Data and Applications Group Assignment - 1

Team AGDP

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Introduction

UNICON is an organisation that organises events for unicyclists, bringing riders together in every discipline from around the world. This event is not only a competition, but also a convention for the International Unicycling Federation.

Purpose

The purpose of this database is to help in organizing and managing all events and competitions taking place during UNICON.

Users

The UNICON database would be used by organizers, participants, viewers of the database and web developers.
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Applications

The applications of the UNICON database would be keeping track of the participants data, their results, their performance, managing the schedule for the event etc. The database would also allow users to easily add, delete and edit data like events, results and registrants through queries.

Database Requirements

Entities

1. **Organisation members**
   a. MemberId [Key attribute][Integer>0][Not NULL]
   b. MemberName [Varchar(30)][Not NULL]
   c. MemberPosition [Varchar(20)]
   d. MemberCountry [Varchar]

2. **Events**
   a. EventId [Integer > 0][Key attribute][Not NULL]
   b. EventClass (eg. Muni,TrackAndField)[Varchar(20)][Not NULL]
   c. EventName (eg.100m race, marathon) [Varchar(20)][Not NULL]
   d. EventType (Team / Solo) [Varchar(20)][Not NULL]
   e. EventCategories(age,gender) [MultiValued][Varchar(20)][Not NULL]
   f. EventStartDate [DateTime][Not NULL]
   g. EventEndDate [DateTime][Not NULL]
   h. EventLocation [Varchar][Not NULL]
   i. EventDescription [Varchar][Nullable]

3. **Registrant**
   a. RegistrantId [Key attribute][Integer > 0][Not NULL]
   b. RegistrantName [Varchar(30)][Not NULL]
   c. RegistrantDOB [DateTime][Not NULL]
   d. RegistrantCountry [Varchar][Not NULL]
   e. RegistrantGender [Varchar(10)][Not NULL]
   f. RegistrantContact [Integer][Not NULL]
   g. RegistrantEmail [Varchar(20)]

4. **Team**
   a. TeamName [Varchar][Not NULL]
   b. TeamMemberNames [Multivalued][Varchar(100)][Not NULL]

Weak Entity :

Team is a weak entity because it's identity is dependent on the registrants who are a part of the team. It does not have any key attribute that distinguishes one team from another (team names can be the same in different events).

Relationships

1. "Registrant" **registers in** Solo "Event" (degree = 2)
   a. Attributes
      i. EventCategory (Age Group / Gender)
   b. Cardinality Constraints
      i. A registrant may not register for any event.
      ii. Each solo event must have at least 3 and at most 250 registrations.
      iii. Structural Constraint (min-max ratio) [0, infinite], [3, 250]
   c. Mapping (M : N)

2. "Registrant" **participates in** Solo "Event" (degree = 2)
   a. Attributes
      i. EventCategory (Age Group / Gender)
      ii. Position (int) (equals 0 if disqualified)
      iii. Details (about team performance/stat) (varchar)

3. "Registrant" **registers in** a team "Event" **with** "team" (degree = 3)
   a. A registrant must register with a team in a team event.
   b. Each team event must have at least 3 and at most 50 team registrations.

4. "Registrant" **participates in** a team "Event" **with** "team" (degree = 3)
   a. Attributes
      i. Position (int) (equals 0 if disqualified)
      ii. Details (about team performance/stat) (Varchar)

Functional Requirements

Modifications

1. **Insert:**
    a. Whenever a new event is organised, insert a new record in the "Event" entity.
    b. Whenever a person makes a new account, insert a new record in the "Registrant" entity.
    c. Whenever a new team registers for some event, insert a new record in the "Team" entity.
    d. Whenever a new member joins the organisation, insert a new record in the "Organisation member".
2. **Delete:**
    a. If a member retires from the organisation, delete his/her record from the "Organisation Member" entity.
    b. If any participant violates any of the rules set by IUF and is thus banned from future events, delete his/her record from the "Registrant" entity.
    c. If any team violates any of the rules set by IUF and is thus banned from future events, delete their record from the "Team" entity.

3. **Update:**
    a. If any registrant wants to change any of their personal information, update his/her record in the "Registrant" entity.
    b. If any organisation member wants to change any of their personal information, update his/her record in the "Organisation member" entity.
    c. If there is a change in team members for any team, update their record from the "Team" entity.

Retrievals

1. **Selection:**
    a. Select all details of the registrants from a given location/country.
    b. Select all details of the registrants in a given age group.
    c. Select all details of the events of a particular class (eg. track and field) organised in some given time period.
    d. Select all details of the events organised in a given country.

2. **Projection:**
    a. List all unique MemberPositions in the Organisation from OrganisationMember Entity.
    b. List of names and stats of all the participants who secured first place in "Track and Field" events.

3. **Aggregate:**
    a. Minimum time in "100m Race" in "expert male" category.
    b. Average time in "Downhill Gliding" in "18+ female" category.
    c. Event with maximum number of participants.

4. **Search:**
    a. Search a registrant's details by his/her name.
    b. Search events of EventClass = "Freestyle".

5. **Analysis:**
    a. List the youngest winner from "road racing" from every year.
    b. List the participants with best stat in 100m race in each category.
    c. Performance of a given team in past events.