**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**

Diagram

Description automatically generated

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

|  |  |
| --- | --- |
| **Entity Name** | **Attributes** |
| Nation | **Ntn\_ID**, Ntn\_name, Ntn\_continent |
| Athlete | **Athl\_ID**, Athl\_name, Athl\_dob, Athl\_gender, Athl\_height, Athl\_weight, *Ntn\_ID* |
| Olympic | **Olym\_ID,** Olym\_year, Host\_Ntn |
| Event | **Event\_ID**, Event\_name, Event\_type, Event\_gender, *Sport\_ID* |
| Venue | **Venue\_ID,** Venue\_name, Venue\_capacity |
| Group | **Group\_ID**, Group\_type |
| Sport | **Sport\_ID,** Sport\_name |
| Event\_Match | **Match\_ID,** EM\_date, *Event\_ID, Venue\_ID, Olym\_ID* |
| Nation\_list | ***Ntn\_ID, Olym\_ID*** |
| Athlete\_event | ***Athl\_ID, Event\_ID*** |
| Group\_Athlete | ***Athl\_ID, Group\_ID*** |
| Group\_Match\_Result | ***Group\_ID, Match\_ID,*** *Score, Position* |
| Athl\_Application | **Athl\_Appl\_ID**, Date, Status *, Athl\_ID, Ntn\_ID, Sport\_ID* |
| Host\_Ntn\_Application | **Host\_Appl\_ID,** Bid\_amount, Bid\_year, Date, Status, *Ntn\_ID* |

\* 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 **NATION**s
2. One **OLYMPIC** will have access to multiple **HOST\_NTN\_APPLICATION**s
3. **OLYMPIC** can only update the **status attribute** in **HOST\_NTN\_APPLICATION**s
4. One **OLYMPIC** will have many **EVENT\_MATCH**s
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\_APPLICATION**s
9. **NATION** can only update **status attribute** in **ATHL\_APPLICATION**s
10. One **NATION** will have multiple **ATHLETE**s
11. One **ATHLETE** will belong to only one **NATION**
12. **ATHLETE**swill create **ATHL\_APPLICATION**
13. One **ATHLETE** can create multiple **ATHL\_APPLICATION**s if he/she is participating in multiple **SPORT**s
14. **ATHLETE** cannot update **status attribute** in **ATHL\_APPLICATION**
15. All **ATHLETE**swill 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 **EVENT**s
19. An **EVENT** will have multiple **EVENT\_MATCH**es
20. **EVENT\_MATCH** will be linked to only one **EVENT**, **OLYMPIC** and **VENUE**
21. One **EVENT\_MATCH** will have multiple **GROUP**s 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\_MATCH**es
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\_APPLICATION**s 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