Faculty of Computer & Information Sciences
Ain Shams University
Subject: DBA 372 Database Management Systems
Year: 3rd year undergraduate
Academic year: 2nd term 2019-2020

Research Topic (1)

Title: Enhanced entity-relationship diagram (EERD) and mapping-to-schema case study

تحذير هام: علي الطالب عدم كتابة اسمه أو كتابة اي شيء يدل علي شخصيته

Database Description:

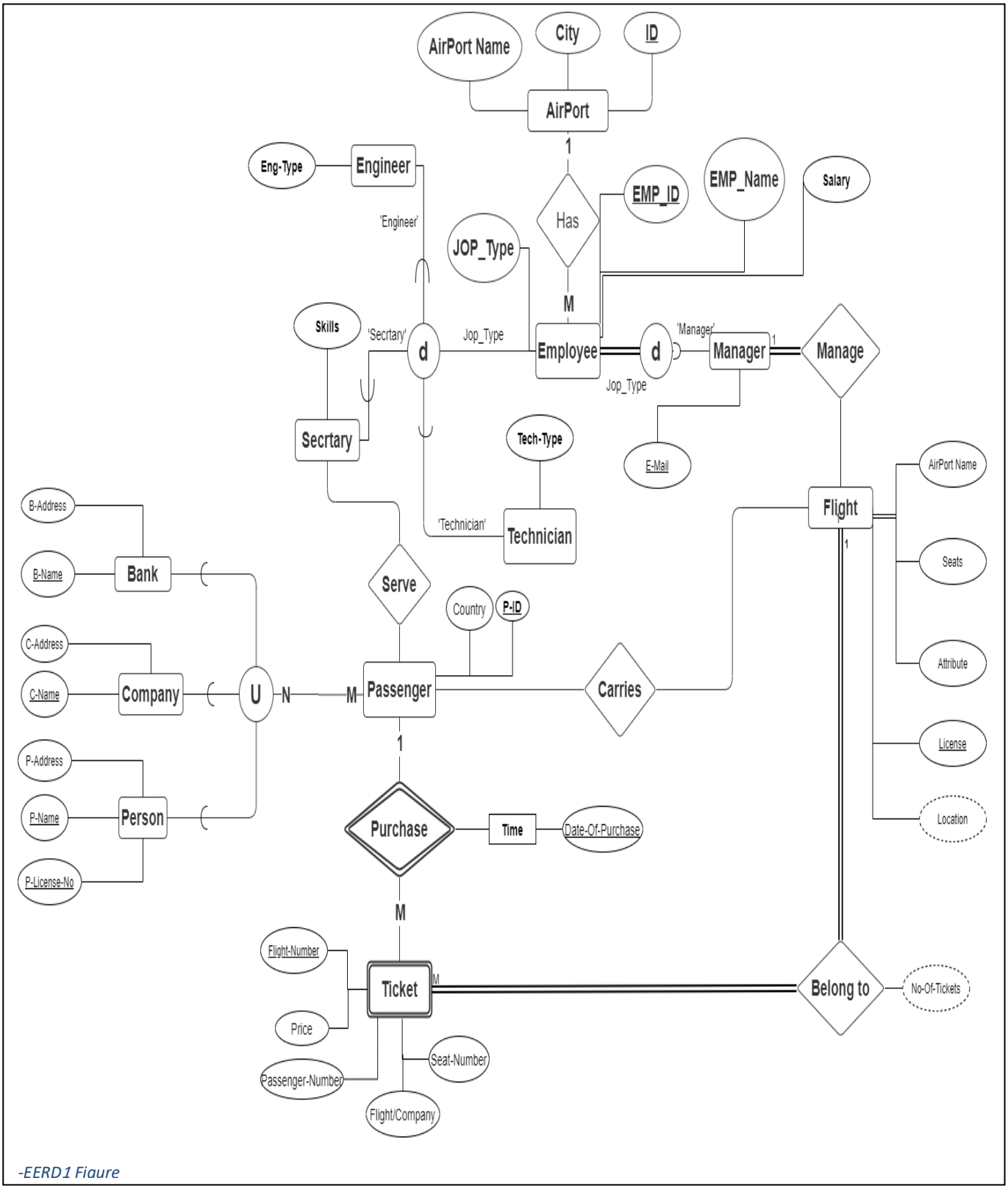
Airport management system: There are many aircraft that we must control ,so I create this database to collect all the data for all airports in terms of their locations , their national number and inside each airport I collect (the number and types of employees and the skills of some of the reception staff) and all types of customers that are possible from (Banks, companies and people) In order to reserve their private ticket for their specific plane.

