

## Group 2 – Project\_3 Submission

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# Olympics Database Management System

The Olympics are leading international sporting events featuring summer and winter sports competitions in which thousands of athletes from around the world participate in a variety of competitions. The Olympic Games are considered the world's foremost sports competition with more than 200 nations participating and are normally held every four years. Therefore, a gigantic dataset is created every four years and this data needs to be well-managed and information about participating nations, hosting countries, athletes, sports events, points table and winning history needs to be managed and retrieved in a pliable manner. The Olympic Database Management System aims to store this data and provide a platform for different users at different levels of access to interact with this enormous dataset by means of registration, accessibility, updating and deletion of records.

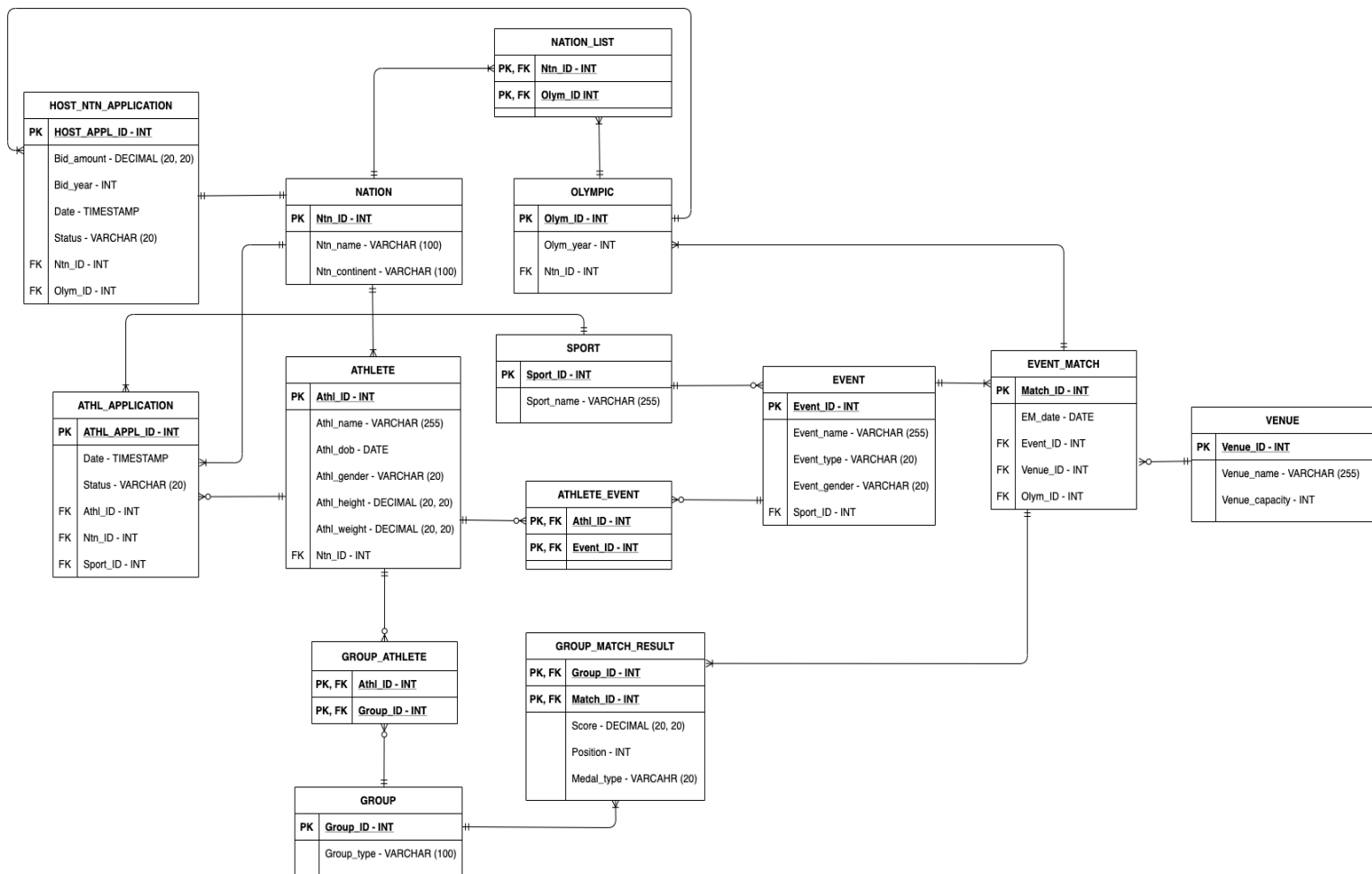
## Problem Statement

- It is difficult to link all the data about the Olympics, Nations and Athletes together without proper data management techniques.
- It is inefficient to manually keep records of all the matches or events happening in the Olympics. Moreover, chances of error increases and it may cause data inconsistency.
- The application process for Athletes and Host Nations is not very transparent.

## Suggested Solution

- The data can be linked from different tables using different query techniques if it is stored in a well-designed database.
- A database will ensure a faster retrieval of the data asked by the user. Moreover, it will be possible to store the data according to the set rules and ensure data integrity.
- Keeping records of applications in a database will ensure that no Athlete/Nation can make the same type of application twice.

E-R Diagram



