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**DATABASE SYSTEMS PROJECT STEP-1**

* **Subject**

This project is a business applicable database which is designed to represent **an** **online TV/movie streaming** **service** like Amazon Prime Video, Netflix, Hulu etc. For the first step of the project we will determine how many tables will be required and what will be characteristics and associations of them.

* **Vision**

 ***CANNAL | Premium Streaming Service***

“Cannal” is an online streaming service offering live and on-demand TV and movies, with affordable prices for home sets and mobile devices. Along with his licensed library and on-growing originals, Cannal offers extensive streaming experience by virtue of highly customizable add-ons and features.

* **Scope**

Cannal provides 2 main services to subscribers: on-demand video (Movies, series, reality shows, documentaries etc.) and Live TV (network channels). Additionally, user can customize his subscription by choosing add-ons like Enhanced Cloud DVR, Unlimited Screens, Premium Networks, No-Ads etc.

Besides of user services, we will also implement some of corporate operations like:

* Advertising and brand solutions,
* Production and marketing of “Originals”,
* Purchasing and certification of exterior productions.
* **Glossary of Terms**

We will examine the organization under 5 schemas (User, Advertising, Marketing, Purchasing and Others) by grouping entities to simplify general view.

* **User Schema:**

There will be 13 main entities that is related to a user:

1. **Title:** Themain entity for video products which holds basic information.
2. **Category:** ASupertype entity *Category* lists the categories that can be assigned to a title.

* **Movie:** The movie table is a list of all films in the catalogue of the service.
* **Series:** The series table, which is a list of all kind of series in the catalogue including TV shows, reality shows, news etc., is also a supertype:
  + **Series Episode:** This subtype entity represents a single episode of a series.

1. **Genre:** ASupertype entity *Genre* lists the genres that can be assigned to a title.

* **MovieGenre:** This subtype entity represents different kind of genres related to a movie.
* **SeriesGenre:** This subtype entity represents different kind of genres related to a series which uses separate dataset than *MovieGenre* so they should be distinct entities.

1. **Person:** A Supertype entity *Person* lists cast and crew of a title.

* **Director:** The director subtype contains information for directors related to a specific *Movie* or a *Series*.
* **Writer:** The writer subtype contains information for the writers related to a specific *Movie* or a *Series*.
* **Actor:** The actor subtype lists information for all actors related to a specific *Movie* or a *Series****.***

1. **User:** The user entity contains a list of all users and their personal information.
2. **Favourites:** This table contains favourite movies for a specific user.
3. **Ratings:** This table contains movie ratings for a specific user.
4. **PaymentRecord:** This table contains information about several payments of a specific user.
5. **MembershipPlan:** This table records payment plans available to all users.
6. **Addon:** This table records different kinds of add-ons that may affect the price of subscription.

* **LiveTV:** A subtype feature that *User* can watch free Tv Channels.
* **LiveTVPlus:** A subtype feature that *User* can watch premium networks.
* **UnlimitedScreen:** A subtype feature that *User* can use Cannal on limitless number of devices.
* **NoAds:** A subtype feature that *User* can use Cannal without any advertisement.
* **EnhancedCloudDVR:** A subtype feature that *User* can enhance his cloud storage from 50 hours to 200 hours.

1. **Device:** This table records different kinds of devices which are also affect the price of subscription.
2. **PremiumNetwork:** This entity holds information about premium networks which are belong to “LiveTVPlus” *Addon.*
3. **BasicChannel:** This entity holds information about basic channels which are belong to “LiveTV” *Addon.*

* **Advertising Schema:**

There will be 3 main entities that is related to operations of advertisement department:

1. **Advertiser:** This entity which is a subtype of “*Customer”,* holds information about the customer company of an advert.
2. **Advertisement:** This entity holds information about an advert.
3. **AdvertisementType:** This entity holds different kinds of adverts offered by “Cannal”.
   * **Marketing Schema:**

There will be 3 main entities that is related to operations of production and marketing departments:

1. **Original:** This entity which is a subtype of “*TitleType”,* holds information about original made movies and series.
2. **Buyer:** This entity which is a subtype of “*Customer”,* holds information about the customer company of an advert.
3. **Contract:** This entity holds information of the contracts that made between *Buyer* and *Cannal* on selling or renting *Originals*.
   * **Purchasing Schema:**

There will be 3 main entities that is related to operations of purchasing department:

1. **Exterior:** This entity which is a subtype of “*TitleType”,* holds information about movies and series bought from a *Distributor*.
2. **Distributor:** This entity which is a subtype of “*Customer”,* holds information about the distributor of an *Exterior*.
3. **Certificate:** This entity holds information about terms of use of an *Exterior*.

* **Other Entities:**

1. **Company:** This entity is the supertype of *Advertiser,* *Buyer* and *Distributor*.
2. **TitleType:** This entity is a supertype of *Original* and *Exterior*.

* **Problem Statement:**
* **User Issues:**

**-** There will be at least 3 payment plans (basic, standard, premium) available to all users. Number of devices, video quality and extra add-ons will be decisive factors.

**-** Payments can be made by several methods like credit card, mobile payment, bank transfers etc.

**-** User can use different streaming devices like smart tv, computer, console, smartphone, tablet etc. Number of available devices will depend on membership plan.

**-** Different video qualities like SD, HD, UHD will be also available to users depending on their membership plan.

**-** *User* can add extra features to his membership plan by choosing add-ons as much as he wants so that will also affect his payment plan.

**-** *User* can purchase different kinds of memberships over a period so the system holds information of purchasing history of a *User.*

**-** There may be several genres, several actors, several writers and several directors for a *Title*.

**-** There is only one category for a *Title*.

**-** *Users* can rate *Titles* and add themtotheir *Favourites*, so the service can make recommendations based on that.

**-** There will be different numbers of accessible *Titles* for each month depending on the contracts between distributor and the streaming service.

**-** Cannal content will vary by region also.

**-** Depending on his add-ons, *User* can watch live tv channels also including premium networks like HBO, STARZ, SHOWTIME etc.

* **Advertising Issues:**

**-** Cannal offers different kind of advertisement plans to customers like:

* **Splash:** Reach all viewers without any restriction, but a period of 24 hours.
* **DMA Targeting:** Target every viewer within a specific market.
* **Targeted Blitz:** This plan improves brand awareness among Cannal users by using different kinds of customized utilities by using personal informations, geographic area, genre, and more.
* **Seasonal:** Opportunity to align your brand with new episodes of fan favorite series, debuts of new and exclusive Cannal originals, and full seasons perennial favorites.
* **Annuals:** Opportunity to promoting your brand at special annuals like Mother’s Day, Father’s Day, Valentine’s Day etc.
* **Integrated commercial:** Cannal’s creative team can work with clients to raise brand awareness by strategically integrating their product or service in to Cannal’s Originals world.
* **Marketing Issues:**

**-** Cannal produces all kinds of original *Titles;* movies, series, tv shows etc.

**-** Cannal may sell *Originals* to third parties; other channels, networks or distributors based on a *Contract* which holds information and restrictions aboutbroadcasting. It may include selling copyrights or just renting for a period.

* **Purchasing Issues:**

**-** Cannal may purchase or rent exterior programs from *Distributors* and hold info about the agreement at a *Certificate.*

* **System Constraints:**

- Since Cannal is an online streaming service, there will be no options to buy or rent hard copies of movies (DVD).

- Downloading option and soft copies (offline watching feature) can be available as long as related movie stays in the service catalogue.

- *User* can play, pause, and resume watching any time he wants. Same feature also available for live tv channels if his cloud storage limit permits.

- There will be no buying option. Payments will be done monthly and user can reach whole catalogue without any restriction.

- There will be no contract commitment about membership period. User can cancel his membership any time he wants.

-There will be ads which are typically shown at the beginning of the stream and throughout the video, similar to what you’d expect from a traditional TV broadcast.

