guide at the same time.

The agency organizes numerous trips, and for each one it wishes to store the trip code, destination, departure date, return date, and base price. Each trip can be managed by one or more employees (agents or guides) and can receive many bookings from customers. A single employee can participate in multiple trips.

When a customer purchases or books a trip, a booking is created. For each booking, the system stores a booking number, the date it was made, and the number of people included. Each booking belongs to one customer and one trip,

though a customer can have multiple bookings over time. If a trip is removed from the system, the associated bookings lose their meaning, since they depend directly on the trip.

In the agency, a customer can make many bookings, and each booking belongs to a single customer. Likewise, a trip can have multiple bookings, but each booking is linked to a single trip. In addition, each trip has at least one employee assigned, and an employee can participate in several trips.

Tasks

1. Identify the entities and attributes, and indicate which entities are strong, weak, or subentities.

ENTITY:

       PERSON

       TRIP

       BOOKING

       CUSTOMER

       EMPLOYEE

SUBENTITY:

       PERSON: CUSTOMER, (EMPLOYEE = TRAVEL_AGENT, TOUR_GUIDE)

ATTRIBUTE:

       PERSON: #dni, first_name, last_name, phone.

       CUSTOMER: #dni, email, country_residence.

       EMPLOYEE: #dni, employee_number, hire_date.

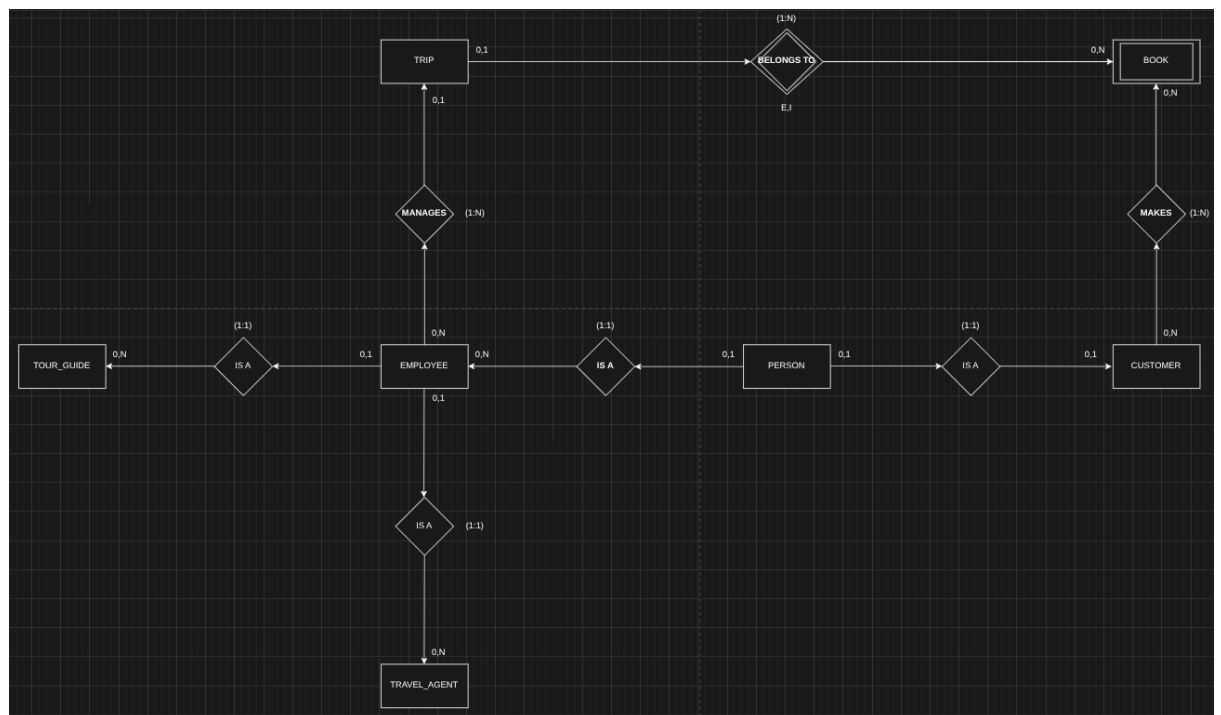   TRIP: #trip_code, destination, departure_date, return_date, base_price.

       BOOKING: booking_number, booking_date, number_people.

2. For each relationship, complete a table like the following:

Relationship	Direction	Min	Max	Justification
IS A	PERSON → CUSTOMER	0	1	A person may not be a customer (0) or may be a customer (1).
IS A	PERSON → EMPLOYEE	0	1	A person may not be an employee (0) or be an employee (1).
IS A	EMPLOYEE → TRAVEL_AGENT	0	1	An employee may not be an agent (0) or may be an agent (1).
IS A	EMPLOYEE → TOUR_GUIDE	0	1	An employee may not be a guide (0) or may be a guide (1).
MANAGES	EMPLOYEE → TRIP	1	N	Each trip has at least one employee assigned, and an employee can participate in multiple trips.
MAKES	CUSTOMER → BOOKING	0	N	A customer may have no reservations or many, but each

				reservation belongs to a single customer.
BELONGS TO	TRIP → BOOKING	1	N	A trip can have multiple reservations, but a reservation belongs to only one trip; it also depends on the trip (a weak entity).

3. Design the Entity–Relationship Diagram (ERD) that represents all the information and described relationships.

4. Explain which entity you consider weak, indicating the type of weakness (by existence, identification, or both).

BOOKING is a weak entity with both existence and identification dependency

on TRIP.

5. Indicate which attributes are inherited by the subentities.
TRAVEL_AGENT: #dni, office.

TOURE_GUIDE: #dni, primary_language.

Submission

Export the document to PDF and submit it via Google Classroom.