Department of Computer Science
CMPS 277 – Database Systems

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Olympic Games Database System
Final Project

Maya Awada - 201801365

Ali Yassine - 201802289

Abed Al Mottaleb Al Amin - 201803402

Hussein Nasrallah – 201802472

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Proposal

Description

This project aims at building a database system to manage information about the Olympics Games history and facilitate information retrieval. It also keeps track of the COVID-19 vaccination status of upcoming athletes in the 2021 Tokyo Summer Olympics to ensure maximum safety.

Entities

We will maintain information about the following set of entities:

1- PERSON: ID, FirstName, LastName	Superclass
2- ATHLETE: Sex, YearOfBirth	Superclass
3- UPCOMING ATHLETE: Height, Weight	Subclass
4- PREVIOUS ATHLETE: VaccinationStatus	Subclass
5- REFEREE: Nationality	Subclass
6- OLYMPICS: Year, Season, City, StartDate, EndDate	
7- HOST COUNTRY: Country ID, CountryName	
8- TEAM: NOC, TeamName, ContinentalAssociation	
9- SPORT: SportID, SportName, Category	
10- EVENT: EventID, EventName	
11- WINNER: Medal	Weak entity

Note: NOC stands for National Olympic Committees (ex: CHN, ALG, SRB)

Examples of event, sport and category in the Olympic Games are:
Event: Swimming Women's 100 meters Backstroke
Sport: Swimming
Category: Aquatic Sports

Values of Medals: Gold, Silver, or Bronze
Values of Season: Summer, Winter

Relationships

The following relationships will hold between our entities:

1- Athlete **belongs to** a Team.
2- Previous Athlete **participates in** an Event.
3- Previous Athlete **wins** Event.
4- Referee **responsible of** an Event.
5- Event **held in** an Olympics.
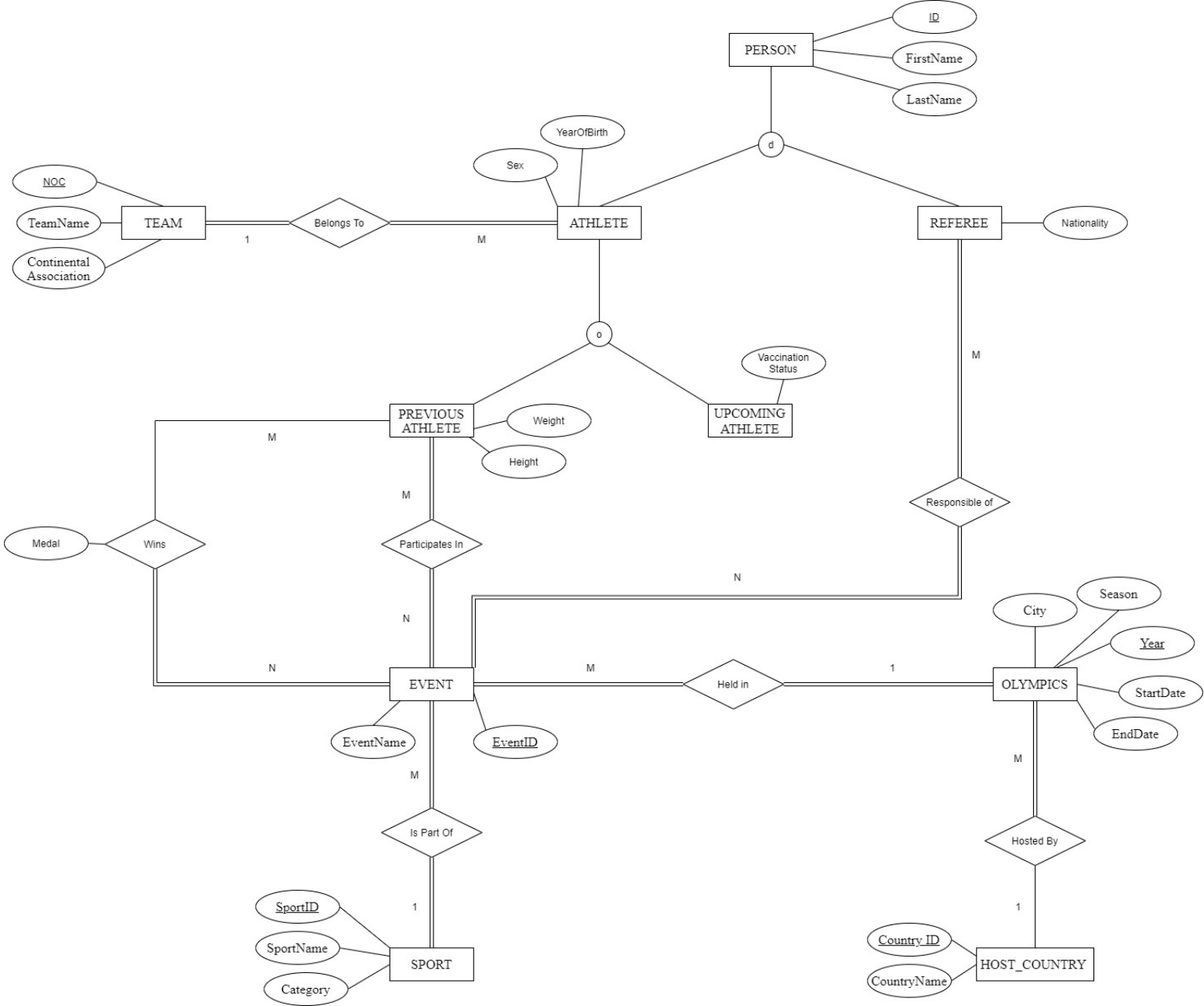6- Event **part of** a Sport
7- Olympics **hosted by** a Host Country.

