Institute of Technology, Nirma University

Olympics Management System

Innovative Assignment

Database Management System

(2CS402)

Submitted By:

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Features:

- Helps in storing and retrieving data for Olympics and various other similar tournaments like Commonwealth Games, Asian Games, Khel Mahakumbh, etc. This model can also be used for Sports day in Schools and Colleges as with its help, storing and retrieving data becomes easy.

Project Functional Requirements:

Phase-1: Tool used for drawing ER Diagram https://erdplus.com/ , Computer System, Microsoft Word.

Phase-2: Oracle Database 11g Express Edition, Computer System, Microsoft Word, Document of Phase-1 which contains Relational Model.

ER Model:

Entities:

Entity	Strong/Weak	Key Attribute/ Partial Attribute
Athlete	Strong	AthleteID
Country	Strong	CountryCode
Event	Strong	EventID
Team	Strong	TeamID
Referee	Strong	RefereeID
OlympicSite	Weak	Year, Season
Match	Strong	MatchID

Attributes:

Entity	Attribute	Key / Partial / Composite / Derived / Multivalued

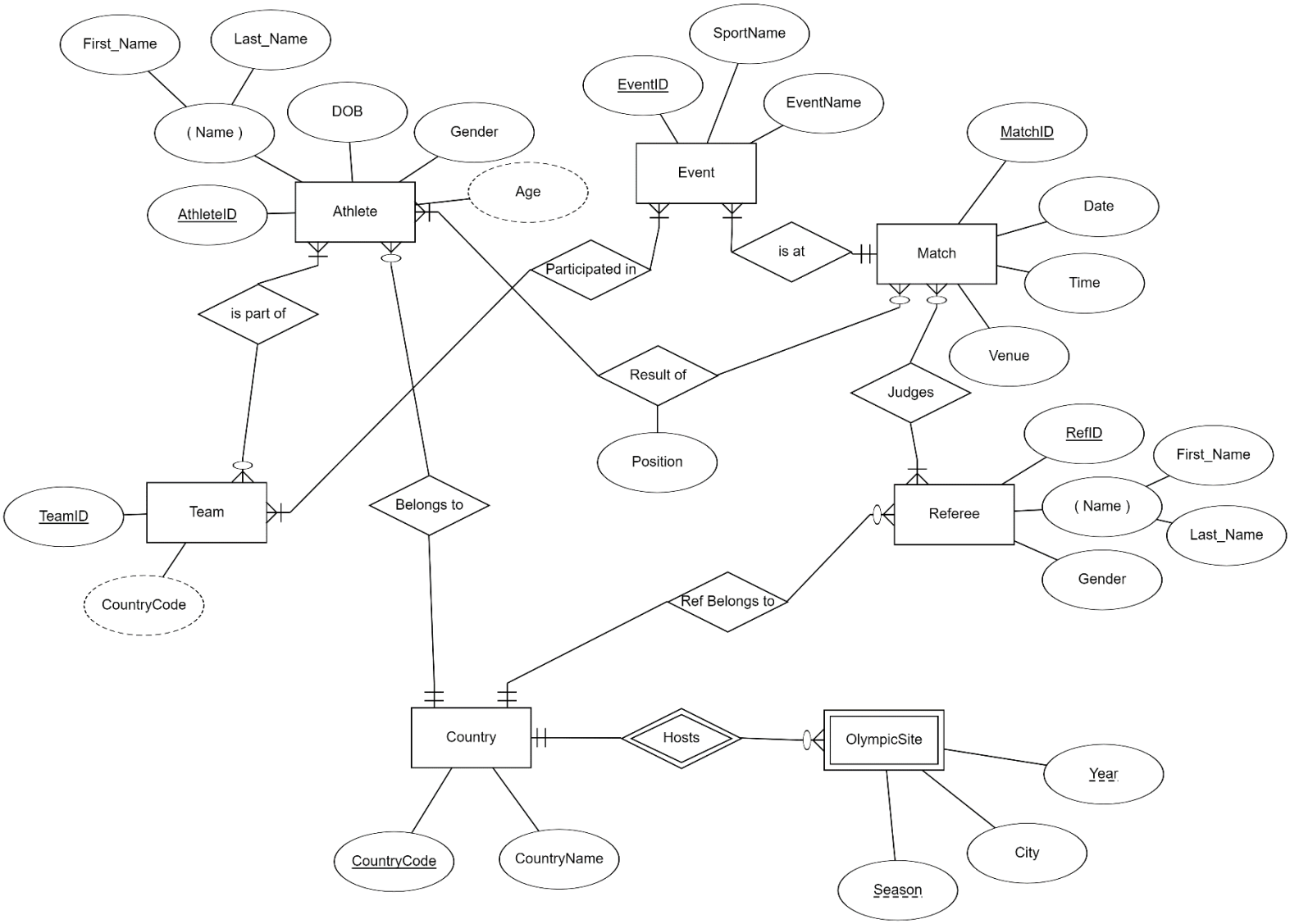
Athlete	AthleteID	Key Attribute
	Name	Composite Attribute (First_Name + Last_Name)
	DOB	-
	Gender	-
	Age	Derived Attribute
Country	CountryCode	Key Attribute
	CountryName	-
Event	EventID	Key Attribute
	SportName	-
	EventName	-
Team	TeamID	Key Attribute
	CountryCode	Derived Attribute
Referee	RefID	Key Attribute
	Name	Composite Attribute (First_Name + Last_Name)
	Gender	-
OlympicSite	Year	Partial Key Attribute
	City	-
	Season	Partial Key Attribute
Match	MatchID	Key Attribute
	Date	-
	Time	-
	Venue	-