Database constraints:

- **AirPort** have a primary key called ID
- Each **airport** has employees
- **Employee** is Super Class
- **Employee's** Subclass (Technician, Secretary, Engineer, Manager)
- **Employee** have a primary Key Called EMP_ID.
- JOP_Type that in **Employee** class determine employee type.
- Secretary serve **passengers**
- **Passenger** have a primary key called P-ID

- The Relation Between **Passenger** and The Category Many to Many
- This Category Have {Person, Company, Bank}
- Each of them has Primary Key:
    - ✓ P-License-No for **Person**
    - ✓ C-Name for **Company**
    - ✓ B-Name for **Bank**
- Each **passenger** Get into The Relation Called Purchase**.**
- Each Purchase have entity called **Time** with primary key Called Date-Of-Purchase.
- Every **Passenger** can purchase a Ticket.
- **Ticket** have Primary Key called Flight-Number.
- This **Ticket** Belong to Specific Flight.
- This **Flight** Has Primary Key called License.
- Every **Manager** Has an E-Mail Primary Key.
- Each **Manager** Can Control All **Flights**.

Enhanced Entity-Relationship (EERD) Modeling:



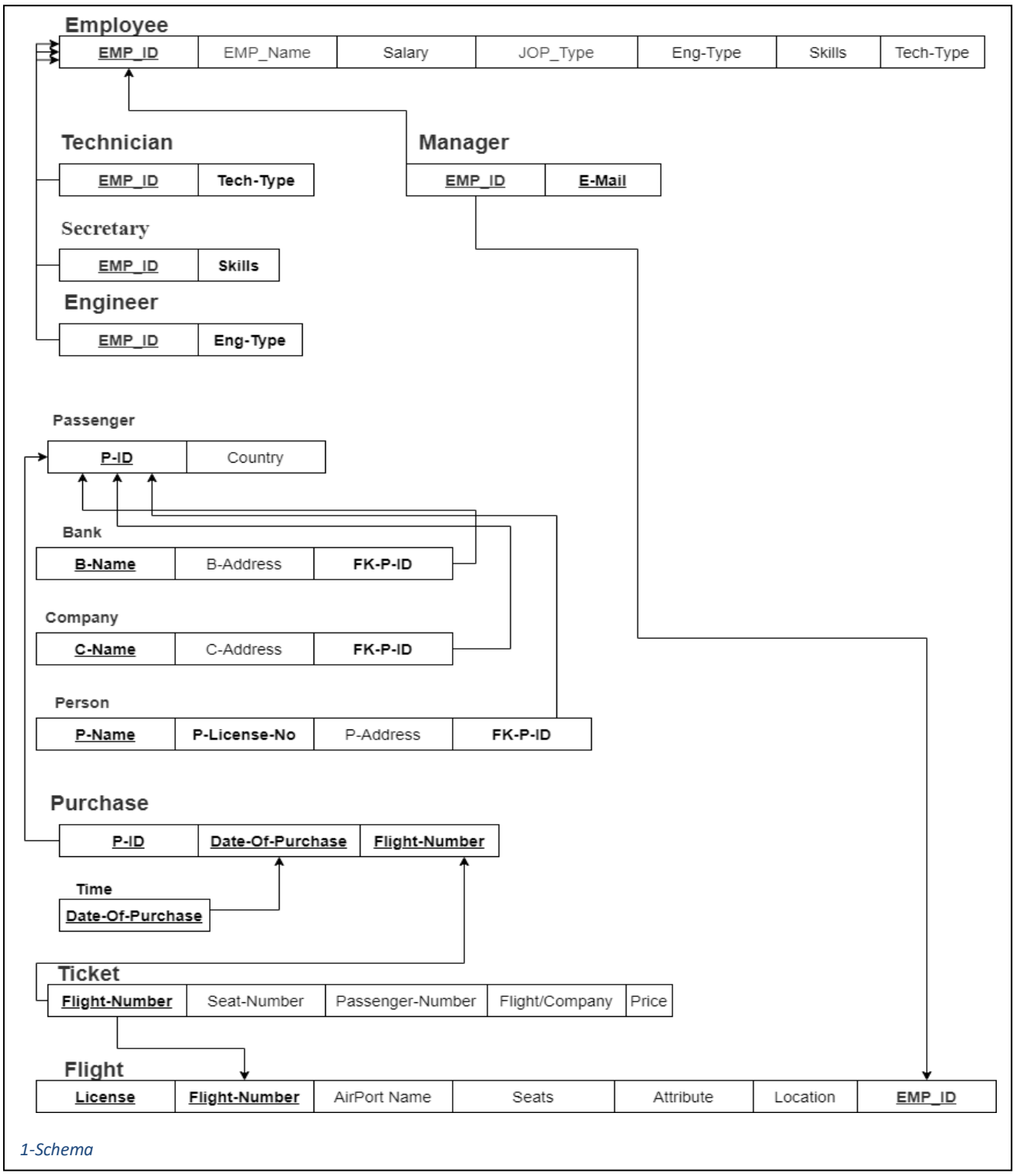
-EERD1 Figure

Database Schema:

Schema 1: -

a. Option 8A: Multiple Relations-Superclass Employee and subclasses Technician, Secretary, Engineer, Manager

b. Mapping Option: specialization

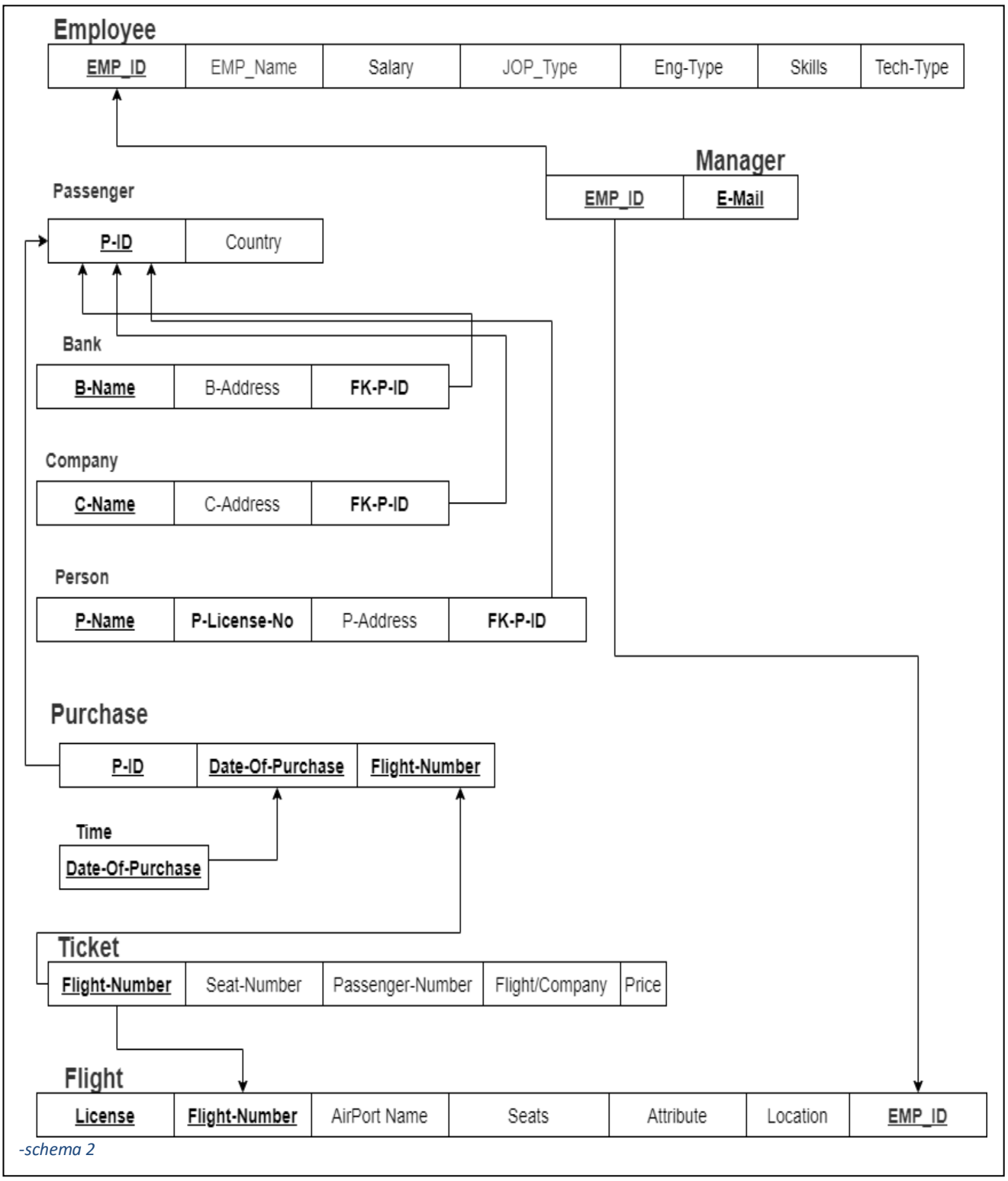


1-Schema

Schema 2: -

a. Option 8C: Single relation with one type attribute

b. Mapping Option: attribute-defined specialization on Job Type.