Constraints

1- A person cannot be an athlete and a referee at the same time.
2- An athlete can be a previous athlete and an upcoming athlete at the same time.
3- Each athlete must belong to one team.
4- A team contains two or more previous athletes.
5- Every previous athlete participates in at least one event.
6- An event has at least two previous athletes.
7- A Previous athlete can be a winner several times.
8- Every event has three winners.
9- Each Olympics holds several events.
10- Each Olympics is hosted by one host country.
11- A host country can host more than one Olympics
12- A referee can be responsible of more than one event.
13- An event can have several referees responsible of it.
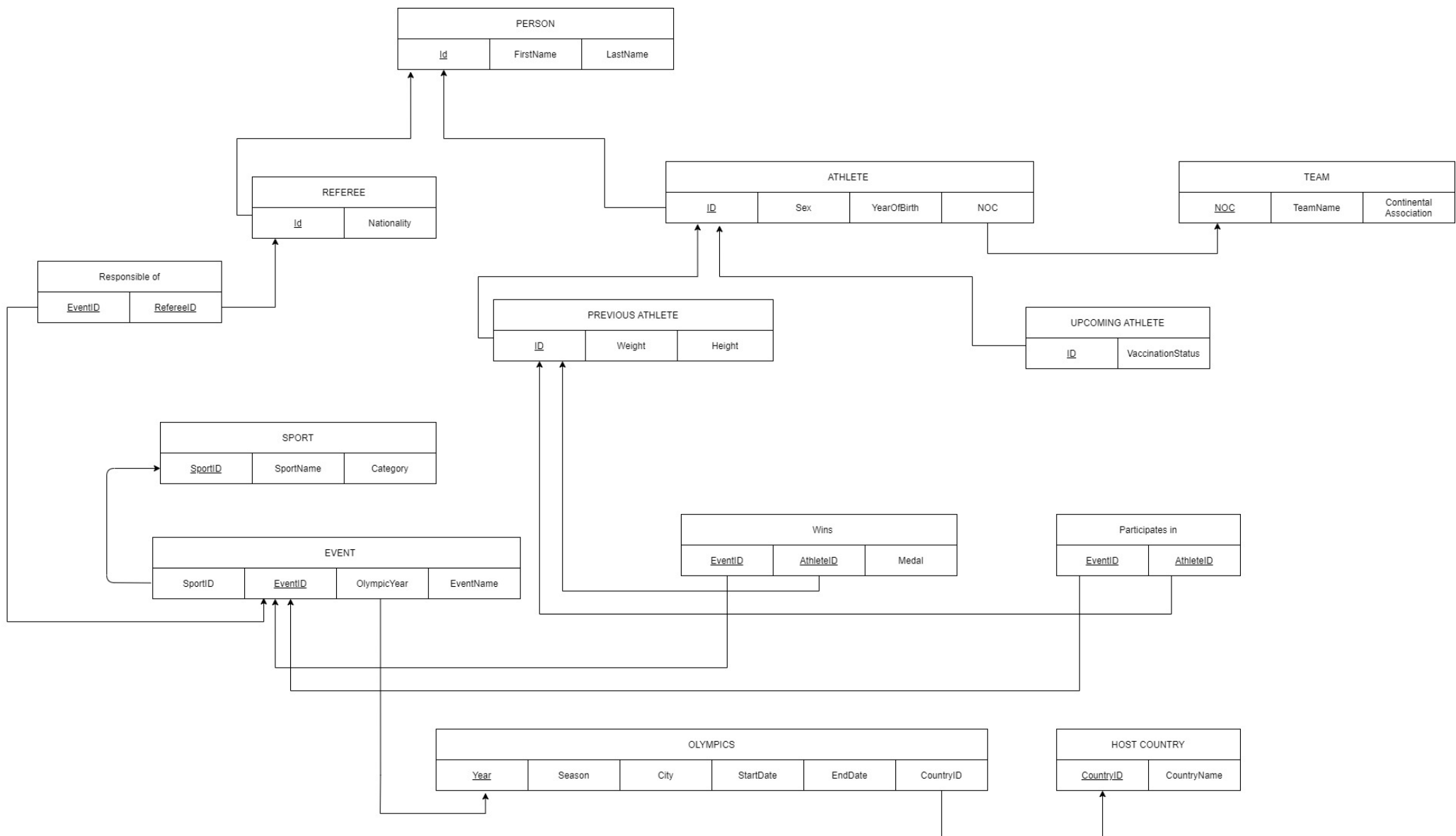14- Every event is part of one sport.
15- A sport contains several events.

