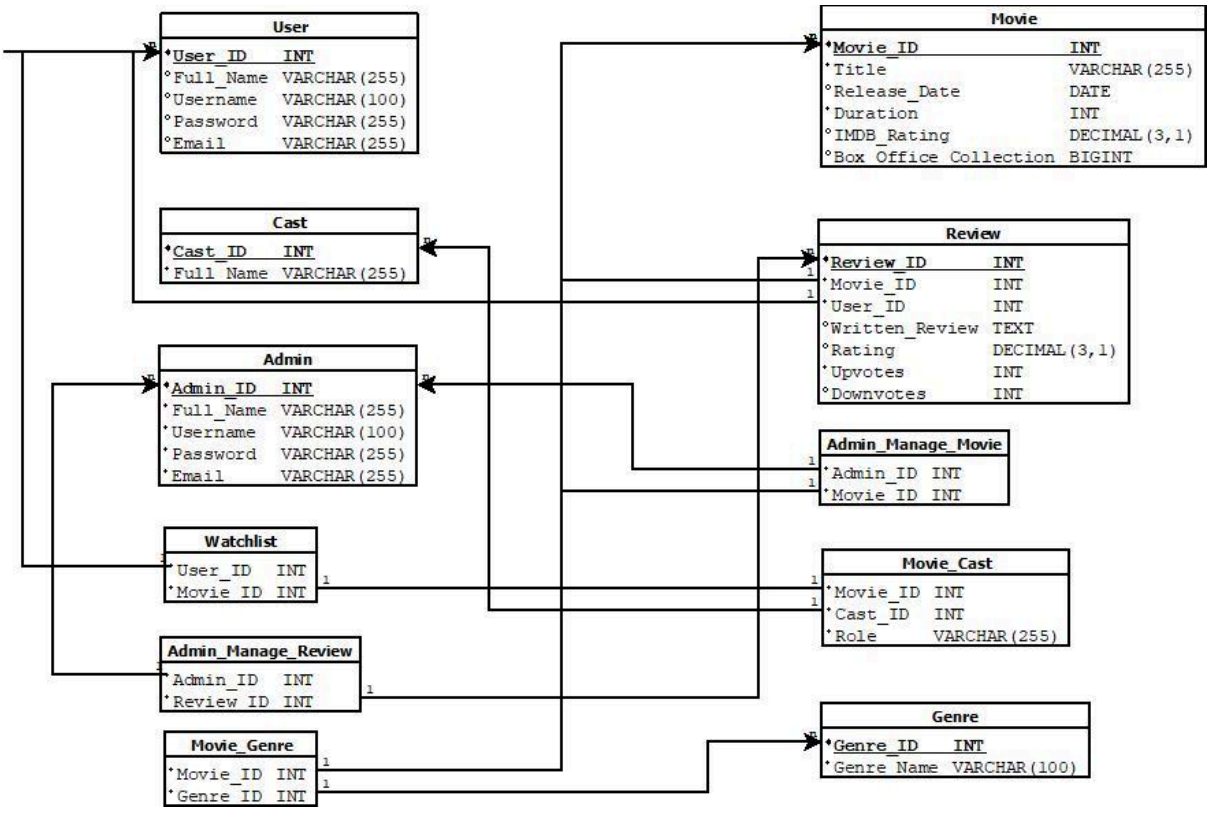
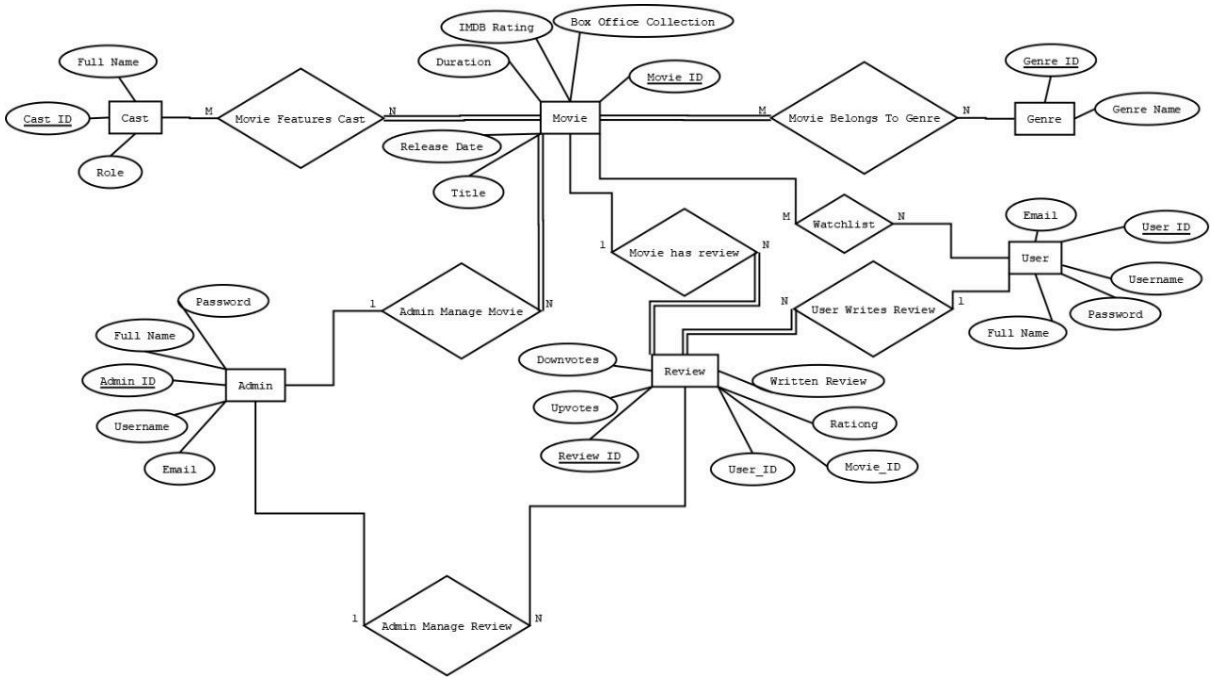
G5-T6

