Modern Family : Mini-World

Data and Application HW-1 Report

Team 50 : Systum
2022111025 - Prakhar Singhal
2022101088 - Mohak Somani
2022101039 - Chirag Dhamija
2022115007 - Samagra Bharti

1 Introduction

Within the framework of the television series 'Modern Family,' an exploration ensues, focusing on the Pritchett-Dunphy family unit led by patriarch Jay Pritchett. This examination delves into the comedic dimensions surrounding the parenting endeavors undertaken by Jay's daughter, Claire, and her husband Phil, whose character is characterized by well-intentioned albeit occasionally bumbling actions. These dynamics are further contextualized within the framework of modern parenthood, through the experiences of Jay's son, Mitchell, and his partner, Cameron, as they navigate the complexities of raising their adopted daughter, Lily. 'Modern Family' adeptly interweaves humor and emotional resonance, ultimately illuminating the atypical bonds that define this contemporary familial ensemble.

2 Purpose

The Modern Family Database aims to create a comprehensive and organized repository of family-related information and activities for the Pritchett-Dunphy-Tucker clan, enhancing family communication, coordination, and overall well-being. This database will serve as a central hub for family members to access essential information, manage family events, and maintain connections across generations and households. It can also act as a database for product based companies for providing information for targeted advertisements as well as product marketing.

3 Users

User for this database can include following:

- **Jay Pritchett:** As the family patriarch, he may need access to various financial and property-related information.
- **Gloria Pritchett:** For managing household finances, family events, and cultural aspects.
- **Claire Dunphy:** To coordinate family events, school activities for her children, and household management.
- **Phil Dunphy:** For scheduling, organizing real estate business, and family events.
- **Mitchell Pritchett:** To manage legal documents, records related to Lily, and family event planning.
- **Cameron Tucker:** For involvement in family events and legal documents related to their adopted child, Lily.
- **Haley, Alex, and Luke Dunphy:** To check their schedules, school-related activities, and personal data.

4 Applications

This database would help the three different inter-related families to schedule their daily events and needs. Family events can also be planned efficiently through the system. Apart from family commitments, this database can be used by general stores and other companies to attract potential buyers to appropriate products in accordance with the data of the family members.

5 Database Requirements

5.1 Assumptions

1. Considering the relatively short deadline for submission and the relatively big amount of watch time present in Modern Family, our database has been restricted mainly in accordance with the first season of "Modern Family".

2. We have assumed that every character has a Public Security Key. We have also created a joint weak entity for Job or Business i.e. methods or source of income.

3. At last, we too have assumed the attributes of the properties mentioned in the show.

4. The key attribute of the strong entity "Events" has been decided "Date" as per the Gregorian Calendar and Christian Events.

5. Certain Key Attributes such as Family Identifier, Address and Job Title have additional sub-attributes.

5.2 Strong Entity Types

Entity	Attributes	Primary Key
Character	Age, Name, Gender, Blood Type, Date of Birth, Public Security Key, **Hobby(Multi-Valued)**	Public Security Key
Family	Quirk(Multi-Valued), Number of Members, Family Identifier[Surname + Residence](Composite), **Pet Name**	Family Identifier
Property	Address[Locality + Street No. + House No](Composite), Market Value, Carpet Area, Property ID	Property ID
Jobs	Salary, Job Title[Designation + Organisation](Composite) , Working Hours	Job Title
Events	Venue, Date, Type	Date

Table 1: Strong Entities and Their Attributes

5.3 Weak Entity Types

Entity	Attributes	Partial Key
Activities	**Type**, Experience, Indoor/Outdoor	Type
Pet	Species, Breed, **Name**, Age, Color (Multi-Valued)	Name

Table 2: Weak Entities and Their Attributes

1. The weak entity "Activities" is connected with the strong entity "Character" through the Key Attributes of "Hobby (Character)" and "Type (Activities)".

2. The weak entity "Pet" is connected to the strong unique entity of "Family" with the help of Key Attributes "Pet Name (Family)" and "Name (Pet)".

3. Unless mention explicitly all the attributes are assumed to be "Single" Valued.

5.4 Relation Types

Serial No.	Relation Type Name	Degree	Relation Type Description	Participating Entity Type	Carnality ratio
1	Earning Status	2	Mode and Amount of earning	Character ; Jobs/Business	(1:1)
2	Participates in	2	Engaging individuals	Events ; Characters	(1:N)
3	Hosted around	2	Main characters for an event	Events ; Characters	(1:N)
4	Belongs to	2	Groupings	Family ; Characters	(1:N)
5	Adopts	3	Accepting members which are unrelated by blood	Characters ; Family ; Pets	(N:1:M)
6	Celebrated by	2	Participating groups of individuals	Events ; Family	(1:N)
7	Ownership	2	Possession	Property ; Family	(N:1)
8	Interests	2	Hobbies and Passions	Characters ; Activities	(1:N)

5.5 Degree > 2 Relation Types

1. Adopts

5.6 Functional Requirements

Modifications

Insert:

Inserting New Entries into database under different
Entry for new members and characters in families or for newly adopted pets. [Example: Lily] Entry for Events as they Occur in Timeline for show. Entry for New property brought by families.

Update:

Updating pre-existing entries in the database dynamically
Update entries for Interest for each character over the course of the sitcom. Update entries for Jobs corresponding to characters as they change jobs and take up new roles at the workplace.

Delete:

Deleting redundant entries in database
Deleting redundant entries from the database such as unrealized interests, past pets, and evicted property.

