

DATABASES

Homework 4: Design of a database and development of a web application

1. Creation of the database

Realize the database for the management of a cycling championship considering the logical scheme below.

CYCLIST (CodC, Name, Surname, Nationality, CodT, BirthYear)

TEAM (CodT, NameT, FoundationYear, LegalAddress)

STAGE (Edition, CodS, StartingCity, ArrivalCity, Length, HeightDifference, DifficultyLevel)

INDIVIDUAL_CLASSIFICATION (CodC, CodS, Edition, Ranking)

Note: the underlined fields identify the primary key of each relationship. Some details on the fields of the various tables are shown below:

- *CodS* is an incremental positive integer (1, 2, etc.).
- *Edition* is an incremental positive integer (1, 2, etc.).
- *Length* is expressed in meters.
- *Ranking* contains the arrival position of the cyclist on the stage (1, 2, etc.).
- *DifficultyLevel* is a positive integer between 1 and 10.
- *HeightDifference* is expressed in meters.

The following activities are required:

- Create a SQL script for MySQL containing:
 - the instructions to create the database corresponding to the given logical schema and the specification of the appropriate integrity constraints
 - the instructions to populate the database (at least 1 record for each table)
- Write the SQL statements to do the following:
 - Query of the database created:
 - Given the code of a cyclist and the code of a stage (up to your choice), show the rankings obtained by the cyclist in the various editions. For each cyclist, display name, surname, name of the team to which they belong and the identifying attributes of the chosen stage. Sort the results in ascending order of Edition.
 - Data entry transaction in the database:
 - Insert into the database the data related to a new cyclist and a ranking.

2. Design and development of the web application

Design a web application in PHP for online consultation of the previously created database. The application should allow the user to perform the two activities corresponding to the SQL statements written for Section 1.

Note: All the parameters of any GET or POST requests must match with the names of the attributes in the logical scheme, as in the following example (pay attention to capital letters):

```
insert.php?CodC=1&Name=Marco&Surname=Pantani&BirthYear=1970&Nationality=Italian&CodT=5
```

2.1 Querying of the database created

After selecting the code of a cyclist (from a drop-down menu populated with values recovered from the database) and the code of a stage (free text input field), show the list of rankings obtained by the cyclist in the various editions. For each cyclist, display the name, surname and name of the team to which they belong.

A specific error message must be generated in case of missing data (at least one of the parameters empty) or not correctly entered (check the type of data entered).

Below you can find an example of the form to be filled in for insertion:

Posizione Ciclista in Tappa

Codice Ciclista:

2 - Chris Froome

Codice Tappa:

2

Cerca

Figure 1. Example form for querying the database

2.2 Insertion in the database

Two forms must be created: one for the insertion of a new cyclist and one for the insertion of the ranking of a cyclist in a (already existing) stage:

- The first form must request all the data necessary for the insertion of a new cyclist. Before insertion it is necessary to:
 - Check that the types of data entered are correct.
 - Check that the team for which insertion is requested already exists in the database
 - Make sure that there is not already another cyclist with the same code.

- The second form should require all the data necessary for the insertion of an entry in the `INDIVIDUAL_CLASSIFICATION` table. In particular, it is requested that:
 - The identification fields of the stage and of the cyclist are populated using the data already present in the database and the ranking of the cyclist is entered through a free text field.
 - Check that the types of data entered are correct.
 - Check that the data are consistent (the cyclist with that code already exists in the database as well as the stage code and the edition).
 - Check that a position for the cyclist in the stage does not already exist.
 - It must also be verified that the position entered by the user is a positive integer.

In case of an error, a message in white text on a red background must be displayed, otherwise a message of successful insertion must be displayed in white text on a green background.

Below you can find an example of the two forms and of the error messages or correct insertion.

Inserisci Ciclista

Codice Ciclista:

Nome Ciclista:

Cognome Ciclista:

Nazionalità Ciclista:

Codice Squadra:

Anno di Nascita Ciclista:

Inserisci

Figure 2. Example form for cyclist insertion.

Inserisci posizione in classifica

Codice Ciclista:

Codice Tappa:

Edizione:

Posizione Ciclista:

Inserisci

Figure 3. Example form for entering personal ranking position.

Inserimento avvenuto!

Inserimento avvenuto con successo.

Figure 4. Example of a success message.

Errore!

La posizione per questo ciclista in questa tappa esiste già nella base dati.

Figure 5. Example of an error message.