BACHELOR IN INFORMATICS ENGINEERING
Academic course: 2024/2025 – 3rd Year, 2nd term
Subject: *File Structures and Databases*
Solution 1st Assignment: Relational DB Design

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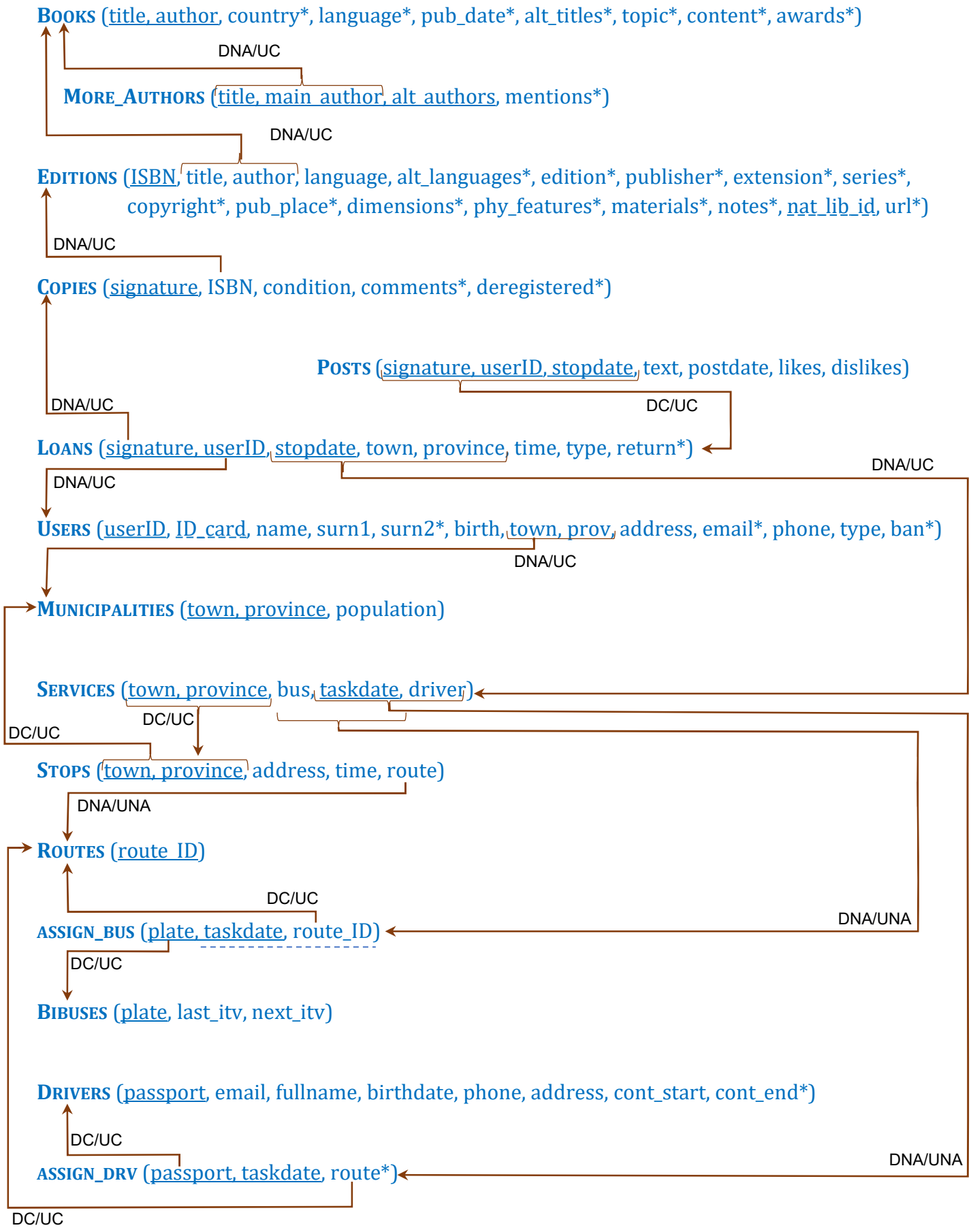

Semantic comments

- Copies.condition takes values {'N', 'G', 'W', 'V', 'D'} standing for {'new', 'good', 'worn', 'very used', 'deteriorated'} respectively.
- Users.ID_card may be either a passport or library's CIF
- Users.type is 'P' for persons (non-library) rows, and 'L' for libraries.
- Users.ban is the date until which the user is banned (unused for libraries).
- assign_drv.route is an existent route for assignments, or null on driver's vacation; missing assignment dates reveal the driver's availability for that date (ultimately, when not assigned, s/he must go to the office).
- Loans.type is 'L' for (effective) loans rows, and 'R' for reservations (future loans).
- A tuple in 'Loan' with null return_date (and possibly 'stopdate' in the future) will be meant for a reservation; when the loan is made, this attribute will be assigned to non-null value.
- 'Time' attributes are expressed in minutes (natural number)

(Implicit) Incorporated Semantics:

- it is assumed that userID is still useful and unique (found to be not null and unique till far, and it's shorter than passports and CIFs), so it is kept and taken as pk
- it is assumed that name and surname/s should be kept separately
- it is assumed that passports and CIF are disjoint sets (else, *type* should be part of the Uk)
- (strong one) it is assumed that any town is included in one route at most; else, stop pk should include id_route, service relation should include that attribute, and that relation's fks should include it as well
- It is assumed that any bus without assignment for a date is available (unless that date is 'next_itv' date)
- Stop address is always the same in any given town. In a similar way, 'stop time' is always the same at a given town (real stop time nor small differences due to traffic conditions or eventualities won't be recorded).
- It is assumed that any user can post once for each time s/he borrows a book (several posts regarding the same book by the same user are allowed, but from different loans).
- Default value for Copies.condition is 'good'

(Explicit) Excluded Semantics

- cannot observe upper bounds for active (non-returned) loans
- cannot observe a route has at most one driver for a given date
- cannot prevent assignments on both 'next_itv' or 'next_itv' date
- cannot prevent loans of non-available copies (loaned, reserved or deregistered)
- cannot prevent loans to banned users (sanctioned) nor autom. remove their reservations
- cannot prevent libraries from adding posts;
- cannot observe that postdate is after loan date, nor that number of likes/dislikes is initially 0