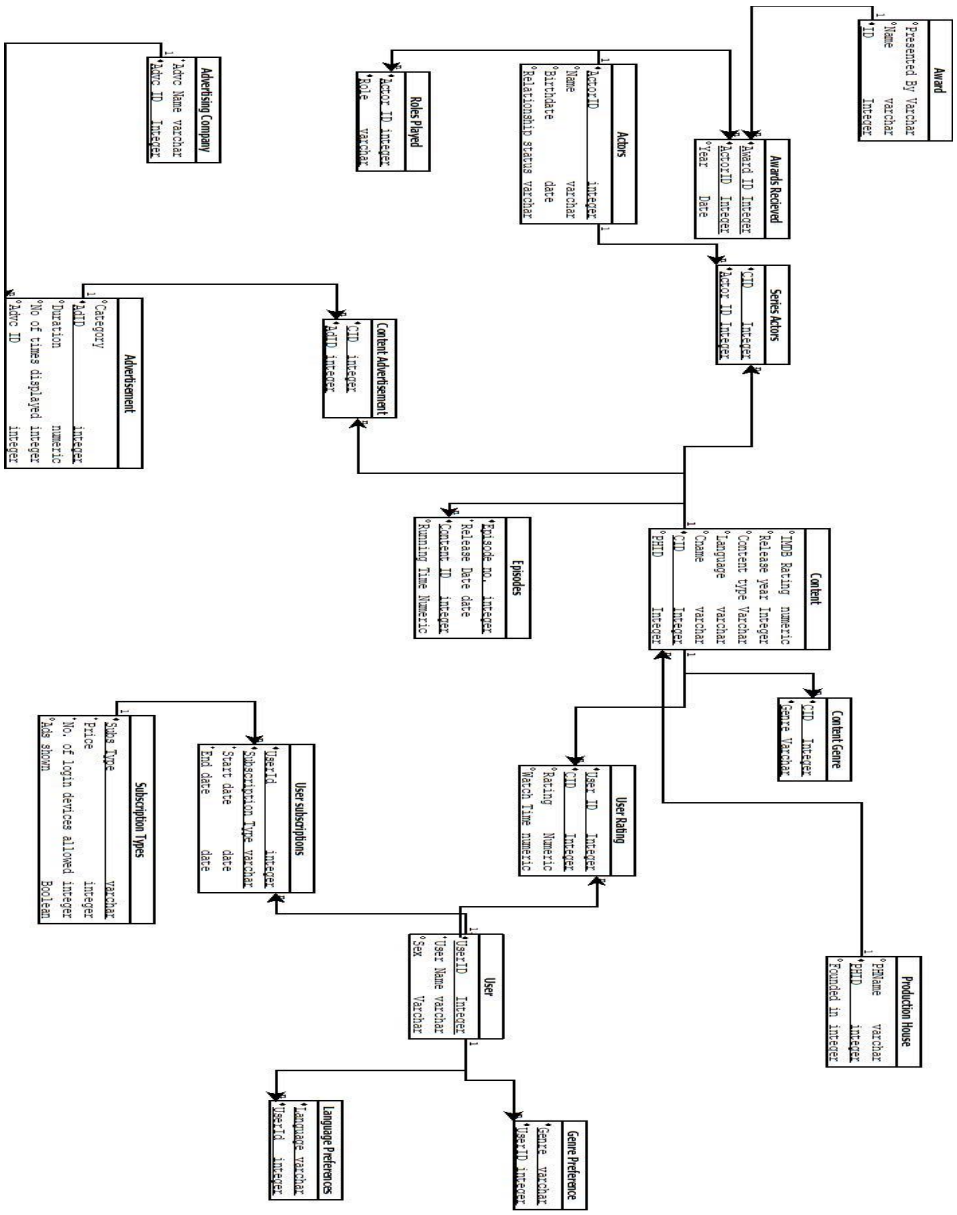
Relational Schema



Minimal FD Set

User_Id -> {username,sex }

SubsType -> {Price, No_of_devices, ads_shown}

{UserID ,Substype} -> {start_date, end_date}

{UserID,Content_ID} -> {rating, watch_time}

CID -> {IMDB, Release_year, Content_type, Language, Cname, PHID}

PHID -> { PHName, Founded_in}

{Episode_no, Content ID} -> {Run_time, Release_date}

Actor_ID -> {Name, Birthdate, Relationship_status}

Award_ID -> {Name, presented_by}

{Actor_id, Award_id} -> {Year}

AdId -> {Category, Duration, number_of_times_displayed, Advc_id}

Advc_id -> {Advc-Name}

Proof of the fact that all the relations are in BCNF

User relation

The FD set for the user relation is as follows:

User_Id -> {username, sex}

Here the key is the user ID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Genre Preferences Relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

Language Preferences Relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

User Rating

The FD set for the episodes relation is as follows:

{User_id, Content_id} -> {rating, watch_time}

Here the key is the User_id, Content_id which is a composite key.

Since all other attributes are determined by the composite key attribute only the user relation is in BCNF.

User Subscription

The FD set for the user subscription relation is as follows:

{User_id, Subscription_type} -> {start_date, end_date}

Here the key is the User_id, Substype which is a composite key.