Relationship and Mapping Cardinalities and Participation:

Entity 1	Relation	Entity 2	Cardinality	Participation of Entity 1	Participation of Entity 2	Descriptive Attributes
Athlete	Is Part Of	Team	M:N	Partial	Total	-
Team	Participated In	Event	M:N	Total	Total	-
Event	Is At	Match	1:N	Total	Total	-
Referee	Judges	Match	M:N	Partial	Total	-
Athlete	Result Of	Match	M:N	Partial	Total	Position
Athlete	Belongs To	Country	M:1	Total	Partial	-
Referee	Ref Belongs To	Country	M:1	Total	Partial	-

Country	Hosts	OlympicSite	1:M	Partial	Total	-

ER Diagram:



Relational Model:

Tables Required:

- Athlete (AthleteID, First_Name, Last_Name, DOB, Gender, CountryCode)

- Country (CountryCode, CountryName)
- Referee (RefID, First_Name, Last_Name, Gender, CountryCode)
- OlympicSite (Year, Season, City, CountryCode)
- PartOf (AthleteID, TeamID)
- Judges (MatchID , RefID)
- Result (MatchID, AthleteID, Position)
- TeamParticipatedinEvent (TeamID, EventID, SportName, EventName)
- EventInMatch (EventID, SportName, EventName, MatchID, Date, Time, Venue)

Relational Schema of each table:

Athlete:

Column Name	Data Type	Size	Constraints
AthleteID	varchar2	5	Primary key
First_Name	varchar2	15	Not Null
Last_Name	varchar2	15	
DOB	date		
Gender	char	1	Female (F) / Male (M)
CountryCode	varchar2	5	ForeignKey references CountryCode of Country table

Country:

Column Name	Data Type	Size	Constraints
CountryCode	Varchar2	5	Primary Key
CountryName	Varchar2	15	Not Null

Referee:

Column Name	Data Type	Size	Constraints
RefID	Varchar2	5	Primary Key
First_Name	Varchar2	15	Not Null
Last_Name	Varchar2	15	
Gender	char	1	Female (F) / Male (M)
CountryCode	Varchar2	5	ForeignKey references CountryCode of Country table

OlympicSite:

Column Name	Data Type	Size	Constraints
Year	Number	4	Primary Key along with Season
Season	Char	1	Primary Key along with Year (Winter (W) / Summer (S))
City	Varchar2	15	Not Null
CountryCode	Varchar2	5	ForeignKey references CountryCode of Country table

PartOf:

Column Name	Data Type	Size	Constraints
AthleteID	Varchar2	5	Primary Key and ForeignKey

			references AtheleteID of Athlete table
TeamID	Varchar2	5	

Judges:

Column Name	Data Type	Size	Constraints
MatchID	Varchar2	5	Primary Key
RefID	Varchar2	5	Foreign Key references RefereeID of Referee table

Result:

Column Name	Data Type	Size	Constraints
MatchID	Varchar2	5	Primary Key along with AthleteID
AthleteID	Varchar2	5	Primary Key along with MatchID and Foreign Key references AthleteID from Athlete table
Position	Number	2	Check > 0

