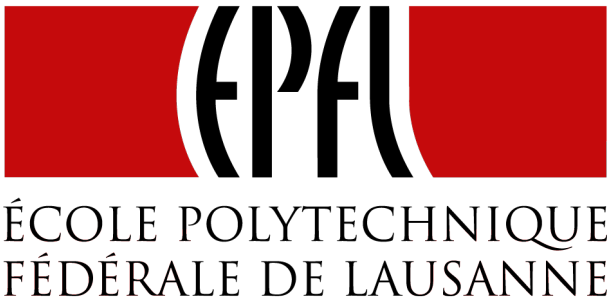
# Introduction to Database Systems

# Olympic Games

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Academic years 2012-2013

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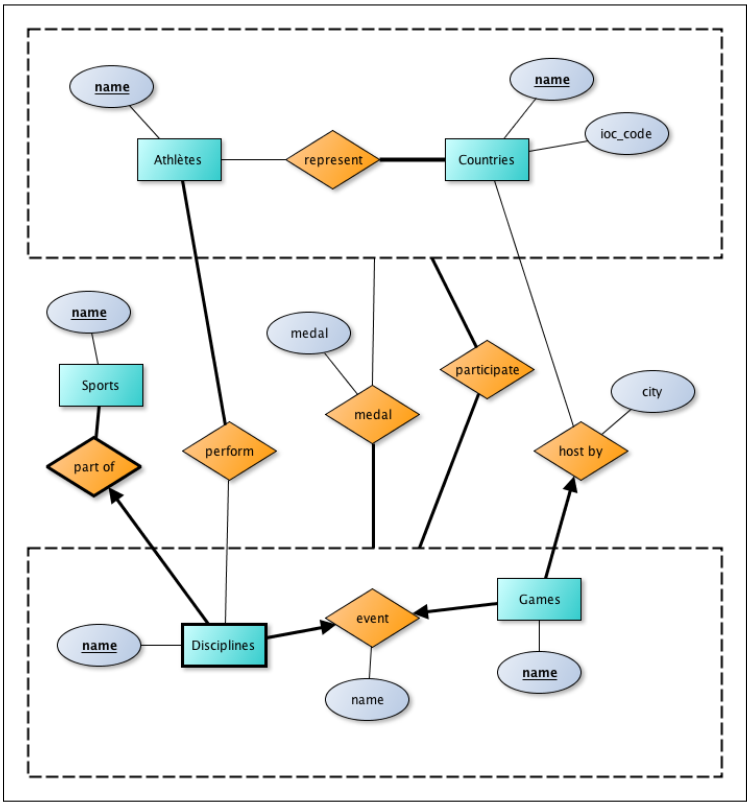
# Contents

# 1 Entityrelationship model




From the analysis of the Dataset, here are our assumptions:

- An **Athlete** is always performing a **Discipline** instead of just a **Sport**.
- An **Athlete** can represent only a **Country** for a **Game**. However, he can represent another **Country** for another **Game**.
- A **Game** can only be hosted by one and only one **Country**, but this **Country** can host several **Games**.
- Each **Discipline** is defined by its **Sport**.
- An *Event* is characterized by only a **Game** and only a **Discipline**.
- A *Medal* is obtained for a *Representant* during an *Event*.
- A *Participant* is formed by both a *Representant* and an *Event*.

