

Description

In this phase of the final project, the groups should promote the evolution of the database that results from the first phase of the project, implementing a set of rules that make sense in the World Cup data model. For the starting point of the groups to be equivalent, a version of a possible representation of the data model is provided – conceptual and physical data models and the SQL script to generate the database.

Part I specification and guidelines, namely parts of the text that described rules that weren't implemented in the first phase of the project, should be considered as contextual information for Part II of the project.

The implementation of the integrity and business rules must be made using triggers complemented by other database objects (e.g., stored procedures, functions, integrity constraints) if necessary. The main goal is to produce a database enriched with a set of rules implemented to enforce integrity and business rules.

Rules¹

1. It is not possible to summon a player that does not belong to any of the countries participating in the match. (INSERT)
2. A referee cannot referee a match where her/his own country is participating. (INSERT/UPDATE)
3. When a yellow card event is inserted, it must be verified if the player already received a yellow card in the same match. If that is the case, then a new red card event must be inserted with the same data. (INSERT)
4. When a "Goal" event is inserted, it must be verified if the player that scored the goal was on the field. **For a player to be on the field**, either:
 - She was part of the starting 11 and did not leave (was not replaced and did not receive a red card);
 - She was not part of the starting 11 but replaced another player and did not leave afterwards (was not replaced and did not receive a red card).

If the scorer was not on the field, then the record must not be inserted, and a message must be displayed. (INSERT)

¹ The operations to be supported and subject of testing are presented between brackets in the end of the rule text.

5. When a “Replacement” event is inserted, it must be verified:

- If the “player out” was on the field²;
- If the “player in” was not on the field already and was on the bench, available to replace another player (to be available to replace a player means that the person is summoned, is not in the starting 11, did not go in yet and did not receive a red card);
- If the “player in” and the “player out” belong to the same team;
- If the 2 players are in the same match.

If any of these points is not verified, then the record must not be inserted, and a message must be displayed. (INSERT)

Deliverables

1. Script with SQL code to implement business/integrity rules (e.g., triggers, functions, stored procedures, integrity restrictions) – **one (1) single text file** with “.sql” extension.
2. A text file with the identification (name and number) of all the group elements.

Guidelines

- For the evaluation of the 2nd delivery, the code created to implement the integrity/business rules will be analyzed and their execution tested through examples created by the professors. If the triggers created by the groups prevent the test samples from functioning normally, the work will be penalized. The test results will have a very significant weight in the final evaluation.
- The tests mentioned above will consider both individual record and **batch operations** in the database. Batch operations are operations (insert/update/delete) that include several rows in the same statement.
- The triggers’ implementation should consider that for batch operations when in presence of mixed cases, i.e., correct rows together with incorrect rows, the DML operation (insert/update/delete) should be executed for the correct rows and not executed for the incorrect cases. If presented solutions opt to undo (rollback) all the operation when an error is detected just in part of the row set, the work will be penalized.
- The deliverables described above must be sent by email to jnneves@novaims.unl.pt, mmfernandes@novaims.unl.pt, and ajose@novaims.unl.pt in a single zipped file (.zip) following the template “DB_2023_2024_Delivery_2_AAAANNN” – AAAANNN is the student number of the group’s delegate.
- Part II deadline is **December 22, 2023**. **Files delivered after the deadline will not be accepted.**

² For the conditions that apply for a player to “be on the field” refer to question 4.