TeamParticipatedinEvent:

Column Name	Data Type	Size	Constraints
TeamID	Varchar2	5	Primary Key along with EventID

EventID	Varchar2	5	Primary Key along with TeamID
SportName	Varchar2	15	
EventName	Varchar2	15	

MatchInEvent:

Column Name	Data Type	Size	Constraints
MatchID	Varchar2	5	Primary Key along with EventID
EventID	Varchar2	5	Primary Key along with MatchID
SportName	Varchar2	15	
EventName	Varchar2	15	
Date	Date		
Time	Number	2,2	Check between 00.00 and 23.59
Venue	Varchar2	15	

Creating Tables and Inserting Records:

1. Creating table <u>country</u> and inserting records:

Creating Table:

```
create table country (countrycode varchar2(5) primary key, countryname varchar2(15) not null);
Table created.

SQL> desc country
 Name                      Null?    Type
```

---------- -------- ----------

COUNTRYCODE NOT NULL VARCHAR2(5)

COUNTRYNAME NOT NULL VARCHAR2(15)

Inserting Records:

SQL> insert into country values ('IND12', 'India');

1 row created.

SQL> insert into country values ('CHI12', 'China');

1 row created.

SQL> insert into country values ('USA99', 'USA');

1 row created.

SQL> insert into country values ('JAP01', 'Japan');

1 row created.

SQL> insert into country values ('ENG47', 'England');

1 row created.

SQL> insert into country values ('RUS14', 'Russia');

1 row created.

SQL> insert into country values ('CAN06', 'Canada');

1 row created.

SQL> insert into country values ('BRA16', 'Brazil');

1 row created.

SQL> insert into country values ('AUS02', 'Australia');

1 row created.

SQL> select * from country;

COUNT COUNTRYNAME

----- ----------

IND12 India

CHI12 China

USA99 USA

JAP01 Japan

ENG47 England

RUS14 Russia

CAN06 Canada

BRA16 Brazil

AUS02 Australia

9 rows selected.

2. Creating table athlete and inserting records:

Creating Table:

SQL> create table athlete (athleteid varchar2(5) primary key, first_name varchar2(15) not null, last_name varchar2(15), dob date, gender char check(gender='F' or gender='M'), countrycode varchar2(5) references country(countrycode));

Table created.

SQL> desc athlete

Name	Null?	Type
ATHLETEID	NOT NULL	VARCHAR2(5)
FIRST_NAME	NOT NULL	VARCHAR2(15)
LAST_NAME		VARCHAR2(15)
DOB		DATE
GENDER		CHAR(1)
COUNTRYCODE		VARCHAR2(5)

Inserting Records:

SQL> insert into athlete values('AIND1', 'Deepa', 'Karmakar', '09-AUG-93', 'F', 'IND12');

1 row created.

SQL> insert into athlete values('AIND2', 'Sakshi', 'Malik', '03-SEP-92', 'F', 'IND12');

1 row created.

SQL> insert into athlete values('AIND3', 'Vinesh', 'Phogat', '25-AUG-94', 'F', 'IND12');

1 row created.

```
SQL> insert into athlete values('AIND4', 'Leander', 'Paes', '17-JUN-73', 'M', 'IND12');

1 row created.

SQL> insert into athlete values('AUSA1', 'Serena', 'Williams', '26-Sep-81', 'F', 'USA99');

1 row created.

SQL> insert into athlete values('ACHI1', 'Lin', 'Dan', '14-OCT-83', 'M', 'CHI12');

1 row created.

SQL> insert into athlete values('AJAP1', 'Naomi', 'Osaka', '14-OCT-83', 'M', 'JAP01');

1 row created.

SQL> insert into athlete values('AENG1', 'David', 'Beckham', '02-MAY-75', 'M', 'ENG47');

1 row created.

SQL> insert into athlete values('ARUS1', 'Maria', 'Sharapova', '19-APR-87', 'F', 'RUS14');

1 row created.

SQL> insert into athlete values('ACAN1', 'Donovan', 'Bailey', '16-DEC-67', 'F', 'CAN06');

1 row created.

SQL> insert into athlete values('ABRA1', 'Rafaela', 'Silva', '24-APR-92', 'F', 'BRA16');

1 row created.

SQL> insert into athlete values('AAUS1', 'Ben', 'Simmons', '20-JUL-96', 'M', 'AUS02');

1 row created.

SQL> insert into athlete values('AIND5','Ashvini','Ponnapa','20-AUG-1992','F', 'IND12');

1 row created.

SQL> insert into athlete values('AIND6','Jwala','Gutta','30-JUL-1992','F','IND12');

1 row created.

SQL> insert into athlete values('AJAP2','Yuki','Fukushima','23-APR-1992','F','JAP01');

1 row created.

SQL> insert into athlete values('AJAP3','Sayaka','Hirota','26-APR-1992','F','JAP01');

1 row created.


SQL> select * from athlete;

ATHLE FIRST_NAME     LAST_NAME      DOB      G COUNT

----- ---------------  ---------------  ---------  - -----

AIND1 Deepa          Karmakar       09-AUG-93 F IND12
```