**-** If *User* subscribe to one of live tv plans he can also expect to see ads while watching.

**-** Premium content from add-ons like HBO, Cinemax, SHOWTIME and STARZ will play uninterrupted.

*- User* cannot skip any ads.

**-** If *User* subscribe to NoAds add-on, there will be no ads showed by Cannal side still there can be some on live tv channels.

* **Relationships:**

1. Each *Title* belongs to only one *Category* (*Movie* or *Series*) and each *Category* has at least one *Title*.
2. Each *Series* consists of several *Episodes* and each *Episode* belongs to only one *Series*.
3. Each *Title* has at least one *Genre* and vice versa.
4. *MovieGenre* and *SeriesGenre* inherits from *Genre* supertype.
5. Each *Title* has at least one *Director* and vice versa.
6. Each *Title* has at least one *Writer* and vice versa.
7. Each *Title* has at least one *Actor* and vice versa.
8. *Director*, *Writer* and *Actor* inherits from *Person* supertype.
9. Each *User* may have a list of *Favorites* and at least one *Title* in this list.
10. Each *User* rates zero or more *Titles*.
11. Each *User* must have a *MembershipPlan*.
12. Each *MembershipPlan* includes at least 3 *Devices* and at least one *Addons.*
13. *LiveTV***,** *LiveTVPlus***,** *UnlimitedScreen* and *NoAds* inherits from *Addon*.
14. *LiveTv* add-on consists at least one *BasicChannel*.
15. *LiveTvPlus* consists at least one *PremiumNetwork*.
16. *LiveTV***,** *LiveTVPlus***,** *UnlimitedScreen* and *NoAds* affects *MembershipPlan.*
17. Each *User* must have at least one *PaymentRecord* and each *PaymentRecord* belongs to only one *User*.
18. *Advertiser,* *Buyer* and *Distributor* inherits from *Customer* supertype.
19. Each *Advertiser* purchase at least one *Advertisement* and each *Advertisement* has only one *Advertiser*.
20. Each *Advertisement* has only one *AdvertisementType* and each *AdvertisementType* may be associative to zero or more *Advertisement.*
21. *Original* and *Exterior* inherits from *Titletype*.
22. Each *Title* have only one *Titletype.*
23. Each *Buyer* purchases at least one *Original* and vice versa.
24. Each *Buyer* signs at least one *Contract* and a *Contract* only belongs to one *Buyer.*
25. Each *Contract* holds info about only one *Original*. An *Original* may be mentioned on zero or more *Contract*.
26. An *Exterior* can be purchased from only one *Distributor*. A *Distributor* can sell one or more *Exterior*.
27. Each *Distributor* signs at least one *Certificate* and a *Certificate* mentions only one *Distributor.*
28. Each *Certificate* holds info about only one *Exterior* and vice versa.

* **Use Cases:**
* **User Cases:**

1. User creates an account by his email address and a password.
2. User chooses the membership plan that’s right for him.
3. User chooses a payment method to continue paying monthly price.
4. User can start watching stream on any device he wants (numbers of devices available is restricted by his membership plan) after installing related Cannal app.
5. User can choose a movie or series from personalized recommendations.
6. User can watch live tv channels if he purchases one of live tv add-ons.
7. User can play, pause, and resume Titles watching any time he wants.
8. User can record live tv channels to watch later when his/her cloud storage avaliable.
9. User can rate and add a Title to his favourites list.
10. User can look at Title info, his personal info and his lists any time he wants.
11. User can cancel his membership any time he wants.

* **Advertiser Case:**

1. An advertiser can purchase one the plans that Cannal offers:Splash, DMA Targeting, Targeted Blitz, Seasonal Annuals, Integrated commercial.

* **Buyer Case:**

1. A buyer can purchase one of the original programs that Cannal produces. Agreement may consists buying copyrights or just renting depending on contract.

* **Purchasing Case:**

1. Cannal can buy or rent an exterior program from a distributor to expand its catalogue.