DNA Project Phase - 1 (Group 25)

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Introduction to the Mini-World:

The mini-world deals with an imaginary world wherein the devil decides to come to live together with the humans and the aftermaths of that decision. This mini-world has been developed on the critically acclaimed series “Lucifer”.

Purpose of the database:

The following mini-world has been built for the purpose of developing a full-fledged video game with the following set of data. There can be other uses of this database such as one can make a card game, simple crossword, or such minor games as well.

Users of the database:

1. The video gaming company for the building up of the game.
2. The writers of the further show so that they can easily navigate their progress and thus help in better script writing.
3. Show enthusiasts to keep up with the show always.

Assumptions:

1. Since it is not necessary that every character carries a mobile (as angels don't, Characters become weak entities).
2. Our database is restricted to criminal cases which are generally a consequence of one of the angel’s acts.
3. Only a maximum of 2 participants are allowed to team up for taking up cases.

Symbols:

PK - Primary Key
SE - Strong Entity
WE - Weak Entity
MVA - Multi-valued Attribute
CA - Composite Attribute

The mini-world consists of the following entities:

1. Characters - WE
    a. Name CA
    b. DOB
    c. Age - Derived Attribute
    d. Place of Origin
    e. Parents - CA
    f. Type (Human, Angel, Half Human - Half Angel)
    g. Special Abilities - MVA

    h. Relationship status
    i. Associated partner
2. Godly Weapons - WE
    a. Name - CA
    b. Level (Higher the level, the better the weapon. For example, Azrael's blade is a legendary level weapon)
    c. Presently possessed by
3. Landmark Properties - SE
    a. Name
    b. Address - PK, MVA
    c. Valuation
    d. Owned by - MVA (chances are that there might be more than 2 owners of the same property)
4. Illegal Substances - SE
    a. Commonly sought Name
    b. Scientific name - PK
    c. Price per kg
    d. Most sought dealer
5. Cases - SE
    a. Case number - PK
    b. Handled by - MVA
    c. Type of case
    d. Victim
    e. Accused
    f. Status of the victim
    g. Murder weapon if murder
    h. Relation with Lucifer
6. Vehicles - SE, two key attributes
    a. Vehicle Number - PK
    b. Registration Number - PK
    c. Vehicle Model

Relations:

1. Belongs_to: Defined between a car and a character or a property and a character.
    a. The degree of the relation is 2.
    b. Cardinality ratio = N : 1
    c. It tells us who owns a certain property car.
2. Killed_by: This is defined as a ternary relation wherein it is a case where a person is killed by another person using a godly weapon
    a. The degree of this relation is 4.
    b. It is interesting to see that there is an internal unary relation whilst also them relating to each other.
3. Team_up: This is another unary relation wherein two people team up with each other to work along in cases.
4. Illegal_sub_with_case: Illegal substances related to the cases.
    a. This is an M : N ratio.
5. Hidden_status: This deals with the relation of storage of godly substances in landmark properties.
    a. This is an M : 1 ratio.
    b. Multiple godly substances might be stored in the same building (For example, multiple godly weapons were stored in lucifer's nightclub.

Functional Requirements:

1. Retrieval:
    a. Selection: This is a simple selection process wherein it retrieves all the required data
    b. Projection_by_Entity: Here the query tries to search for a particular attribute in a given entity table only
    c. Projection_overall: Here the query tries to search for a particular attribute throughout the database
    d. No_of_cases_by: The query computes the no of cases handled by a particular person
    e. Costliest_drug: Computes the then costliest drug to know the one in demand
    f. Net_worth: Computes the net worth of a person based on the properties they own
    g. Search_name: Searches for a name with the partial entry as well from the characters

2. Modifications:
    a. Insert into a given entity:
        i. Note that there shall be integrity constraints:
            1. Key Constraints:
                a. While inserting, it is always seen that the uniqueness of a primary key is seen. If violated, the insertion will not happen and will give an error message.
            2. Entity Constraints:
                a. When entity constraints are not followed, the insertion is not done and an error message is given.
            3. Referential Constraints
                a. When wrong references are made, the insertion is not done and an error message is given.
    b. Updating an entity:
        i. Note that all the integrity constraints mentioned above will be taken care of
    c. Deleting an entity:
        i. Note that all the integrity constraints mentioned above will be taken care of. Special mention to the Referential Constraints.

Summary:

The database is a mini world of the critically acclaimed series Lucifer. It succeeds in extending its scope of the database as this not just stores typical data, but is more than that and often updates based on the requirements. Thus this can also be extended to more than just video games.