



**DATABASES I / DATABASES**  
**(2023 - 2024)**  
**PROJECT: WWC FOOTBALL**  
**SPECIFICATIONS AND GUIDELINES**  
**PART I**

### **Project Description**

You are a football enthusiast and decided to create a database to store the most relevant information associated with the Women's Football World Cup that will take place in 2027. In the first phase of the project the task is to create a data model (conceptual and physical) that allows the storage of the required information to fill the requirements described below.

### **Requirements**

The database will store all pertinent information of the draw and matches of the tournament. You want to save data about each player, head coaches, and the principal referees. For all these people you want to know their name, birth date, and gender. Additionally, for the players, you want to store their (most common) field position (from a closed list of possible positions).

Each referee can participate in multiple matches and one match must have a single principal referee (we are going to store only information regarding the principal referee). As for the coaches (only the principal coach also), each coach trains one team and each team must have a head coach. A referee cannot rule a game of his/her country.

Regarding each team, we want to store their name (country's name) and country code (unique, 3 letter code). It should be possible to identify the group name (Group Stage) to which each team was assigned initially.

A football match always has two parts of 45 minutes and each part can have extra time granted by the referee after the 45-minute limit (regular time). For matches after the Group Stage, it is not possible to end with a tie. In that case if we reach the end of the second half without a winner, the match goes to extra time. The extra time is composed of two parts of 15 minutes, and both can also have added time. Finally, if at the end of the extra time the tie persists, the winner is decided with penalties.

For each match we need to store which teams are playing, starting date and time, added time given at the end of the first half and second half. In case the match goes to extra time, we must store how much added time there was in the first and second half of the extra time. We must also know if the match went to penalties after the extra time. Each match occurs in a stadium, which has a name and a location (country and city). Additionally, you want to store which players were summoned by the coach to be part of each game (regardless of whether they played or stayed at the bench during the entire match) and the starting team (11 players).

We also want to keep track of the goals scored by each player in each match and if the goal resulted from a penalty. We want to keep a record of the cards shown to each player in each match: there can be yellow and red cards. Finally, we want to store information about the replacements that took place during the match: which player left, and which entered. For each

card, replacement, and goal we want to store in which phase of the game and minute it occurred.

This World Cup will be composed of 6 stages: the group stage, the round of 16, the quarterfinals, the semifinals, the third-place play-off, and the final. We want to store the date when each phase starts and the date when it ends, and each match must be associated to one of the stages mentioned.

### **Deliverables (PART I)**

The model that will result from the answers to the requirements set out above can always be expanded as students identify new questions that enrich the model. The requirements description is obviously incomplete, and the identification of entities, attributes, or other design decisions, not explicitly mentioned, are considered in project's part I objectives. Additionally, in this first delivery, there may be restrictions, implicitly or explicitly identified in the requirements, that cannot be represented, and their implementation will have to be postponed to the business rules definition phase that will be part of the 2nd delivery.

The first delivery consists of the design of the entity-relationship and relational models<sup>1</sup>, and the production of SQL code (DDL) instantiated to Microsoft SQL Server as indicated below:

1. Conceptual Data Model (Entity-Relationship Model) developed in Power Designer (.cdm file).
2. Physical Data Model (Relational Model) developed in Power Designer and obtained using Microsoft SQL Server specifications (.pdm file).
3. SQL script generated in Power Designer with SQL statements for database objects creation in SQL Server (.sql file).
4. Text file (.txt) with the identification (name and number) of all the group elements.

The deliverables described above must be sent by email to jnneves@novaims.unl.pt, ajose@novaims.unl.pt and mmfernandes@novaims.unl.pt in a single zipped file (.zip) following the template "DB\_2023\_2024\_Delivery\_1\_AAAANNN" – AAAANNN is the student number of the group's delegate.

### **Additional Guidelines (PART I)**

- The project can be implemented individually or in groups of a maximum of five (5) students.
- **PART I** deadline is **October 8, 2023**. For each day of delay in the delivery of the 1st part of the final work, 2 points (in a scale from 0 to 20) will be taken from the Part I score. Five days after the deadline (October 13, 2023) the delivery is not accepted, and the group will have a grade of zero (0) in this part of the project.

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<sup>1</sup> Power Designer Conceptual Data Model and Physical Data Model, respectively.