Retrieval

Select:

Choose which rows are to be returned from the entries (i.e. entities and their corresponding attributes).
Example: Getting Address for a specific member

Projection:

Choose which columns are to be returned from the entries (i.e. attributes and their corresponding entities).
Example: Getting all members in a family.

Aggregate:

Iterating over all values of an attribute for an entity type. (Sum, Min, Max, Average, etc.)
Example: Getting Total Earnings for a family by summing salaries for all earning members of the family.

Search:

Search for entries or matching sub-parts of entries.
Example: Getting all characters that work within a specific organization

Analysis:

Using the retrieved data to get to more conclusions.
Example:

1. Event tracking: Analyze event attendance and participation over time and Identify trends in the types and frequency of family events.
2. Financial Bookkeeping: Getting average earning and spending for family members and Identify spending patterns of families.

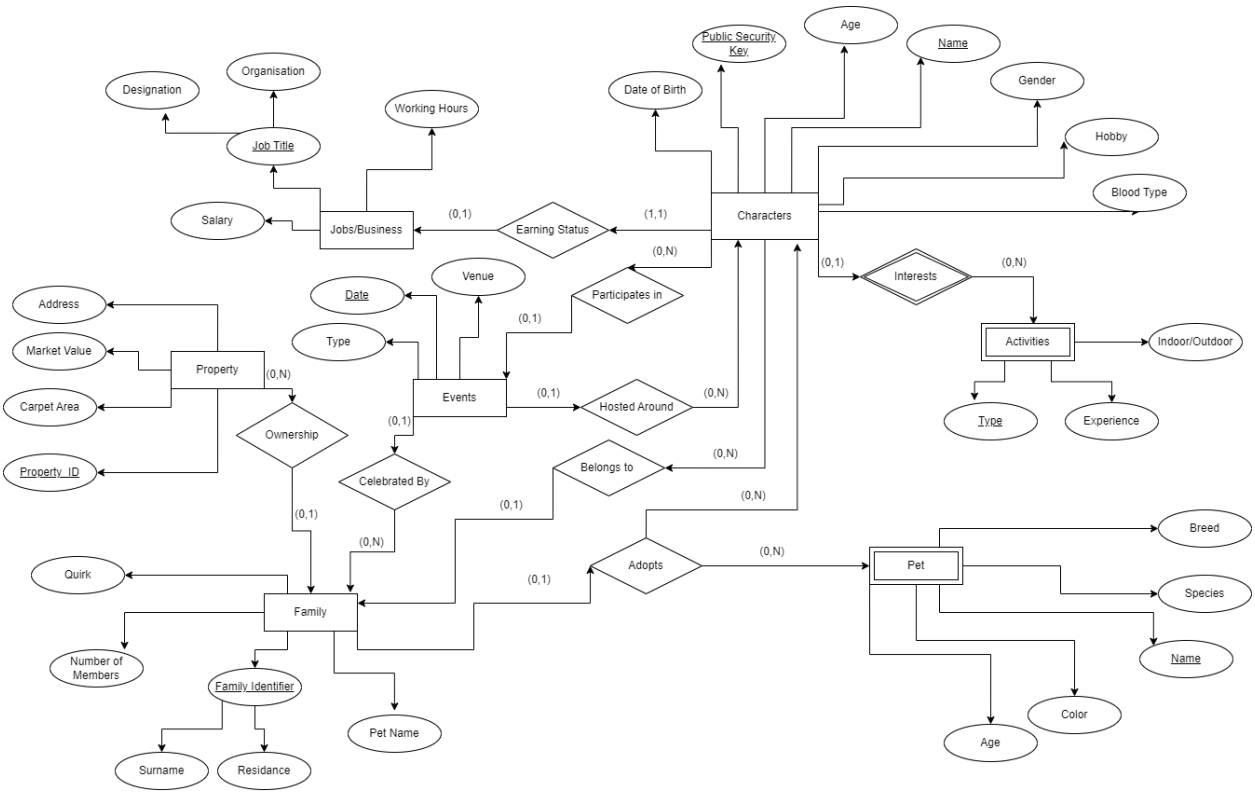

Figure 1: E-R diagram

6 Summary

The database is designed to serve as a comprehensive and centralized information repository for the Pritchett-Dunphy family. Its primary purpose is to facilitate efficient management and access to crucial data and records related to their daily lives, family events, and personal information. Each family member, from the patriarch Jay Pritchett to the children and extended family, can use the database for various purposes, including financial management, scheduling, family event coordination, legal document storage, school activities, and personal record-keeping. By offering a streamlined platform for communication and organization, the database aims to enhance overall coordination and maintain a harmonious and well-organized family environment.

7 Possible Metadata Extraction

Following cab possible data set extraction from provided database:

- **Family Member Profiles Dataset:** - A dataset containing details of each family member, including their name, date of birth, contact information, and occupation.
- **Events Dataset:** - A dataset that tracks family events, including event date and time, location, organizer, and attendees.
- **Financial Records Dataset:** - A dataset that records income, expenses, budgets, financial goals, savings, investments, and debts.
- **Health and Medical Records Dataset:** - A dataset containing medical history, doctor's contact information, medications, allergies, and health insurance details.

- **Educational and Career Dataset:** - A dataset that tracks educational achievements, career history, educational institutions, and professional goals.
- **Evolution of Recreational Interests Dataset:** - A dataset listing family hobbies, interests, recreational activities, favorite destinations, and vacation plans.

These data sets can be used for various purposes, such as data analysis, trend identification, and decision-making within the family. For example, you can analyze the family's financial data to create budgets, track expenses, and set financial goals. Similarly, the communication history dataset can help assess family communication patterns and improve information sharing. The possibilities for analysis and insights are vast, depending on the specific goals and needs of the family.