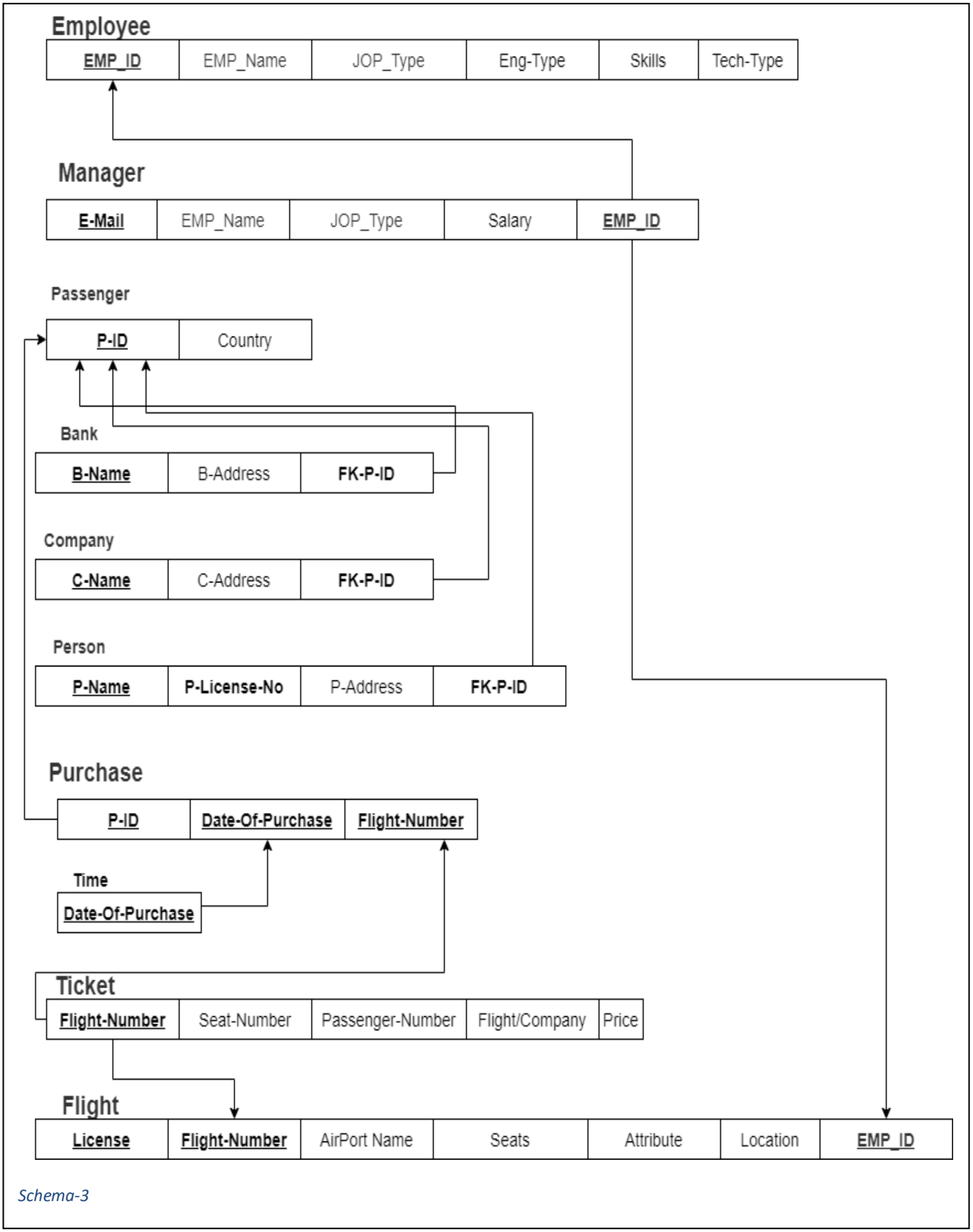


-schema 2

Schema 4: -

a. Option 8B : Multiple relations-Subclass relations only

b. Mapping Option: Generalizing Manager into superclass Employee.