**Following are the entities and their attributes which are discussed above. (Brief View)**

Entity Name	Attributes
Nation	<b>Ntn_ID</b> , Ntn_name, Ntn_continent
Athlete	<b>Athl_ID</b> , Athl_name, Athl_dob, Athl_gender, Athl_height, Athl_weight, <i>Ntn_ID</i>
Olympic	<b>Olym_ID</b> , Olym_year, Host_Ntn
Event	<b>Event_ID</b> , Event_name, Event_type, Event_gender, <i>Sport_ID</i>
Venue	<b>Venue_ID</b> , Venue_name, Venue_capacity
Group	<b>Group_ID</b> , Group_type
Sport	<b>Sport_ID</b> , Sport_name
Event_Match	<b>Match_ID</b> , EM_date, <i>Event_ID</i> , <i>Venue_ID</i> , <i>Olym_ID</i>
Nation_list	<i><b>Ntn_ID</b></i> , <i><b>Olym_ID</b></i>
Athlete_event	<i><b>Athl_ID</b></i> , <i><b>Event_ID</b></i>
Group_Athlete	<i><b>Athl_ID</b></i> , <i><b>Group_ID</b></i>
Group_Match_Result	<i><b>Group_ID</b></i> , <i><b>Match_ID</b></i> , <i>Score</i> , <i>Position</i>
Athl_Application	<b>Athl_Appl_ID</b> , Date, Status, <i>Athl_ID</i> , <i>Ntn_ID</i> , <i>Sport_ID</i>
Host_Ntn_Application	<b>Host_Appl_ID</b> , Bid_amount, Bid_year, Date, Status, <i>Ntn_ID</i>

\* the values entered in ITALICS is Foreign key for the entity which is a referring attribute of some other entity.  
Attributes in **BOLD** are the Primary key for the specific entity

#### **HOST\_NTN\_APPLICATION Entity:**

ATTRIBUTES	Data Types	Comments
HOST_APPL_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Bid_amount	DECIMAL (20,20)	NOT NULL
Bid_year	DATE	NOT NULL
Date	TIMESTAMP	NOT NULL, AUTOGENERATED
Status	VARCHAR (20)	NULL initially; status is updated by OLYMPIC admin
Ntn_ID	INTEGER	A foreign key which references Ntn_ID from NATION Entity. This is used to fetch the details of the Nation. NOT NULL

**NATION\_LIST Entity:**

ATTRIBUTES	Data Types	Comments
Ntn_ID	INTEGER	A surrogate key Ntn_ID which acts as bridge to connect the NATION entity with the OLYMPIC NOT NULL
Olym_ID	INTEGER	A surrogate key Olym_ID which acts as bridge to connect the OLYMPIC entity with the NATION NOT NULL