AIND2 Sakshi Malik 03-SEP-92 F IND12

AIND3 Vinesh Phogat 25-AUG-94 F IND12

AIND4 Leander Paes 17-JUN-73 M IND12

AUSA1 Serena Williams 26-SEP-81 F USA99

ACHI1 Lin Dan 14-OCT-83 M CHI12

AJAP1 Naomi Osaka 14-OCT-83 M JAP01

AENG1 David Beckham 02-MAY-75 M ENG47

ARUS1 Maria Sharapova 19-APR-87 F RUS14

ACAN1 Donovan Bailey 16-DEC-67 F CAN06

ABRA1 Rafaela Silva 24-APR-92 F BRA16

ATHLE FIRST_NAME LAST_NAME DOB G COUNT

----- --------------- --------------- --------- - -----

AAUS1 Ben Simmons 20-JUL-96 M AUS02

AIND5 Ashvini Ponnapa 20-AUG-92 F IND12

AIND6 Jwala Gutta 30-JUL-92 F IND12

AJAP2 Yuki Fukushima 23-APR-92 F JAP01

AJAP3 Sayaka Hirota 26-APR-92 F JAP01

16 rows selected.

3. Creating table referee and inserting records:

Creating Table:

SQL> create table referee (refid varchar2(5) primary key, first_name varchar2(15) not null, last_name varchar2(15), gender char(1) check(gender='M' or gender='F'), countrycode varchar2(5) references country(countrycode));

Table created.

SQL> desc referee

Name	Null?	Type
REFID	NOT NULL	VARCHAR2(5)

FIRST_NAME NOT NULL VARCHAR2(15)

LAST_NAME VARCHAR2(15)

GENDER CHAR(1)

COUNTRYCODE VARCHAR2(5)

Inserting Records:

SQL> insert into referee values('RIND1', 'Pranjal', 'Banerjee', 'M', 'IND12');

1 row created.

SQL> insert into referee values('RCHI1', 'Ching', 'Pong', 'F', 'CHI12');

1 row created.

SQL> insert into referee values('RUSA1', 'Clinton', 'Dave', 'M', 'USA99');

1 row created.

SQL> insert into referee values('RJAP1', 'Hakuna', 'Matata', 'F', 'JAP01');

1 row created.

SQL> insert into referee values('RENG1', 'Thomas', 'George', 'M', 'ENG47');

1 row created.

SQL> insert into referee values('RRUS1', 'Gabriella', 'Johnson', 'F', 'RUS14');

1 row created.

SQL> insert into referee values('RCAN1', 'George', 'Kurien', 'M', 'CAN06');

1 row created.

SQL> insert into referee values('RBRA1', 'Wilson', 'Bond', 'F', 'BRA16');

1 row created.

SQL> select * from referee;

REFID FIRST_NAME LAST_NAME G COUNT

----- --------------- --------------- - -----

RIND1 Pranjal Banerjee M IND12

RCHI1 Ching Pong F CHI12

RUSA1 Clinton Dave M USA99

RJAP1 Hakuna Matata F JAP01

RENG1 Thomas George M ENG47

RRUS1 Gabriella Johnson F RUS14

RCAN1 George Kurien M CAN06

RBRA1 Wilson Bond F BRA16

8 rows selected.

4. Creating table olympicsite and inserting records:

Creating Table:

SQL> create table olympicsite (year number(4), season char(1) check(season='W' or season='S'), city varchar2(15) not null, countrycode varchar2(5) references country(countrycode), primary key(year,season));

Table created.

