DNA Homework 1

Rick and Morty (S02E05: Get Schwifty)

1. Introduction to the mini-world

Rick and Morty is an animated science-fiction sitcom. For making our mini world, we have referred to episode 2 of season 5 “Get Schwifty”. With reference to the given episode, which showcased a music competition between planets, and planet Earth was represented by Rick and Morty.

2. Purpose of the database

To keep track of the music competition, entries of participating planets and the musicians representing them ,songs the musicians sing and scores of those planets based on how they sing.

3. Users of the database

-> Participants of Planet Music Competition.

-> Judges of Planet Music Competition.

-> Viewers of Planet Music Competition.

4. Applications of the database

-> Participants (ie Musicians) can view and keep track of their personal information, entries and their rankings.

-> Judges can view entries, assign scores to these entries, view the leaderboard and remove planets (from existence :P).

-> Viewers of the competition can view the leaderboard.

5. Database Requirements

a. Assumptions

-> Planets have unique names.

-> Each Musician has been provided an ID that is unique from all other musicians on any planet.

-> Each entry in Planet Music Competition has been provided a unique Entry ID.

->After every round, the planet with least number of points is disqualified (deleted from universe)

b. Strong Entity types

-> Planet

Attributes
-> Name (Primary Key)
-> Location
-> Size / Diameter
-> Population
-> Exists

-> Musician

Attributes
-> Name
-> Id (Primary Key)
-> Gender
-> DOB
-> Age
->Species

-> Planet_Music_Entry

Attributes
-> Season
-> Round
-> Entry Id (Primary Key)
-> Entry Score

c. Weak entity types

-> Song

Attributes
-> Name (Partial Key)
-> Duration
-> Date of Creation
-> Song Recording

d. Relationship types

1. **Musician - Planet**: Musician ***belongs to*** Planet
2. **Musician - Song**: Musician ***writes*** a song.
3. **Planet_Music_Entry - Planet - Song**: Planet_Music_Entry ***consists of*** Planet and a song.
4. **Musician - Planet_Music_Entry**: Musician ***participates*** in Planet_Music_Entry

i. **Max Degree** : 3
ii. **Participating entity types** :

iii. Musician - Planet (degree 2)
iv. Musician - Song (degree 2)
v. Planet_Music_Entry - Planet - Song (degree 3)
vi. Musician - Planet_Music_Entry (degree 2)

e. Cardinality ratio/ Participation constraint/ (min, max) constraint

1. Musician - Planet [One-to-One relation]
2. Musician - Song [One-to-One relation]
3. Planet_Music_Entry - Planet - Song [One-to-One relation]
4. Musician - Planet_Music_Entry [1:N relation]

f. Degree > 2 relationship types

-> **Planet_Music_Entry - Planet - Song** : Planet_Music_Entry ***consists of*** Planet and song. This is a ***ternary*** relationship.

6. Functional Requirements

MODIFICATIONS:

1. INSERT
    - Insert_musician: inserts musician with corresponding attributes that relate it with other entities.
    - Insert_planet : inserts planets with corresponding attributes that relate it with other entities.
    - Insert_song : inserts song with its attributes.
    - insert_planetMusicEntry : inserts each planet's music entry with corresponding attributes and relates it to other entities

RETRIEVALS:

1. SELECTION
    - Top_k_rank:gives participants with ranks <= k in all competitions.
    - Participants : displays the attributes of musicians/participants(for musicians)
    - results : displays information about planets, musicians, songs, planet entry. (for the judges)
2. AGGREGATE
    - Min : displays planet with least points
    - Max : displays planets with max points
    - Avg : displays average points scored
3. SEARCH
    - Search_musician_n : searches and lists out all the musicians whose names start with the letter 'n'
    - Search_planet_n : searches and lists out all the planets whose names start with the letter 'n'
4. ANALYSIS

    We can obtain the list of planets and their rankings after each round. This will help the judges declare the final winner and disqualify the planet with the least points at the end of every round.

7. Summary

The given database will be of use in conducting and keeping track of the planet music competition.

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