**NATION Entity:**

ATTRIBUTES	Data Types	Comments
Ntn_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Ntn_name	VARCHAR (100)	NOT NULL
Ntn_continent	VARCHAR (100)	NOT NULL

**OLYMPIC Entity:**

ATTRIBUTES	Data Types	Comments
Olym_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Olym_year	INTEGER	NOT NULL
Host_ntn	VARCHAR (100)	NULL initially Will be populated once one of the Host_Ntn_Application is approved

**ATHL\_APPLICATION Entity:**

ATTRIBUTES	Data Types	Comments
ATHL_APPL_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Date	TIMESTAMP	NOT NULL
Status	VARCHAR (20)	NULL initially; status is updated by the NATION admin Can be approved/rejected
Athl_ID	INTEGER	A foreign key which references Athl_ID from ATHLETE Entity. This is used to fetch the details of the athletes. NOT NULL
Ntn_ID	INTEGER	A foreign key which references Nation_ID from NATION Entity. This is used to fetch the details of the Nation. NOT NULL
Sport_ID	INTEGER	A foreign key which references Sport_ID from SPORT Entity. This is used to fetch the details of the Sport Entity. NOT NULL

**ATHLETE Entity:**

ATTRIBUTES	Data Types	Comments
Athl_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Athl_name	VARCHAR (255)	UNIQUE KEY, NOT NULL
Athl_dob	DATE	NOT NULL
Athl_gender	VARCHAR (20)	NOT NULL; can be male/female
Athl_height	DECIMAL (20, 20)	NOT NULL
Athl_weight	DECIMAL (20, 20)	NOT NULL
Ntn_ID	INTEGER	A foreign key which references Nation_ID from Nation Entity. This is used to fetch the details of the Nation. NOT NULL

**SPORT Entity:**

ATTRIBUTES	Data Types	Comments
Sport_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Sport_name	VARCHAR (255)	NOT NULL

**Event Entity:**

ATTRIBUTES	Data Types	Comments
Event_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Event_name	VARCHAR(255)	UNIQUE KEY, NOT NULL
Event_type	VARCHAR(20)	NOT NULL; can be single/team
Event_gender	VARCHAR(20)	NOT NULL; can be male/female
Sport_ID	INTEGER	A foreign key which references Sport_ID from SPORT Entity. This is used to fetch the details of the Sport. NOT NULL

**Venue Entity:**

ATTRIBUTES	Data Types	Comments
Venue_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Venue_name	VARCHAR(255)	UNIQUE KEY, NOT NULL
Venue_capacity	INTEGER	NOT NULL

**Group Entity:**

ATTRIBUTES	Data Types	Comments
Group_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
Group_type	VARCHAR(100)	NOT NULL; can be single/team

**Event\_Match Entity:**

ATTRIBUTES	Data Types	Comments
Match_ID	INTEGER	PRIMARY KEY, AUTOGENERATED
EM_date	DATE	NOT NULL
Event_ID	INTEGER	A foreign key which references Event_ID from EVENT Entity. This is used to fetch the details of the Event. NOT NULL
Venue_ID	INTEGER	A foreign key which references Venue_ID from VENUE Entity. This is used to fetch the details of the Venue. NOT NULL
Olym_ID	INTEGER	A foreign key which references Olym_ID from OLYMPIC Entity. This is used to fetch the details of the Olympic. NOT NULL

**Athlete\_event Entity:**

ATTRIBUTES	Data Types	Comments
Athl_ID	INTEGER	A surrogate key Athl_ID which acts as bridge to connect the event entity and ATHLETE Entity. NOT NULL
Event_ID	INTEGER	A surrogate key Event_ID which acts as bridge to connect the EVENT entity and Athlete Entity. NOT NULL

