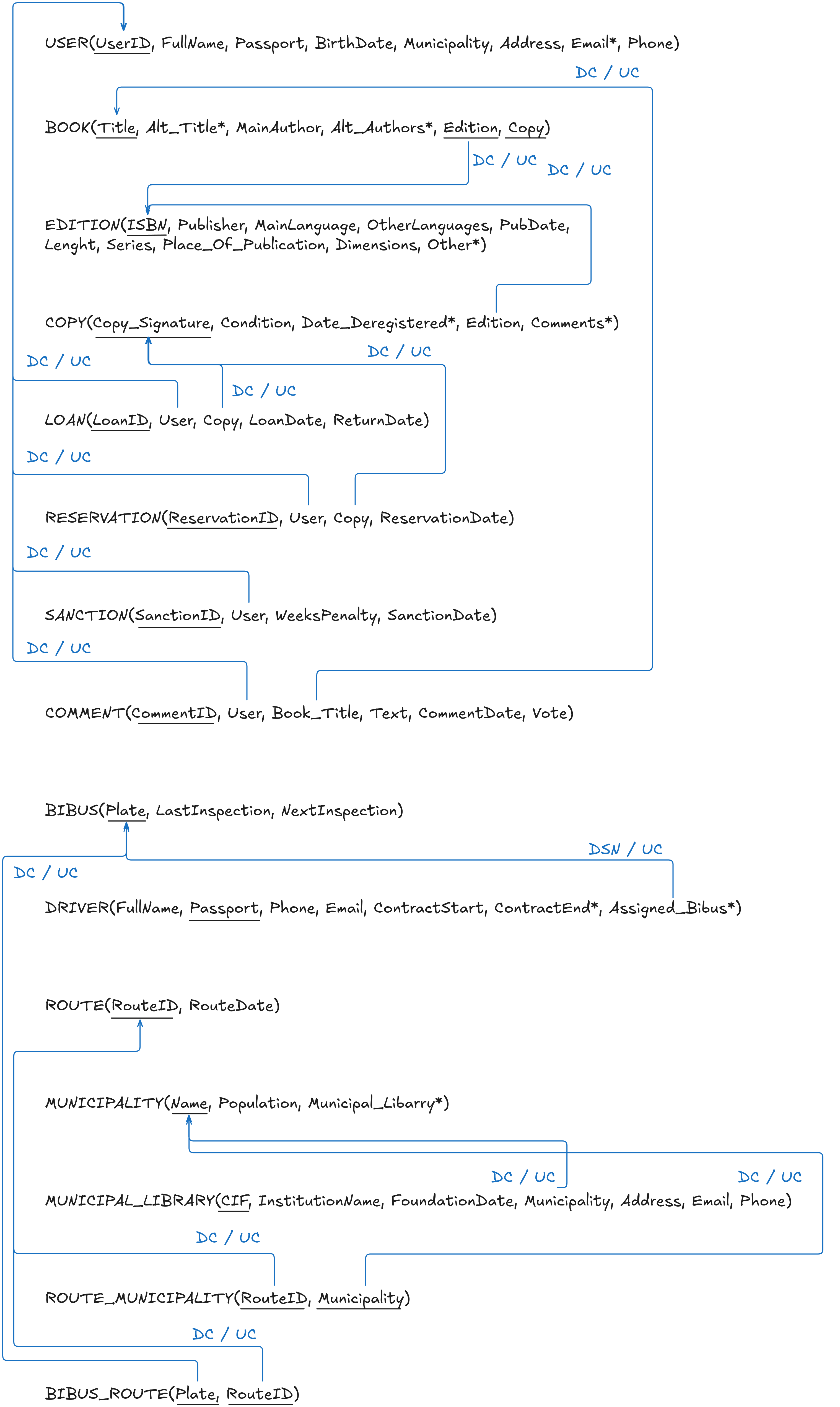
|  |  |  |  |
| --- | --- | --- | --- |
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# Introduction

The Foundation for the Diffusion of Culture (Foundicu Org.) requires an updated database system to efficiently manage its bibliographic collections and mobile library services. The current database is inadequate, containing only three disjointed tables with limited constraints, leading to poor data integrity and insufficient semantic coverage. This project aims to design a new relational database that meets the foundation’s operational needs, implements necessary constraints, and facilitates seamless data migration. The accompanying files, create-tables.sql and migration.sql, contain the implementation of the new schema and data migration procedures, respectively.

In this document will be present a diagram of the followed database structure, with the primary keys and the foreign keys, accompanied with

# Relational Design



* Implicit semantics: semantic presuppositions that are not found in the explicit description, but which are required to complete the relational design. Again, a tabular format is recommended for describing these presuppositions, such as the following:

|  |  |  |  |
| --- | --- | --- | --- |
| **Presp\_id** | **Stage** | **Mechanism** | **Description** |
| I1 | Design | Primary key | Cars are identified by number plate |
| I2 |  |  | … |
| … |  |  | … |

Table 1: Implicit semantics incorporated into the relational graph

* Non-observed explicit semantics: each of the explicit presuppositions (stated in the problem description) that could not be included in the relational graph, will be identified (with a label, such as S1, S2, …) and described in this section. Tabular format is recommended, as shown next:

|  |  |
| --- | --- |
| **Presp\_id** | **Description** |
| S1 | Phone numbers have 9 digits (at least, at most) |
| S2 |  |
| … | … |

Table 2: Non-observed explicit semantics

# Relational Statics Implementation in SQL (DDL)

This section must include the creation of each table. In addition to the code (*NEWcreation.sql* script) for creating tables (valid syntax in PL/SQL), you should include the correspondent subsections referring to the excluded semantics that are re-incorporated, the newly incorporated implicit semantics, and the explicit semantics that were observed but are now excluded. All these sections will be accomplishing by fulfilling the correspondent table (see tables 3, 4 and 5). Any of these tables is empty (in case), the table should be omitted and replaced by a phrase such as "Has not been reported."

Re-incorporated semantics: (identifiers referred to those assigned in table 1)

|  |  |
| --- | --- |
| **Presp\_id** | **Solution Description** |
| S1 | field size is 9; a constraint (*constraint\_name*) CHECK (phone³100000000) is added to the table *<table\_name>* |
| … | … |

Table 3: re-incorporated explicit semantics

Incorporated implicit semantics: (numbering continues where ended in table 2)

|  |  |  |  |
| --- | --- | --- | --- |
| **Presp\_id** | **Stage** | **Mechanism** | **Description** |
| In+1 | Implem. | Check | There is no *age* greater than 120 years old |
| … |  |  | … |

Table 1(cont.): implicit semantics incorporated in the definition of each table

Excluded semantics:

|  |  |  |  |
| --- | --- | --- | --- |
| **Presp\_id** | **Description** | **Cause** | **Explicit/Implicit** |
| E1 | Contracts are automatically updated with the company’s update (integrity option UC on the FK referencing *Companies*). | PL/SQL does not observe this integrity option | Implicit |
| … | … | … |  |

Table 5: explicit semantics excluded in the creation of each table

# Workload (DML)

This section will describe the uploading of the workload (*NEWload.sql* script) from the tables provided (and described in the statement). To this end, we will analyze the problem of populating the tables with the workload. The solution will be described, with emphasis on:

* The specific order of tables to dump data into them (reasoned).
* The problems that arise (obligatory field value, inconsistencies in the original data, etc...) and the solutions adopted to overcome them.