Sample Queries

1- List all the golden winners along with their team in the "Gymnastics Women's Floor Exercise" event over the years.
2- Display the names of the athletes that won any event that is part of a gymnastics sport in the 2004 Olympic Games.
3- Display the names of all previous athletes who have a height less than 150 cm.
4- Count the number of male athletes and the number of female athletes who participated in the 2004 Summer Olympics.
5- Find the team that won the most silver medals in the 2016 Summer Olympics.
6- Display the names and teams of all athletes who won a bronze medal in the 2010 Winter Olympics.
7- List all referees who were responsible of an event that is part of "Road Cycling" sport in the 2012 Summer Olympics.

EER Diagram

PERSON
- ID
- FirstName
- LastName

d

ATHLETE
- YearOfBirth
- Sex

TEAM
- NOC
- TeamName
- Continental Association

Belongs To 1 — M

REFEREE
- Nationality

o

PREVIOUS ATHLETE
- Weight
- Height

UPCOMING ATHLETE
- Vaccination Status

Responsible of M — N

Wins
- Medal

M — N

Participates In
M — N

EVENT
- EventName
- EventID

Held in M — 1

OLYMPICS
- City
- Season
- Year
- StartDate
- EndDate

Is Part Of M — 1

Hosted By M — 1

SPORT
- SportID
- SportName
- Category

HOST_COUNTRY
- Country ID
- CountryName

Relational Diagram

PERSON

Id	FirstName	LastName

REFEREE

Id	Nationality

ATHLETE

ID	Sex	YearOfBirth	NOC

TEAM

NOC	TeamName	Continental Association

Responsible of

EventID	RefereeID

PREVIOUS ATHLETE

ID	Weight	Height

UPCOMING ATHLETE

ID	VaccinationStatus

SPORT

SportID	SportName	Category

EVENT

SportID	EventID	OlympicYear	EventName

Wins

EventID	AthleteID	Medal

Participates in

EventID	AthleteID

OLYMPICS

Year	Season	City	StartDate	EndDate	CountryID

HOST COUNTRY

CountryID	CountryName

Queries

1- List all the golden winners along with their team in the "Gymnastics Women's Floor Exercise" event over the years.

SELECT p.FirstName, p.LastName, a.NOC, e.OlympicYear

FROM PERSON p, ATHLETE a, EVENTS e, WINS w

WHERE p.ID = a.ID AND a.ID = w.AthleteID AND e.EventName = "Gymnastics Women's Floor Exercise" AND e.EventID = w.EventID AND w.Medal = 'Gold'

FirstName	LastName	NOC	OlympicYear
Simone Arianne	Biles	USA	2016
Alexandra Rose	Raisman	USA	2012
Sandra	Izbaa	ROU	2008
Ctlina	Ponor	ROU	2004
Yelena	Zamolodchikova	RUS	2000

2- Display the names of the athletes that won any event that is part of a gymnastics sport in the 2004 Olympic Games

SELECT p.FirstName, p.LastName, w.Medal

FROM EVENTS e, SPORT s, WINS w, person p

WHERE e.SportID = s.SportID AND w.EventId = e.EventId AND p.ID = w.AthleteID AND e.OlympicYear=2004 AND s.SportName LIKE '%gymnastic%'

FirstName	LastName	Medal
Nicoleta	ofronie	Silver
Patricia	Snchez	Bronze
Ctlina	Ponor	Gold

3- Display the names of all previous athletes who have a height less than 150 cm.

SELECT p.FirstName, p.LastName, a.NOC, pa.Height

FROM PERSON p, ATHLETE a, PREVIOUSATHLETE pa

WHERE p.ID = a.ID AND a.ID = pa.ID AND pa.Height < 150

FirstName	LastName	NOC	Height
Nicoleta	ofronie	ROU	146
Simone Arianne	Biles	USA	143
Tatyana	Zharganova	BLR	147
Shawn	Johnson	USA	145
Patricia	Snchez	ESP	143

4- Count the number of male athletes and the number of female athletes who participated in the 2004 Summer Olympics.

SELECT a.sex as 'Sex', COUNT(DISTINCT pi.AthleteID) as 'Number of Athletes'

FROM PARTICIPATESIN pi, EVENTS e, ATHLETE a

WHERE pi.AthleteID = a.ID AND pi.EventID = e.EventID AND e.OlympicYear = 2004

GROUP BY a.sex

Sex	Number of Athletes
F	21
M	24

5- Find the team that won the most silver medals in the 2016 Summer Olympics.

SELECT t.NOC, t.TeamName, COUNT(w.Medal) as 'Number of Silver Medals'

FROM TEAM t, ATHLETE a, WINS w, EVENTS e

WHERE a.NOC = t.NOC AND a.ID = w.AthleteID AND e.EventID = w.EventID AND e.OlympicYear = 2016

GROUP BY t.NOC

ORDER BY COUNT(w.Medal) DESC

LIMIT 1

NOC	TeamName	Number of Silver Medals
USA	United States of America	18

6- Display the names and teams of all athletes who won a bronze medal in the 2010 Winter Olympics.

