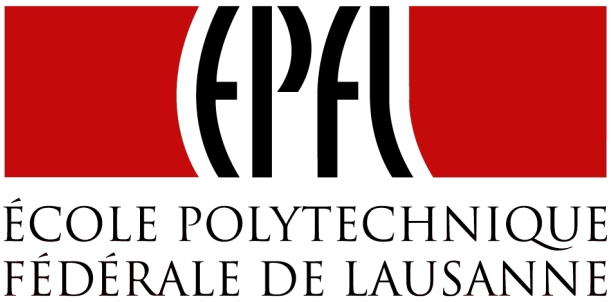
Introduction to Database Systems

Olympic Games



Bastien Antoine (203267)
Denoréaz Thomas (183785)
Dieulivol David (185078)

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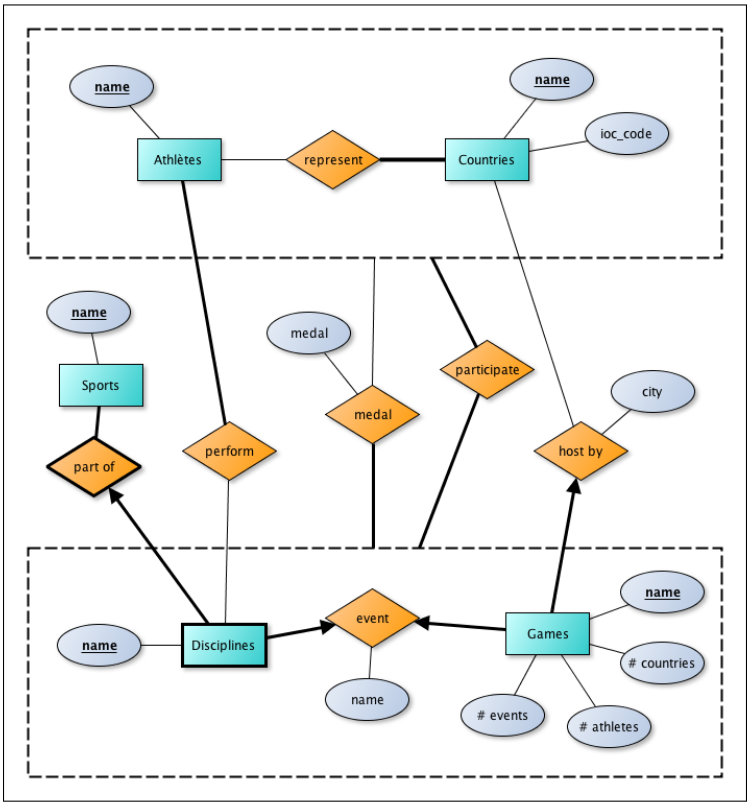
1 Entityrelationship model



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

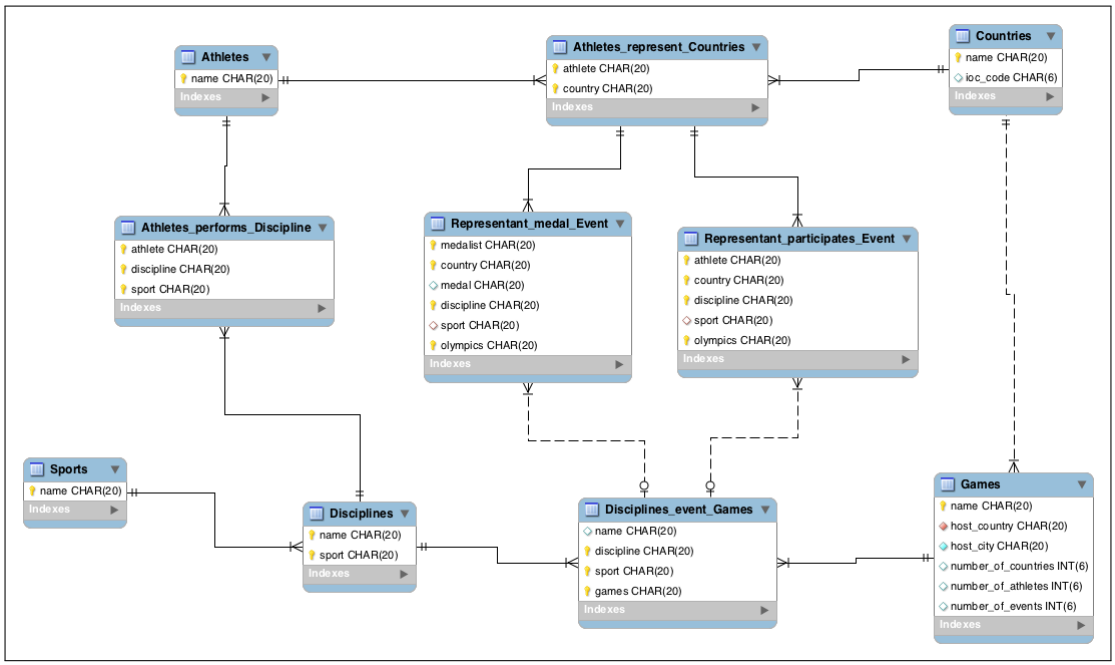


Figure 2.1: Generated EER Model from MySQL Workbench.

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)
5 );
```

```
6
7  -- Note : Could not force the participation constraint to Athletes.
8  CREATE TABLE Countries (
9      name                    char(20),
10     ioc_code                char(6),
11     PRIMARY KEY (name)
12 );
13
14 -- Note : Could not force the participation constraint to
       ➥Disciplines.
15 CREATE TABLE Sports (
16     name                    char(20),
17     PRIMARY KEY (name)
18
19 );
20
21 CREATE TABLE Games (
22     name                    char(20),
23     host_country            char(20)  NOT NULL,
24     host_city               char(20)  NOT NULL,
25     number_of_countries     integer(6),
26     number_of_athletes      integer(6),
27     number_of_events        integer(6),
28     PRIMARY KEY (name),
29     FOREIGN KEY (host_country) REFERENCES Countries (name)
30 );
31
32 CREATE TABLE Disciplines (
33     name                    char(20),
34     sport                   char(20),
35     PRIMARY KEY (name, sport),
36     FOREIGN KEY (sport) REFERENCES Sports (name)
37        ON DELETE CASCADE
38 );
```

Listing 2.1: DDL Entities

```
1  CREATE TABLE Athletes_represent_Countries (
2      athlete                 char(20),
3      country                 char(20),
4      PRIMARY KEY (athlete, country),
5      FOREIGN KEY (athlete) REFERENCES Athletes (name),
6      FOREIGN KEY (country) REFERENCES Countries (name)
7  );
8
9  CREATE TABLE Athletes_performs_Discipline (
10     athlete                 char(20),
11     discipline              char(20),
12     sport                   char(20),
13     PRIMARY KEY (athlete, discipline, sport),
14     FOREIGN KEY (athlete) REFERENCES Athletes (name),
15     FOREIGN KEY (discipline, sport) REFERENCES Disciplines (name,
           ➥sport)
16 );
17
18 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