# 2 Relational schema and constraints

## 2.1 Relational schema

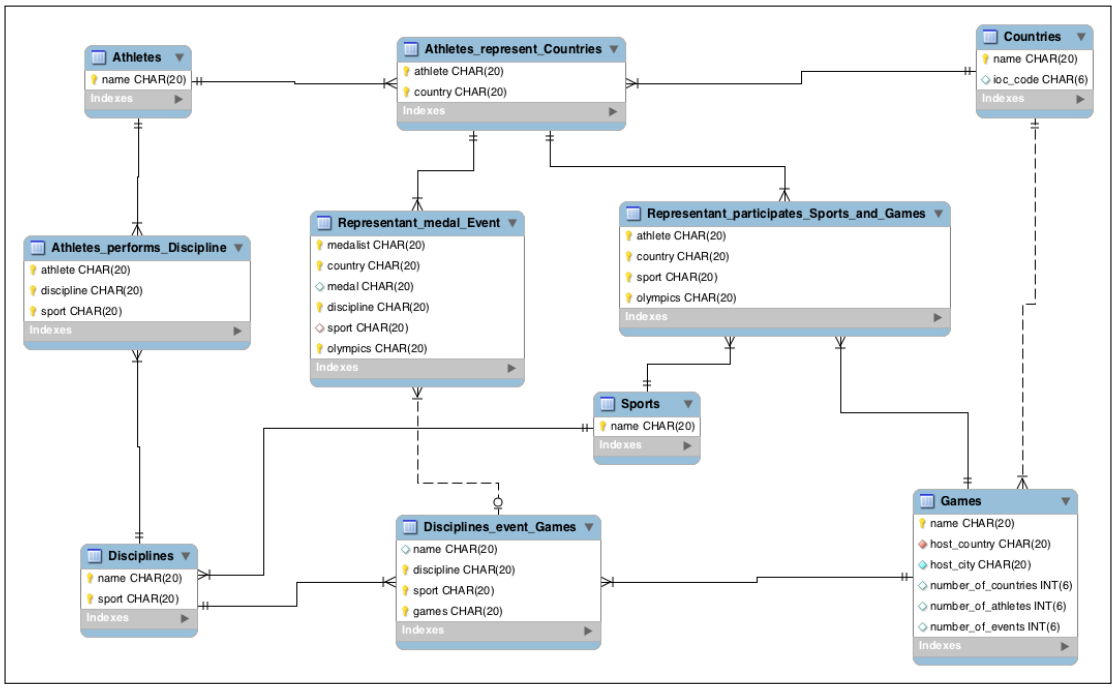



Figure 2.1: Generated EER Model from MySQL Workbench.

After implementing the DDL from Section 2.2, we generated the scheme in Figure 2.1 using MySQL Workbench.

## 2.2 SQL Data definition language statements

We decided to implement our project, using the Oracle MySQL database management system. Following is the listing of our entities and relations.

```
1 -- Note : Could not force the participation constraint to
    ➥Disciplines.
2 CREATE TABLE Athletes (
3     name                    char(20),
4     PRIMARY KEY (name)
```

```
);

-- Note : Could not force the participation constraint to Athletes.
CREATE TABLE Countries (
    name                    char(20),
    ioc_code                char(6),
    PRIMARY KEY (name)
);

-- Note : Could not force the participation constraint to
    ➥Disciplines.
CREATE TABLE Sports (
    name                    char(20),
    PRIMARY KEY (name)

);

CREATE TABLE Games (
    name                    char(20),
    host_country            char(20)  NOT NULL,
    host_city               char(20)  NOT NULL,
    number_of_countries     integer(6),
    number_of_athletes      integer(6),
    number_of_events        integer(6),
    PRIMARY KEY (name),
    FOREIGN KEY (host_country) REFERENCES Countries (name)
);

CREATE TABLE Disciplines (
    name                    char(20),
    sport                   char(20),
    PRIMARY KEY (name, sport),
    FOREIGN KEY (sport) REFERENCES Sports (name)
       ON DELETE CASCADE
);
```

Listing 2.1: DDL Entities

```
CREATE TABLE Athletes_represent_Countries (
    athlete                 char(20),
    country                 char(20),
    PRIMARY KEY (athlete, country),
    FOREIGN KEY (athlete) REFERENCES Athletes (name),
    FOREIGN KEY (country) REFERENCES Countries (name)
);

CREATE TABLE Athletes_performs_Discipline (
    athlete                 char(20),
    discipline              char(20),
    sport                   char(20),
    PRIMARY KEY (athlete, discipline, sport),
    FOREIGN KEY (athlete) REFERENCES Athletes (name),
    FOREIGN KEY (discipline, sport) REFERENCES Disciplines (name,
        ➥sport)
);

CREATE TABLE Disciplines_event_Games (
```

```
19      name                    char(20),
20      discipline              char(20),
21      sport                   char(20),
22      games                   char(20),
23      PRIMARY KEY (discipline, sport, games),
24      FOREIGN KEY (discipline, sport) REFERENCES Disciplines (name,
            ➥sport),
25      FOREIGN KEY (games) REFERENCES Games (name)
26  );
27
28  -- Here Event is a shortcut to table Disciplines_event_Games
29
30  CREATE TABLE Representant_participates_Event (
31      athlete                char(20),
32      country                 char(20),
33      discipline              char(20),
34      sport                   char(20),
35      olympics                char(20),
36      PRIMARY KEY (athlete, country, discipline, olympics),
37      FOREIGN KEY (athlete, country) REFERENCES
            ➥Athletes_represent_Countries (athlete, country),
38      FOREIGN KEY (discipline, sport, olympics) REFERENCES
            ➥Disciplines_event_Games (discipline, sport, games)
39  );
40
41  CREATE TABLE Representant_medal_Event (
42      medalist                char(20),
43      country                 char(20),
44      medal                   char(20),
45      discipline              char(20),
46      sport                   char(20),
47      olympics                char(20),
48      PRIMARY KEY (medalist, country, discipline, olympics),
49      FOREIGN KEY (medalist, country) REFERENCES
            ➥Athletes_represent_Countries (athlete, country),
50      FOREIGN KEY (discipline, sport, olympics) REFERENCES
            ➥Disciplines_event_Games (discipline, sport, games)
51  );
```

Listing 2.2: DDL Relations