SELECT p.FirstName, p.LastName, a.NOC

FROM TEAM t, PERSON p, ATHLETE a, WINS w, EVENTS e

WHERE a.NOC = t.NOC AND a.ID = w.AthleteID AND e.EventID = w.EventID AND p.ID = a.ID AND e.OlympicYear = 2000 AND w.Medal = "Bronze"

FirstName	LastName	NOC
Kim	Su-Nyeong	KOR
Roman	Shchurenko	UKR
Kajsa	Bergqvist	SWE
Oana	Muunoi-Pantelimon	ROU
Ha	Tae-Gwon	KOR
Kim	Dong-Mun	KOR
Ye	Zhaoying	CHN
Clarence	Vinson	USA
Serhiy	Danylchenko	UKR
Rustam	Saidov	UZB
Paolo	Vidoz	ITA

7- List all referees who were responsible of an event that is part of "Road Cycling" sport in the 2012 Summer Olympics.

SELECT p.FirstName, p.LastName, e.EventName as 'Responsible of Event'

FROM PERSON p, REFEREE r, RESPONSIBLEOF ro, EVENTS e, SPORT s

WHERE p.ID = r.ID AND ro.RefereeID = r.ID AND s.SportID = e.SportID AND e.EventID = ro.EventID AND s.SportName = "Road Cycling" AND e.OlympicYear = 2012

FirstName	LastName	Responsible of Event ▲ 1
Lucas	Jansen	Cycling Men's Mountainbike, Cross-Country
Alaia	Lopez	Cycling Women's Individual Time Trial
Josh	McGill	Cycling Women's Road Race, Individual
Amir	Alami	Cycling Women's Team Pursuit

Indexes

We created an index on:

FirstName in PERSON: This index will make the retrieval process faster especially when displaying the general information of an athlete with a certain first name.

LastName in PERSON: This index will make the retrieval process faster especially when displaying the general information of an athlete with a certain last name.

NOC in ATHLETE: Athlete table is joined with Team table on NOC. The attribute is frequently used in the join and where conditions in our queries.

OlympicYear in EVENTS: Events table is joined with Olympics table on OlympicYear. The attribute is frequently used in the join and where conditions in our queries.

SportID in EVENTS: Events table is joined with Sport table on SportID. The attribute is frequently used in the join and where conditions in our queries.

CountryID in OLYMPICS: Olympics table is joined with HostCountry table on CountryID. The attribute is frequently used in the join and where conditions in our queries.

EventID in PARTICIPATESIN: ParticipatesIn table is joined with Events table on EventID. The attribute is frequently used in the join and where conditions in our queries.

EventID in RESPONSIBLEOF: ResponsibleOf table is joined with Events table on EventID. The attribute is frequently used in the join and where conditions in our queries.

EventID in WINS: Wins table is joined with Events table on EventID. The attribute is frequently used in the join and where conditions in our queries.

Note: The indexes were manually created using the CREATE INDEX command.

For example: CREATE INDEX IND_FN ON PERSON(FirstName)

Views

View 1: ATH_INFO

This view displays the general information (ID, first name, last name, NOC, team name, sex, year of birth, weight, height) of previous athletes. It joins and simplifies multiple tables into a single virtual table.

CREATE VIEW ATH_INFO AS

SELECT p.ID, p.FirstName, p.LastName, a.NOC, t.TeamName, a.Sex, a.YearOfBirth, pa.Weight, pa.Height

FROM PERSON p, ATHLETE a, PREVIOUSATHLETE pa, TEAM t

WHERE a.NOC = t.NOC AND p.ID = a.ID AND a.ID = pa.ID

ID	FirstName	LastName	NOC	TeamName	Sex	YearOfBirth	Weight	Height
100430	Ricardo	Santos	BRA	Brazil	M	1988	102	200
100810	Guillermo	Ortz	CUB	Cuba	M	1981	54	166
10121	Pedro	Domnguez	PAR	Paraguay	M	1984	80	190
101488	Sarah Elizabeth	Robles	USA	United States of America	F	1990	141	178
101810	Leonor	Manso	ESP	Spain	F	1980	72	180
102321	Leticia	Gonzlez	ESP	Spain	F	1996	62	177
102877	Nadia	Rthlisberger	SUI	Switzerland	F	1982	82	179
10306	Manuela	Berchtold	AUS	Australia	F	1980	58	164
103686	Gregory James	Rutherford	GBR	Great Britain	M	1996	92	188
10379	Karl	Berg	SWE	Sweden	M	1983	98	195

View 2: UNVACCINATED

This view lists the names and teams of upcoming athletes who have not been vaccinated yet. It joins and simplifies multiple tables into a single virtual table.

CREATE VIEW UNVACCINATED AS

SELECT p.FirstName, p.LastName, a.NOC

FROM PERSON p, ATHLETE a, UPCOMINGATHLETE ua

WHERE p.ID = a.ID AND a.ID = ua.ID AND ua.VaccinationStatus = 'No'

FirstName	LastName	NOC
Roberto	Aboino	PER
Srr	Acar	TUR
Tarek	Abou Al Dahab	SYR
Rita	Achkina	URU
Elmer	Acevedo	ESA

View 3: ATH_WINNERS

This view displays the names and information of all the winner athletes. It joins and simplifies multiple tables into a single virtual table.