SQL> desc olympicsite

Name	Null?	Type
YEAR	NOT NULL	NUMBER(4)
SEASON	NOT NULL	CHAR(1)
CITY	NOT NULL	VARCHAR2(15)
COUNTRYCODE		VARCHAR2(5)

Inserting Records:

SQL> insert into olympicsite values(2016, 'S', 'Rio', 'BRA16');

1 row created.

SQL> insert into olympicsite values(2020, 'S', 'Tokyo', 'JAP01');

1 row created.

SQL> insert into olympicsite values(2012, 'S', 'London', 'ENG47');

1 row created.

SQL> insert into olympicsite values(2008, 'S', 'Beijing', 'CHI12');

1 row created.

SQL> insert into olympicsite values(2022, 'W', 'Beijing', 'CHI12');

1 row created.

SQL> select * from olympicsite;

YEAR	S	CITY	COUNT
2016	S	Rio	BRA16
2020	S	Tokyo	JAP01
2012	S	London	ENG47
2008	S	Beijing	CHI12
2022	W	Beijing	CHI12

5. Creating table partof and inserting records:

Creating Table:

SQL> create table partof (athleteid varchar2(5) primary key references athlete(athleteid), teamid varchar2(5));

Table created.

SQL> desc partof

Name	Null?	Type
ATHLETEID	NOT NULL	VARCHAR2(5)
TEAMID		VARCHAR2(5)

Inserting Records:

SQL> insert into partof values('AIND6','BDWD1');

1 row created.

SQL> insert into partof values('AIND5','BDWD1');

1 row created.

SQL> insert into partof values('AJAP2','BDWD2');

1 row created.

SQL> insert into partof values('AJAP3','BDWD2');

1 row created.

SQL> select * from partof;

ATHLE TEAMI

----- -----

AIND6 BDWD1

AIND5 BDWD1

AJAP2 BDWD2

AJAP3 BDWD2

6. Creating table judges and inserting records:

Creating Table:

SQL> create table judges (matchid varchar2(5) primary key, refid varchar(2) references referee(refid));

Table created.

SQL> desc judges

Name	Null?	Type
MATCHID	NOT NULL	VARCHAR2(5)
REFID		VARCHAR2(2)

Inserting Records:

SQL> insert into judges values('MBD01','RCHI1');

1 row created.

SQL> select * from judges;

MATCH REFID

----- -----

MBD01 RCHI1

7. Creating table result and inserting records:

Creating Table:

```
SQL> create table result (matchid varchar2(5) references judges(matchid), athleteid varchar2(5)
references athlete(athleteid), position number(2) check(position>0), primary
key(matchid,athleteid));

Table created.


SQL> desc result
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 MATCHID                                   NOT NULL VARCHAR2(5)
 ATHLETEID                                 NOT NULL VARCHAR2(5)
 POSITION                                           NUMBER(2)
```

Inserting Records:

```
SQL> insert into result values('MBD01','AIND5','');

1 row created.

SQL> insert into result values('MBD01','AIND6','');

1 row created.

SQL> insert into result values('MBD01','AJAP2','');

1 row created.

SQL> insert into result values('MBD01','AJAP3','');

1 row created.


SQL> select * from result;

MATCH ATHLE   POSITION

----- ----- ----------

MBD01 AIND5

MBD01 AIND6

MBD01 AJAP2
```

8. Creating table teamparticipatedinevent and adding records:

Creating Table:

```
SQL> create table teamparticipatedinevent(teamid varchar2(5), eventid varchar2(5), sportname
varchar2(15), eventname varchar2(15), primary key(teamid, eventid));

Table created.


SQL> desc teamparticipatedinevent
 Name                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 TEAMID                    NOT NULL VARCHAR2(5)
 EVENTID                   NOT NULL VARCHAR2(5)
 SPORTNAME                          VARCHAR2(15)
 EVENTNAME                          VARCHAR2(15)
```

Inserting Records:

```
SQL> insert into teamparticipatedinevent values('BDWD1','BDWD1','Badminton','Women Doubles');

1 row created.

SQL> insert into teamparticipatedinevent values('BDWD2','BDWD1','Badminton','Women Doubles');

1 row created.


SQL> select * from teamparticipatedinevent;


TEAMI EVENT SPORTNAME      EVENTNAME
----- ----- --------------  ---------------
BDWD1 BDWD1 Badminton      Women Doubles
BDWD2 BDWD1 Badminton      Women Doubles
```

