

Data And Analysis

Assignment 1

Mini-World 3

<https://www.bedrace.co.uk>



Team:-

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Introduction

Our mini-world revolves around the yearly competition of **The Great Knaresborough Bed Race**. Each year Bed Race features 90 teams of six runners and a passenger – that's 630 people sweating around the course.

Purpose

The purpose of this database is to store information about:

- Teams participating in the race
- Participant details
- Results of the Race

Users

Based on their interaction with the database:

- Database Administrator (DBA)
- Standalone Users - Event Organisers
- Casual End users - Person who is the point of contact of the teams with the organizers, this person will access the database for example to notify a certain team of invalid registration details or will send emails to subscribed users for registration notifications. Participants may also fall in this category
- Naive users - People working to update the details and schedule.
- Participants - for accessing their result

Applications

- The database stores the data of the participants and the results of various events.
- The data can be used to analyze various factors such as where the teams are coming from as to arrange transport for them if needed.
- The database is also used to analyze the data collected in various years, for example, the percentage of women participation, the rate of increase of participation from previous years, etc.

Database Requirements

Entities

1. Team

1. Team_id [INT NOT NULL UNIQUE] 🔑
2. Year [INT NOT NULL CHECK(Year < 2050)]
3. Bed Number [INT NOT NULL UNIQUE]
4. Team Name [VARCHAR(50) NOT NULL]
5. Category_Code [VARCHAR(10) NOT NULL UNIQUE]
6. Team Contact [INT-10 NOT NULL]

2. Category

1. Category_Code [VARCHAR(10) NOT NULL UNIQUE] 🔑
2. Category Name [VARCHAR(50) NOT NULL]

3. Participant_details

1. Participant_id [INT NOT NULL UNIQUE] 🔑
2. Team_id [INT NOT NULL]
3. Name [VARCHAR(50) NOT NULL]
4. Role type (Runner/Passenger) [VARCHAR(50) NOT NULL]

5. Gender [VARCHAR(15) NOT NULL]
6. Date of Birth [Date]
7. Age (derived) [INT CHECK(AGE<135)]
8. Contact Number [INT-10]
- 4. Roles**
 1. Role_id [INT NOT NULL UNIQUE] 🔑
 2. Role type (Runner/Passenger) [VARCHAR(50) NOT NULL]
- 5. Race_results**
 1. Team_id [INT NOT NULL]
 2. Finish Time [INT]
 3. Position (derived) [INT NOT NULL] 🔑
 4. Year [INT NOT NULL CHECK(Year < 2020)] 🔑
- 6. Misc_results**
 1. Award_id [INT NOT NULL]
 2. Award_Name [VARCHAR(100) NOT NULL]
 3. Team_id [INT NOT NULL UNIQUE] 🔑
 4. Year [INT NOT NULL CHECK(Year < 2020)] 🔑
- 7. Schedule**
 1. Date [DATE]
 2. Year (derived) [INT NOT NULL CHECK(Year < 2020)] 🔑
 3. Day (derived) [VARCHAR(50) NOT NULL]
 4. Timing [TIME]

Note: Two keys represent composite/partial keys.

Weak Entity:

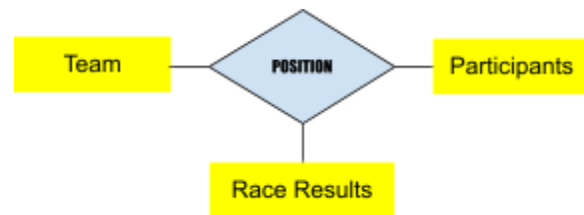
- Race results
- Misc_results

Relationships

- 1. Relationship 1 - member**
 - a. Binary
 - b. The relationship is between Team and Participant_details.
 - c. Ratio: 1:N
- 2. Relationship 2 - task**
 - a. Binary
 - b. The relationship is between Roles and Participant_details.
 - c. Ratio: 1:N
- 3. Relationship 3 - category**
 - a. Binary
 - b. The relationship is between Category, Team.
 - c. Ratio: 1:N
- 4. Relationship 4 - position**
 - a. Ternary
 - b. The relationship is between Team, Participant_details, and Race_results.
 - c. Ratio: 1:N:1

**Similarly, Team, Participant_details, and Misc_results.*
- 5. Relationship 5 - scheduling**
 - a. Binary
 - b. The relationship is between Team and Schedule.
 - c. Ratio: 1:1

n>=3 Relationships:



Functional Requirements

Modifications

1. Insert:

- Add team and its details
- Add participant details
- Add an award type in Misc_results

2. Delete:

- Delete team or unregister
- Delete an event
- Delete a category type
- Delete an award type from Misc_results

3. Update:

- Update participant details
- Update Team contact details
- Update schedule

Retrievals

• Selection:

1. Select teams participating in a particular year.
2. Select teams with a particular category in a particular year.
3. Select teams having bed number > 30.
4. Select female participants from a particular team in the current year.

- **Projection:** "Query Name and Gender of all the Participant_details above the age of 30."
"Query Name of participants with role type passengers(P).

- **Aggregate:** Various functions like AVERAGE_TIME, MAX TIME, MIN TIME, AVERAGE_AGE, MAX_AGE, MIN_AGE can be implemented. Example: "Find the minimum time to complete the race."

• Search:

1. Search for sub-categories in categories. For example: searching for "male" to give male fast, junior male fast, male entertaining.
2. Search for teams that have "Knaresborough" in their name.

• Analysis:

1. "Number of teams in top 5 positions overall, having category Xf from the years 2014-2019".
2. "Percentage of teams having women in passenger role in all years"
(To get the above percentage we will first store the number of teams with women as passengers and then divide that by the total number of teams participated which we will again extract and store.)