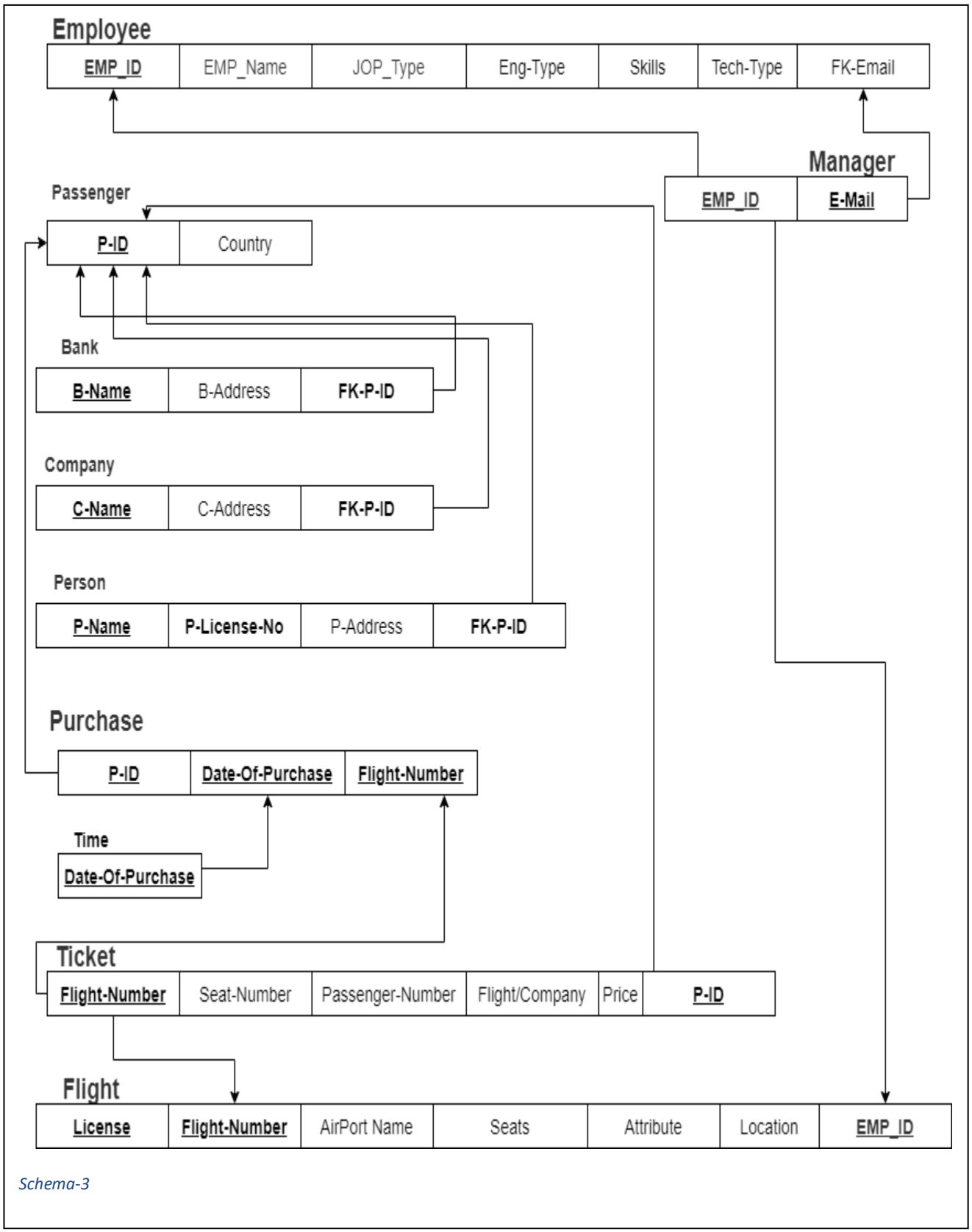


Schema-3

Schema 4: -

a. Option :None

b. Mapping Option: Mapping the EER categories (union types)



Schema-3

Reference:

[1] [Ramez_Elmasri, _Shamkant_B._Navathe]_Fundamentals_(BookZZ.org)

[2] Lecture 3, Chapter 7

[3] Lecture 5, Chapter 4

[4] Lecture 2, Chapter 3

[5] Lecture 1, Chapter 2

[at least 5 references]

With My Best Regards,

your signature