CREATE VIEW ATH_WINNERS AS

SELECT p.FirstName, p.LastName, a.NOC, e.EventName, e.OlympicYear, w.Medal

FROM PERSON p, ATHLETE a, PREVIOUSATHLETE pa, WINS w, EVENTS e

WHERE p.ID = a.ID AND a.ID = pa.ID AND a.ID = w.AthleteID AND e.EventID = w.EventID

FirstName	LastName	NOC	EventName	OlympicYear	Medal
Ricardo	Santos	BRA	Beach Volleyball Men's Beach Volleyball	2004	Gold
Guillermo	Ortz	CUB	Boxing Men's Bantamweight	2000	Gold
Rolf-Gran	Bengtsson	SWE	Equestrianism Mixed Jumping, Individual	2008	Silver
Pedro	Domnguez	PAR	Football Men's Football	2004	Silver
Sarah Elizabeth	Robles	USA	Weightlifting Women's Super-Heavyweight	2016	Bronze
Leonor	Manso	ESP	Basketball Women's Basketball	2016	Silver
Leticia	Gonzlez	ESP	Basketball Women's Basketball	2016	Silver
Nadia	Rthlisberger	SUI	Curling Women's Curling	2002	Silver
Gregory James	Rutherford	GBR	Athletics Men's Long Jump	2016	Bronze
Carter	Rycroft	CAN	Curling Men's Curling	2002	Silver
Rustam	Saidov	UZB	Boxing Men's Super-Heavyweight	2000	Bronze
Emelie	Berggren	SWE	Ice Hockey Women's Ice Hockey	2002	Bronze
Kajsa	Bergqvist	SWE	Athletics Women's High Jump	2000	Bronze
Margit	Bergstrand	SWE	Ice Hockey Women's Ice Hockey	2002	Bronze
Tae	Satoya	JPN	Freestyle Skiing Women's Moguls	2002	Bronze
Andreas	Schwaller	SUI	Curling Men's Curling	2002	Bronze
Christof	Schwaller	SUI	Curling Men's Curling	2002	Bronze
Giuseppe	Sculli	ITA	Football Men's Football	2004	Bronze

View 4: TEAM_WINNERS

This view orders teams by the number of medals received since 2000. It is an aggregated table.

CREATE VIEW TEAM_WINNERS AS

SELECT t.NOC, COUNT(w.Medal) as 'Number of Medals'

FROM TEAM t, ATHLETE a, WINS w, EVENTS e

WHERE a.NOC = t.NOC AND e.OlympicYear >= 2000 AND a.ID = w.AthleteID AND e.EventID = w.EventID

GROUP BY t.NOC

ORDER BY COUNT(w.Medal) DESC

NOC	Number of Medals
USA	46
CAN	18
SUI	16
ESP	15
GER	13
RUS	12
SRB	12
ITA	10
GBR	9
KOR	8
SWE	7
BRA	6
NOR	6
JPN	5

View 5: ACTIVE_ATH

This view displays the information of the athletes who have participated in more than 2 events in any Olympics since 2000. It is an aggregate table.

CREATE VIEW ACTIVE_ATH AS

SELECT p.FirstName, p.LastName, COUNT(pi.AthleteID) AS 'Nb of Participations'

FROM PERSON p, PARTICIPATESIN pi, EVENTS e

WHERE pi.AthleteID = p.ID AND e.OlympicYear >= 2000 AND pi.EventID = e.EventID

GROUP BY pi.AthleteID

HAVING COUNT(pi.AthleteID)>1

ORDER BY COUNT(pi.AthleteID) DESC

FirstName	LastName	Nb of Participations
Denis	Ablyazin	4
Martin	Annen	3
Judith	Arndt	3
Nadine	Capellman	2
Andrea	Baldini	2
Ctlina	Ponor	2
Gunilla	Andersson	2
Alexandra Rose	Raisman	2
Karel	Chacn	2
Elizabeth	Armitstead	2
Simone	Bertazzo	2
Maksim	Afinogenov	2
Adnan	Aliev	2
Kristin	Armstrong	2
Sebastian	Bachmann	2
Koutoua	Abia	2

View 6: OLYMPICS_INFO

This view lists all the countries along with the cities that have hosted an Olympics along with the information about the Olympics. It joins and simplifies two tables into a single virtual table.

