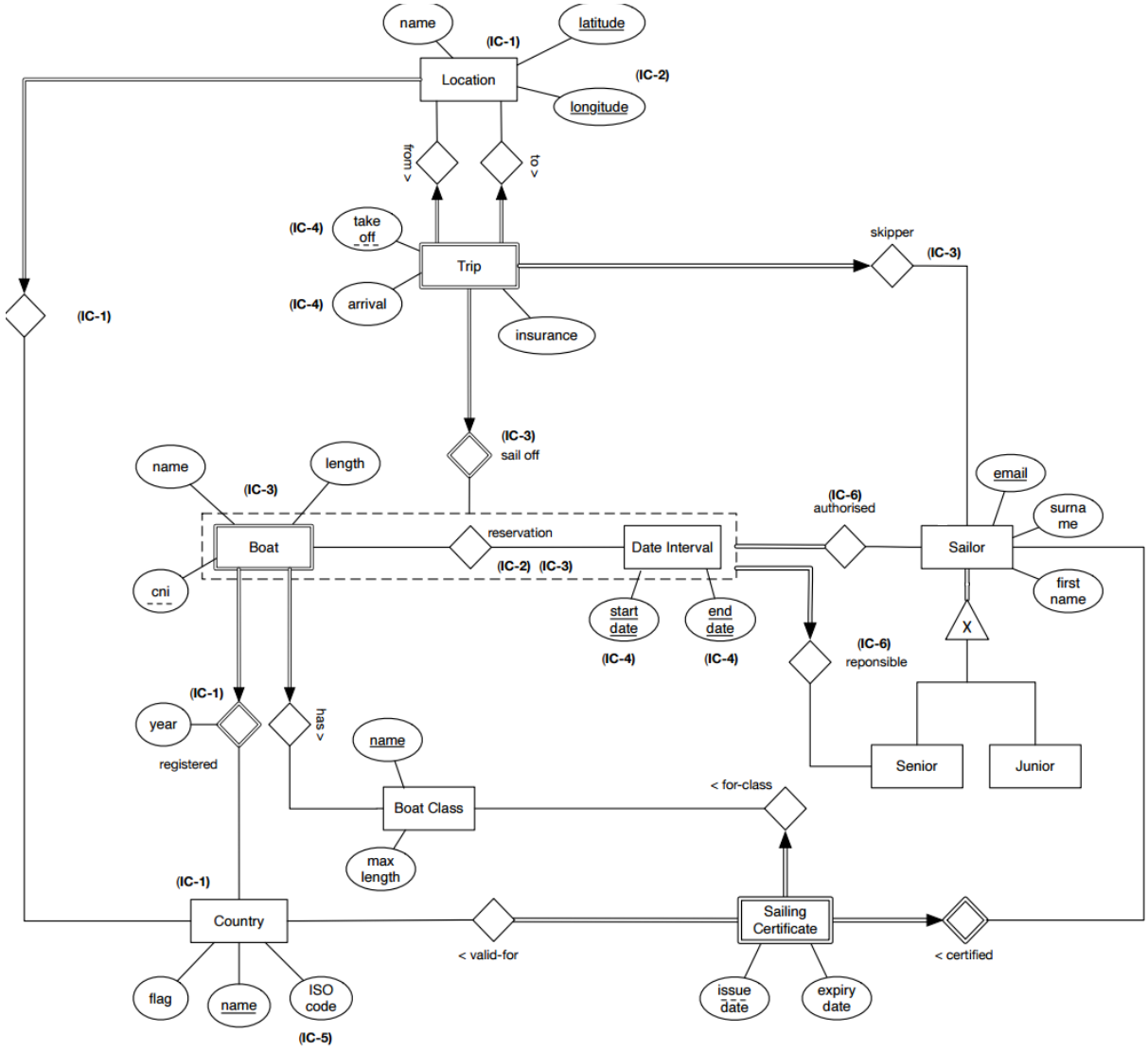
Information Systems and Databases 2022/2023

Project Assignment - Part 2

The second part of the project aims at creating, populating, and querying a database that implements the Entity-Association model presented.

Entity-Association Diagram

Consider the Entity-Association diagram that will be used in the next sections:



Along with the following Integrity Constraints (stated with the terms of the initial universe of discourse):

- **(IC-1)** Every country where boats are registered must have at least one location.
- **(IC-2)** Any two locations must be at least one nautical mile apart.
- **(IC-3)** The skipper must be an authorized sailor of the corresponding reservation.
- **(IC-4)** A boat can not take off on a trip before the reservation start date.
- **(IC-5)** A country has a unique standard ISO code.
- **(IC-6)** One of the senior authorized sailors must be the responsible for the reservation.

Work to be developed

Translation to SQL

1. Using the SQL (DDL) language, present the statements to create the database **corresponding to the Entity-Association model developed above**. Ensure that data types and field sizes selected are the most appropriate. The constraints on each field, row and table must also be specified. Ensure that **NOT NULL**, **CHECK**, **PRIMARY KEY**, **UNIQUE**, and **FOREIGN KEY** constraints are appropriately used. The use of accented characters and cedillas should be avoided.
2. List all the constraints that exist in the Entity-Association model that cannot be captured (implemented) in the SQL schema, writing them **as comments** to the respective tables.

Database Loading

Define in SQL (DML) all the **INSERT** statements that you find necessary to cover specific characteristics that real data scenarios can have in order to validate the expected results of the queries.

Simple SQL Queries

A. The name of all boats that are used in some trip.
B. The name of all boats that are not used in any trip.
C. The name of all boats registered in 'PRT' (ISO code) for which at least one responsible for a reservation has a surname that ends with 'Santos'.
D. The full name of all skippers without any certificate corresponding to the class of the trip's boat.

Evaluation

The project will be evaluated from the submission that should contain all the answers to the items requested above. Oral discussions may be requested to randomly selected groups. The following table indicates the valuation of each part of the work to be developed.

Item	**Grading (0-20)**
Translation to SQL	6.0
Integrity Constraints	3.0
Database Loading	3.0
SQL Queries	8.0

The quality (in terms of organisation, indentation, and simplicity) of the SQL scripts will also be evaluated.

Submission

The submission must be a structured **zip** file named `project-db-GG.zip`[1] where GG is the number of the group as follows[2]:

`cover.pdf`	**A cover page PDF with the names of the authors and any notes** The report should start with a cover page with the title "**SIBD Project - Part 2**", with the **name and number of students**, the **relative percent of each student's contribution**, together with the **total effort (in hours) that each element of the group dedicated to the project**, the **number of the group**, the **shift to which the group belongs**, and **the name of the laboratory teacher.** The report can have at most one page where groups can write down notes concerning aspects they consider relevant.
`schema.sql`	**File with the schema creation instructions** This file should cleanly drop any existing tables before recreating them. The constraints that exist in the Entity-Association model that are not

[1] ⚠ Only ZIP or GZ formats are accepted. Other archive formats (such as RAR) are not accepted.
[2] Penalties will apply to the submissions that do not meet the structure requested.

	captured (implementable) in the SQL schema should be added as comments to the corresponding tables. The script should be runnable in POSTGRES on `db.tecnico.ulisboa.pt`.
`queries.sql`	**File with the SQL Queries** Please ensure that queries are clearly marked using comments. The script should be runnable in POSTGRES on `db.tecnico.ulisboa.pt`.
`populate.sql`	**File with the scripts that populate the database** The script should be runnable in POSTGRES on `db.tecnico.ulisboa.pt`.
`output.txt`	**File with the output of each query** Please make sure that the output of each query is not empty.