- ## Relational Schema



- **ERD**


IMDB Rating
Box Office Collection
Full Name
Duration
Movie ID
Genre ID
Cast ID
Cast
M
Movie Features Cast
N
Movie
M
Movie Belongs To Genre
N
Genre
Genre Name
Release Date
Role
Title
M
Watchlist
N
Email
User ID
1
Movie has review
N
User
Username
Password
Admin Manage Movie
N
User Writes Review
1
Full Name
Password
Full Name
Admin ID
Admin
Downvotes
Review
Written Review
Upvotes
Rationg
Username
Review ID
User_ID
Movie_ID
Email
1
Admin Manage Review
N

- # FD Sets

1. User Table

User_ID → Full_Name, Username, Password, Email
(User_ID uniquely determines all user attributes)

2. Admin Table

Admin_ID → Full_Name, Username, Password, Email
(Admin_ID uniquely determines all admin attributes)

3. Movie Table

Movie_ID → Title, Release_Date, Duration, IMDB_Rating, Box_Office_Collection
(Movie_ID uniquely identifies a movie and its details)

4. Genre Table

Genre_ID → Genre_Name
(Genre_ID uniquely identifies a genre)

5. Movie_Genre Table

{Movie_ID, Genre_ID} → ∅ (Composite primary key, no additional attributes)

6. Cast Table

Cast_ID → Full_Name
(Cast_ID uniquely identifies an actor/actress)

7. Movie_Cast Table

{Movie_ID, Cast_ID} → Role
(Each actor has a specific role in a movie)

8. Review Table

Review_ID → Movie_ID, User_ID, Written_Review, Rating, Upvotes, Downvotes
(Review_ID uniquely determines all attributes of a review)

{Movie_ID, User_ID} → Review_ID, Written_Review, Rating, Upvotes, Downvotes
(Each user can write only one review per movie, making this a candidate key)

9. Watchlist Table

{User_ID, Movie_ID} → ∅ (Composite primary key, no additional attributes)

10. Admin_Manage_Movie Table

{Admin_ID, Movie_ID} → ∅ (Composite primary key, no additional attributes)

11. Admin_Manage_Review Table

{Admin_ID, Review_ID} → ∅ (Composite primary key, no additional attributes)

- # Proof that relational are in BCNF

1. User (User_ID, Full_Name, Username, Password, Email)

FDs:

User_ID→Full_Name,Username,Password,Email (User_ID is the primary key)

User_ID is a superkey, so the table is in BCNF.

2. Admin (Admin_ID, Full_Name, Username, Password, Email)

FDs:

Admin_ID→Full_Name,Username,Password,Email (Admin_ID is the primary key)

Admin_ID is a superkey, so the table is in BCNF.

3. Movie (Movie_ID, Title, Release_Date, Duration, IMDB_Rating, Box_Office_Collection)

FDs:

Movie_ID→Title,Release_Date,Duration,IMDB_Rating,Box_Office_Collection (Movie_ID is the primary key)

Movie_ID is a superkey, so the table is in BCNF.

4. Genre (Genre_ID, Genre_Name)

FDs:

Genre_ID→Genre_Name (Genre_ID is the primary key)

Genre_ID is a superkey, so the table is in BCNF.

5. Movie_Genre (Movie_ID, Genre_ID)

FDs:

{Movie_ID,Genre_ID}→∅ (Composite primary key, no additional attributes)

Since the entire key is the only determinant, the table is in BCNF.

6. Cast (Cast_ID, Full_Name)

FDs:

Cast_ID→Full_Name (Cast_ID is the primary key)

Cast_ID is a superkey, so the table is in BCNF.

7. Movie_Cast (Movie_ID, Cast_ID, Role)

FDs:

{Movie_ID,Cast_ID}→Role (Composite primary key)

The entire key is the only determinant, so the table is in BCNF.

8. Review (Review_ID, Movie_ID, User_ID, Written_Review, Rating, Upvotes, Downvotes)

FDs:

Review_ID→Movie_ID,User_ID,Written_Review,Rating,Upvotes,Downvotes(Review_ID is the primary key)

{Movie_ID,User_ID}→Review_ID,Written_Review,Rating,Upvotes,Downvotes (Each user writes one review per movie, so {Movie_ID, User_ID} is also a candidate key)

Both Review_ID and {Movie_ID,User_ID} are superkeys, so the table is in BCNF.

9. Watchlist (User_ID, Movie_ID)

FDs:

{User_ID,Movie_ID}→∅ (Composite primary key, no additional attributes)

The entire key is the only determinant, so the table is in BCNF.

10. Admin_Manage_Movie (Admin_ID, Movie_ID)

FDs:

{Admin_ID,Movie_ID}→∅(Composite primary key, no additional attributes)

The entire key is the only determinant, so the table is in BCNF.

11. Admin_Manage_Review (Admin_ID, Review_ID)

FDs:

{Admin_ID,Review_ID}→∅ (Composite primary key, no additional attributes)

The entire key is the only determinant, so the table is in BCNF.