CREATE VIEW OLYMPICS_INFO AS

SELECT o.City, hc.CountryName, o.Year, o.Season, o.StartDate, o.EndDate

FROM OLYMPICS o, HOSTCOUNTRY hc

WHERE o.CountryID = hc.CountryID
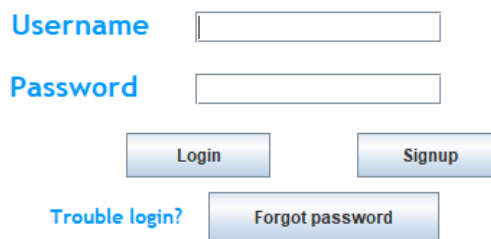
City	CountryName	Year	Season	StartDate	EndDate
Sydney	Australia	2000	Summer	2000-09-15	2000-01-10
Salt Lake City	United States	2002	Winter	2002-02-08	2002-02-24
Athens	Greece	2004	Summer	2004-08-13	2004-08-29
Turin	Italy	2006	Winter	2006-02-10	2006-02-26
Beijing	China	2008	Summer	2008-08-08	2008-08-24
Vancouver	Canada	2010	Winter	2010-02-12	2010-02-28
London	England	2012	Summer	2012-07-27	2012-08-12
Sochi	Russian Federation	2014	Winter	2014-02-07	2014-02-23
Rio	Brazil	2016	Summer	2016-08-05	2016-08-21

Interface

We created an interface on Java NetBeans for the user to interact with our database. It has several functionalities (adding/updating/deleting/searching/ filtering) as presented in the following pictures. Please refer to the caption under each picture to read the description of the functionality.

Please click on this link to access the GUI, the SQL file and the instructions:
https://drive.google.com/drive/folders/1St8PobD6sDAa6FhAH-EyZC7DSgMDMqZo?usp=sharing
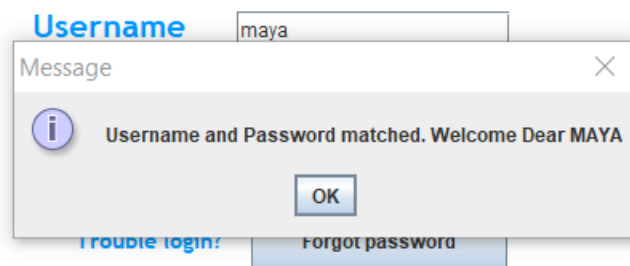
Figure 1: Login Page

Figure 2: Login Successful
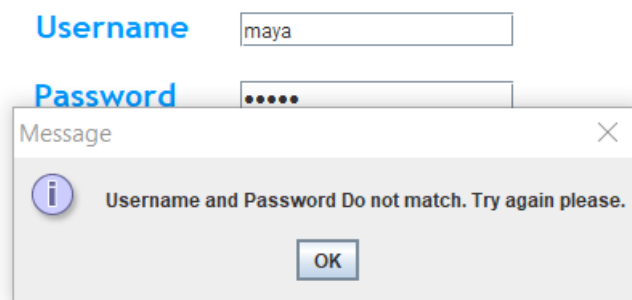
Figure 3: Login Unsuccessful when Username and Password do not Match

Figure 4: Sign Up Page

Figure 5: Main Page

Figure 6: Olympics Menu Page

Search by Olympic Year: [ ]

Year	Season	City	StartDate	EndDate	Country
2000	Summer	Sydney	2000-09-15	2000-01-10	Australia
2002	Winter	Salt Lake City	2002-02-08	2002-02-24	United States
2004	Summer	Athens	2004-08-13	2004-08-29	Greece
2006	Winter	Turin	2006-02-10	2006-02-26	Italy
2008	Summer	Beijing	2008-08-08	2008-08-24	China
2010	Winter	Vancouver	2010-02-12	2010-02-28	Canada
2012	Summer	London	2012-07-27	2012-08-12	England
2014	Winter	Sochi	2014-02-07	2014-02-23	Russian Federa...
2016	Summer	Rio	2016-08-05	2016-08-21	Brazil

Back

Figure 7: Olympics Search Page

Search by Olympic Year: 2000

Year	Season	City	StartDate	EndDate	Country
2000	Summer	Sydney	2000-09-15	2000-01-10	Australia

Figure 8: Example of Olympics Search

Figure 9: Athletes Page

Figure 10: Example of Athletes Search

Figure 11: Example of Adding an Athlete

Figure 12: Successful Addition of an Athlete

Figure 13: Example of Deleting an Athlete (Before)
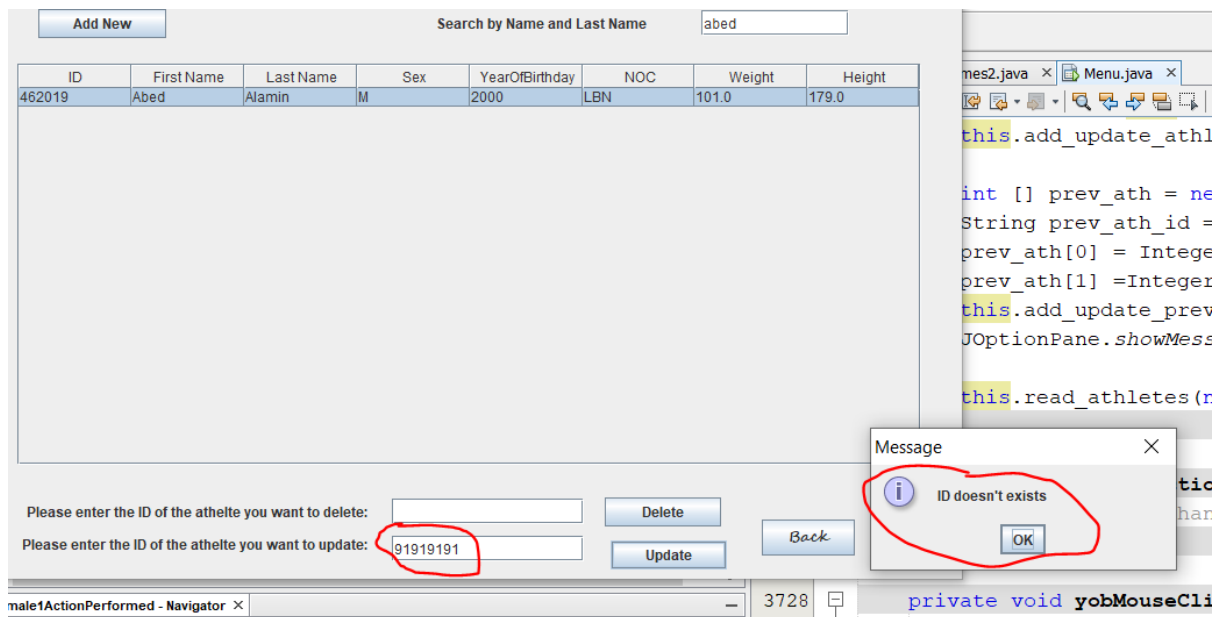