**Group\_Athlete Entity:**

ATTRIBUTES	Data Types	Comments
Athl_ID	INTEGER	A surrogate key Athl_ID which acts as bridge to connect the GROUP entity and ATHLETE Entity. NOT NULL
Group_ID	INTEGER	A surrogate key Group_ID which acts as bridge to connect the GROUP entity and ATHLETE Entity. NOT NULL

**Group\_Match\_Result Entity:**

ATTRIBUTES	Data Types	Comments
Group_ID	INTEGER	A surrogate key Group_ID which acts as bridge to connect the GROUP entity with the GROUP_MATCH_RESULT. NOT NULL
Match_ID	INTEGER	A surrogate key Match_ID which acts as bridge to connect the EVENT_MATCH entity with the GROUP_MATCH_RESULT. NOT NULL
Score	DECIMAL(20, 20)	NOT NULL
Position	INTEGER	NOT NULL
Medal_type	VARCHAR(20)	NOT NULL can be gold/silver/bronze/none will be auto populated based on the position attribute

**BUSINESS RULES:**

1. One **OLYMPIC** will have many participating **NATIONs**
2. One **OLYMPIC** will have access to multiple **HOST\_NTN\_APPLICATIONs**
3. **OLYMPIC** can only update the **status attribute** in **HOST\_NTN\_APPLICATIONs**
4. One **OLYMPIC** will have many **EVENT\_MATCHs**
5. One **NATION** can take part in multiple **OLYMPICS**
6. One **NATION** will create one **HOST\_NTN\_APPLICATION** for a particular **OLYMPIC** edition
7. **NATION** will not be able to update the **status attribute** in **HOST\_NTN\_APPLICATION**
8. One **NATION** will have access to multiple **ATHL\_APPLICATIONs**
9. **NATION** can only update **status attribute** in **ATHL\_APPLICATIONs**
10. One **NATION** will have multiple **ATHLETEs**
11. One **ATHLETE** will belong to only one **NATION**
12. **ATHLETEs** will create **ATHL\_APPLICATION**
13. One **ATHLETE** can create multiple **ATHL\_APPLICATIONs** if he/she is participating in multiple **SPORTs**
14. **ATHLETE** cannot update **status attribute** in **ATHL\_APPLICATION**
15. All **ATHLETEs** will be assigned to a **GROUP** via **GROUP\_ATHLETE**
16. **ATHLETE** can be assigned to multiple **GROUP** if he/she is participating in multiple **EVENT\_MATCH**
17. **ATHLETE** can be a part of multiple **EVENT**
18. **SPORT** can have multiple **EVENTs**
19. An **EVENT** will have multiple **EVENT\_MATCHes**
20. **EVENT\_MATCH** will be linked to only one **EVENT**, **OLYMPIC** and **VENUE**
21. One **EVENT\_MATCH** will have multiple **GROUPs** linked via **GROUP\_MATCH\_RESULT**
22. **GROUP\_MATCH\_RESULT** will store the attributes related to the result of the match such as Score, Position and Medal type
23. **Medal\_type attribute** can be either of the four: Gold, Silver, Bronze, None
24. **Medal\_type attribute** will be auto populated depending on the **position attribute** in **GROUP\_MATCH\_RESULT**
25. Each **VENUE** can hold multiple **EVENT\_MATCHes**
26. **Status attribute** in both **HOST\_NTN\_APPLICATION** and **ATHL\_APPLICATION** can either be Approved or Rejected
27. The **OLYMPIC** admin can approve only one **HOST\_NTN\_APPLICATION** and once that is done, all other **HOST\_NTN\_APPLICATIONs** would be rejected

**USER LEVEL ACCESS/PERMISSIONS:****OLYMPICS:**

1. Has full access to all entities in the database

**NATION:**

1. Has READ/UPDATE access to ATHL\_APPLICATION
2. Has READ/WRITE/UPDATE access to HOST\_NTN\_APPLICATION
3. Has READ access to all other tables

**ATHLETE:**

1. Has READ/WRITE/UPDATE access to ATHL\_APPLICATION
2. Does not have any access to HOST\_NTN\_APPLICATION
3. Has READ access to all other tables