Since all other attributes are determined by the composite key attribute only the user relation is in BCNF.

Subscription Type

The FD set for the user relation is as follows:

Subs Type -> {Price,No_of_devices, ads_shown}

Here the key is the substype.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Content Relation

The FD set for the content relation is as follows:

CID -> {IMDB, Release_year, Content_type, Language, Cname, PHID}

Here the key is the CID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Content Genre Relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

Episodes Relation

The FD set for the episodes relation is as follows:

{Episode_no, ContentID} -> {Run_time, Release_date}

Here the key is the Episode_no, ContentID which is a composite key.

Since all other attributes are determined by the composite key attribute only the user relation is in BCNF.

Production House relation

The FD set for the production house relation is as follows:

PHID -> { PHName, Founded_in}

Here the key is PHID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Content Advertisement Relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

Advertisement Relation

The FD set for the advertisement relation is as follows:

AdID -> {Category, Duration, number of times displayed, advc_id}

Here the key is AdID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Advertising Company Relation

The FD set for the advertisement relation is as follows:

Advc_ID -> {Advc_Name}

Here the key is Advc_ID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Series Actors Relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

Actors Relation

The FD set for the actors relation is as follows:

Actor_ID -> {Name, Birthdate, Relationship_status}

Here the key is Actor_ID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Awards recieved

The FD set for the actors relation is as follows:

{Actor_id, Award_id} -> {Year}

Here the key is {Actor_id, Award_id} which is a composite key.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Award relation

The FD set for the actors relation is as follows:

Award id -> {Name, presented_by}

Here the key is Award_ID.

Since all other attributes are determined by the key attribute only the user relation is in BCNF.

Roles played relation

Since all the attributes of this relation are prime (i.e part of the key), the relation is in BCNF.

DDL Script

```
Create Schema OTT
Create Table Production_House(
PHName varchar,
PHID integer,
Founded_in integer,
Primary Key(PHID)
);
Create Table Content(
        IMDBrating Decimal(2),
        release_year Integer,
        Content_type Varchar,
        Langauage varchar,
        Cname varchar,
        CID Integer,
        PHID Integer,
        Primary Key(CID),
        foreign key(PHID) references Production_House(PHID)
);
Create Table Content_Genre(
   CID Integer,
        Genre Varchar,
        Primary Key(CID,Genre)

);

Create Table Episodes (
Episode_no Integer,
Release_Date date,
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CID integer,
Running_Time Numeric,
Primary Key(Episode_no,CID),
Foreign Key(CID) references Content(CID)
);
Create Table Users (
UserID integer,
User_Name varchar,
Sex varchar,
Primary Key(UserID)
);

Create Table User_Rating (
User_ID  Integer,
CID Integer,
Rating Numeric,
WatchTime Numeric,
Primary Key(User_ID, CID),
foreign key (User_ID) references Users(UserID),
foreign key (CID) references Content(CID)
);
Create Table Subscription_Type (
SubsType varchar,
Price integer,
No_of_login_devices_allowed Integer,
Ads_shown Boolean,
Primary Key(SubsType)
);
Create Table User_subscriptions (
```

```
UserID  Integer,
SubsType Varchar,
Start_date date,
End_date date,
Primary Key(UserID, SubsType),
foreign key (UserID) references Users(UserID),
foreign key (SubsType) references Subscription_Type(SubsType)
);



Create Table Genre_Preference (
Genre varchar,
UserID integer,
Primary Key(Genre, UserID),
foreign key (UserID) references Users(UserID)

);
Create Table Language_Preferences (
Language varchar,
UserId integer,
Primary Key(Language, UserId),
foreign key (UserID) references Users(UserID)
);
Create Table Actors (
ActorID integer,
Name varchar,
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Birthdate date,
Relationship_status varchar,
Primary key(ActorID)
);

Create Table Series_Actors (
CID Integer,
ActorID Integer,
Primary Key(CID,ActorID),
foreign key (CID) references Content(CID),
foreign key (ActorID) references Actors(ActorID)

);
Create Table Award (
Presented_By varchar,
Name varchar,
Award_ID Integer,
Primary Key(Award_ID)
);

Create Table Awards_Recieved (
Award_ID integer,
ActorID integer,
Year Date,
Primary Key(Award_ID),
foreign key (ActorID) references Actors(ActorID),
foreign key (Award_ID) references Award(Award_ID)

);
```

```
Create Table Roles_Played (
ActorID integer,
Roles varchar,
Primary Key(ActorID, Roles),
foreign key (ActorID) references Actors(ActorID)

);
```

```
Create Table Advertising_Company (
Advc_Name Varchar,
Advc_ID integer,
Primary key (Advc_ID)
);

Create Table Advertisement (
Category varchar,
AdID integer,
Duration numeric,
No_of_times_displayed Integer,
Advc_ID integer,
Primary Key(AdID),
foreign key (Advc_ID) references Advertising_Company(Advc_ID)
);
```

```
Create Table Content_Advertisment (
CID integer,
AdID integer,
Primary Key (CID,AdID),
foreign key (AdID) references Advertisement(AdID),
foreign key (CID) references Content(CID)
        );
```