Figure 14: Example of Deleting an Athlete (After)

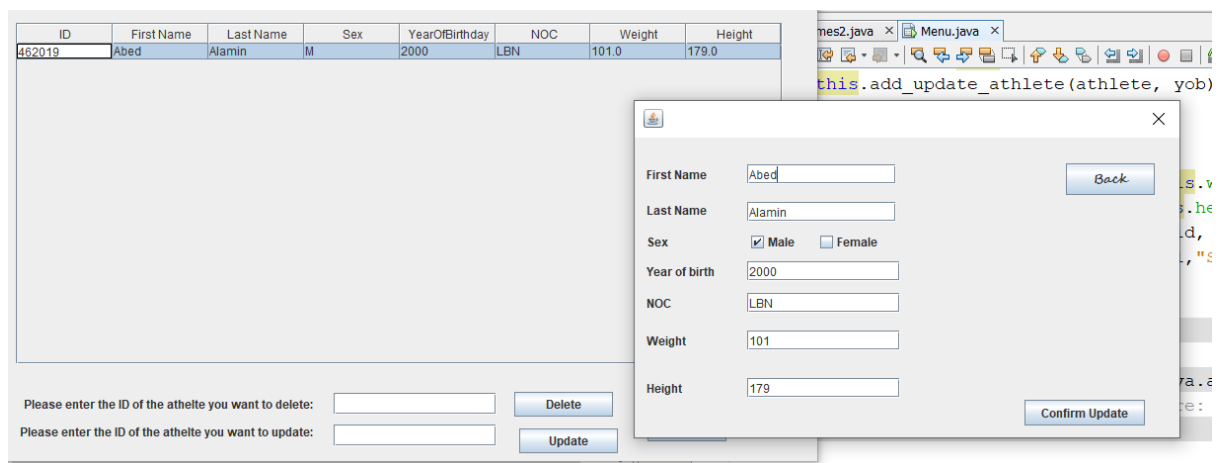*Figure 15: Example of Warning Message when Writing an ID that does not Exist*

Figure 16: Example of Updating an Athlete (Before)

Figure 17: Example of Updating an Athlete (In Process)
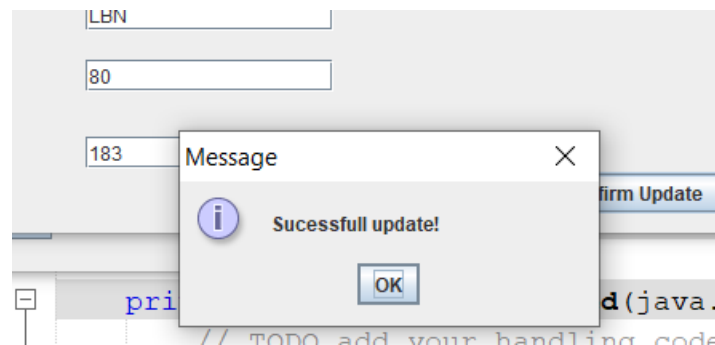
Figure 18: Successful Update Message