9. Creating table matchinevent and inserting records:

Creating Table:

```
SQL> create table matchinevent(matchid varchar2(5) primary key references judges(matchid),
eventid varchar2(5), sportname varchar2(15), eventname varchar2(15), matchdate date, time
number(2,2) check(time>=00.00 and time<=23.59), venue varchar2(15));

Table created.


SQL> desc matchinevent
 Name                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 MATCHID                   NOT NULL VARCHAR2(5)
 EVENTID                            VARCHAR2(5)
 SPORTNAME                          VARCHAR2(15)
 EVENTNAME                          VARCHAR2(15)
 MATCHDATE                          DATE
 TIME                               NUMBER(2,2)
 VENUE                              VARCHAR2(15)
```

Inserting Records:

```
SQL> insert into matchinevent values('MBD01','BDWD1','Badminton','Women Doubles','20-AUG-
21',.10,'JNS');

1 row created.


SQL> select * from matchinevent;

MATCH EVENT SPORTNAME      EVENTNAME      MATCHDATE      TIME VENUE
----- ----- ---------------  ---------------  ---------  ---------- ---------------
MBD01 BDWD1 Badminton      Women Doubles   20-AUG-21        .1 JNS
```

Queries Solved:

- **To identify age of athlete which is derived attribute for athlete entity:**

Query: SQL> select athleteid,floor(months_between(sysdate,dob)/12) from athlete;

Output:

```
ATHLE FLOOR(MONTHS_BETWEEN(SYSDATE,DOB)/12)
----- -----------------------------------
AIND1                                  27
AIND2                                  28
AIND3                                  26
AIND4                                  47
AUSA1                                  39
ACHI1                                  37
AJAP1                                  37
AENG1                                  45
ARUS1                                  34
ACAN1                                  53
ABRA1                                  29

ATHLE FLOOR(MONTHS_BETWEEN(SYSDATE,DOB)/12)
----- -----------------------------------
AAUS1                                  24
AIND5                                  28
AIND6                                  28
AJAP2                                  29
AJAP3                                  29

16 rows selected.
```

- **To identify country of the team which is a derived attribute for team entity:**

Query: SQL> select distinct teamid,countrycode from partof inner join athlete on athlete.athleteid=partof.athleteid;

Output:

```
TEAMI COUNT
----- -----
BDWD1 IND12
BDWD2 JAP01
```

- **To display number of athletes from the different countries:**

Query: SQL> select count(*),countrycode from athlete group by countrycode;

Output:

```
 COUNT(*) COUNT
---------- -----
         6 IND12
         1 RUS14
         1 CAN06
         1 BRA16
         1 AUS02
         3 JAP01
         1 USA99
         1 CHI12
         1 ENG47

9 rows selected.
```

- **To display which athlete is associated with which sport and which event:**

Query: SQL> select athlete.athleteid,eventname,sportname from (athlete inner join result on athlete.athleteid=result.athleteid) inner join matchinevent on matchinevent.matchid=result.matchid;

Output:

```
ATHLE EVENTNAME      SPORTNAME
----- ---------------  ---------------
AIND5 Women Doubles   Badminton
AIND6 Women Doubles   Badminton
AJAP2 Women Doubles   Badminton
AJAP3 Women Doubles   Badminton
```

- **To display names of the country which have hosted both Summer as well as winter Olympics:**

Query: SQL> select a.countrycode from olympicsite a cross join olympicsite b where a.countrycode=b.countrycode and a.season='S' and b.season='W';

Output:

```
COUNT
-----
CHI12
```

- **As it is rule in Olympics that the country of the referee cannot be similar to the countries of any of the participants. So, identify the details of referee who are eligible to judge a particular match:**

Query: SQL> select * from referee where countrycode not in (select countrycode from result inner join athlete on athlete.athleteid=result.athleteid);

Output:

```
REFID FIRST_NAME     LAST_NAME      G COUNT
----- ---------------  ---------------  - -----
RCHI1 Ching          Pong           F CHI12
RUSA1 Clinton        Dave           M USA99
RENG1 Thomas         George         M ENG47
RRUS1 Gabriella      Johnson        F RUS14
RCAN1 George         Kurien         M CAN06
RBRA1 Wilson         Bond           F BRA16

6 rows selected.
```