Figure 19: Example of Updating an Athlete (After)
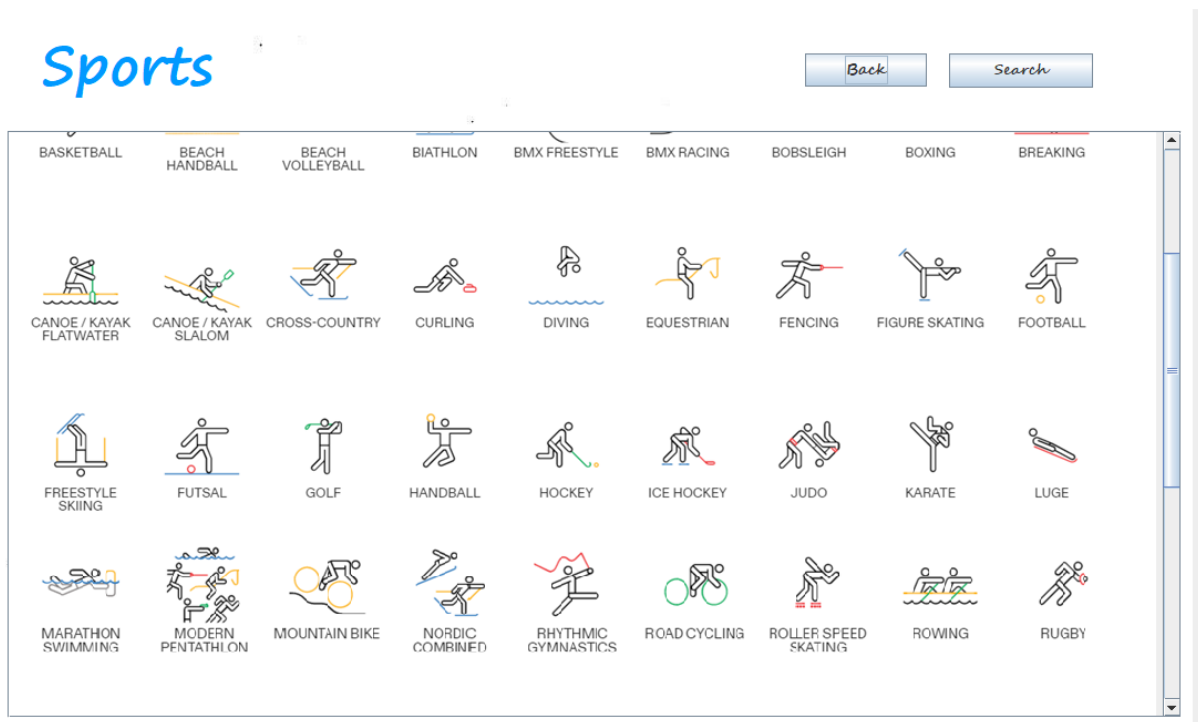
Sports

Figure 20: Sports Menu

Figure 21: Team Search Menu

Back

Please choose select one of two options:

Advanced Search 1

Advanced Search 2

Figure 22: Advanced Search Menu

Back

Search by Sport's Name: gym

SportID	SportName	Category
3	Artistic Gymnastics	Gymnastics Sports
25	Rhythmic Gymnastics	Gymnastics Sports

Figure 23: Advanced Search 1

Count the number of male & females atheletes who participated in the 2000 Olympics (Year).

Sex	Number of Athletes
F	18
M	28

Figure 24: Advanced Search 2

Please select one option:

Medals and year

Ordering the teams

Winners

Unvaccinated Athletes

Back

Figure 25: Statistics Menu

List all the winners with a [Gold ▼] medal along with their team in the event [Gymnastics Women"s Floor Exercise]

Back

First Name	Last Name	NOC	OlympicYear
Simone Arianne	Biles	USA	2016
Yelena	Zamolodchikova	RUS	2000
Sandra	Izbaa	ROU	2008
Ctlina	Ponor	ROU	2004
Alexandra Rose	Raisman	USA	2012

Figure 26: Statistics – Medals and Years

Order teams by the number of medals received since year   Back

2010

NOC	Number of medals
USA	23
ESP	13
SRB	12
RUS	6
GER	4
ITA	4
JPN	4
KOR	4
GBR	3
SUI	2
CHN	2
CAN	2

Figure 27: Statistics – Ordering the Teams

Winners   Ba...

First Name	Last Name	NOC	EventName	OlympicYear	Medal
Ricardo	Santos	BRA	Beach Volleyball Men's ...	2004	Gold
Guillermo	Ortz	CUB	Boxing Men's Bantamwe...	2000	Gold
Pedro	Domnguez	PAR	Football Men's Football	2004	Silver
Sarah Elizabeth	Robles	USA	Weightlifting Women's S...	2016	Bronze
Leonor	Manso	ESP	Basketball Women's Ba...	2016	Silver
Leticia	Gonzlez	ESP	Basketball Women's Ba...	2016	Silver
Nadia	Rthlisberger	SUI	Curling Women's Curling	2002	Silver
Gregory James	Rutherford	GBR	Athletics Men's Long Ju...	2016	Bronze
Carter	Rycroft	CAN	Curling Men's Curling	2002	Silver
Rustam	Saidov	UZB	Boxing Men's Super-Hea...	2000	Bronze
Emelie	Berggren	SWE	Ice Hockey Women's Ice...	2002	Bronze
Kajsa	Bergqvist	SWE	Athletics Women's High ...	2000	Bronze
Margit	Bergstrand	SWE	Ice Hockey Women's Ice...	2002	Bronze
Christof	Schwaller	SUI	Curling Men's Curling	2002	Bronze
Giuseppe	Sculli	ITA	Football Men's Football	2004	Bronze

Figure 28: Statistics – Winners

Unvaccinated Athletes   Back

First Name	Last Name	NOC
Roberto	Aboino	PER
Srr	Acar	TUR
Tarek	Abou Al Dahab	SYR
Rita	Achkina	URU
Elmer	Acevedo	ESA

Figure 29: Statistics – Unvaccinated Athletes

Figure 30: About Us Page