ITC6000 Database Management Systems

Movie buffs Report :

Introduction :

I'm a big fan of movies, and this is a dilemma I encounter regularly. That's why I came up with the concept for this app. The Movie Buff application is tailored for migrants and cinema enthusiasts who want to actively shape the movie lineup in local theaters. Users interact with the app by indicating their preferences for specific movies they'd like to see screened in theatres during the upcoming week. Through voting, commenting, and sharing their favorite movie selections, users create a lively and engaging platform. Theater owners and managers can gain valuable insights into the preferences of this diverse user community, empowering them to make informed decisions about which movies to showcase.

I'm considering implementing the "Free with Ads" monetization model for this app. This means users can use the app without paying anything upfront, making it accessible to a broad audience. The app generates revenue by including advertisements strategically positioned within the user interface. While users benefit from essential features like expressing their movie preferences and staying informed about movie options, they may encounter occasional ads while using the app.

Business Analysis :

User Persona 1 : Maria, the Migrant Community Connector.

Maria, aged 30,fulfills the role of a community connector within her local migrant community. With a strong commitment to cultural integration, Maria utilizes the app to rally her community members in expressing their movie preferences. She appreciates the app's capacity to provide migrants with a collective voice in shaping the film selection at local cinemas, fostering a sense of cultural representation. Maria actively participates in the voting system, fosters discussions among community members, and leverages the app's functionalities to amplify their influence.

User Persona 2 : David , the Movie Enthusiast :

David, a 25 year old cinema aficionado, relies on the app to stay informed about upcoming movies and actively engage in the selection process. He values the opportunity to vote for his preferred films and influence the offerings at his local theater. David regularly interacts with the app, seeking out user comments and enjoying the collaborative decision making process within the community. The app enriches his movie-watching experience by ensuring that the chosen films resonate with a diverse audience fostering a more inclusive cinematic environment.

User Persona 3 : Sarah, the Theater Owner :

Sarah, aged 40 and a theater proprietor, employs the app to gain insights into her local audience's preferences. Through analyzing voting trends and user feedback, she acquires valuable knowledge about the films that strike a chord with her community. Sarah actively utilizes the app's analytics features to make informed decisions regarding the movies to showcase in her theater. The app serves as a tool for Sarah to enhance the overall customer experience, aligning her theater's offerings with the diverse tastes of the audience.

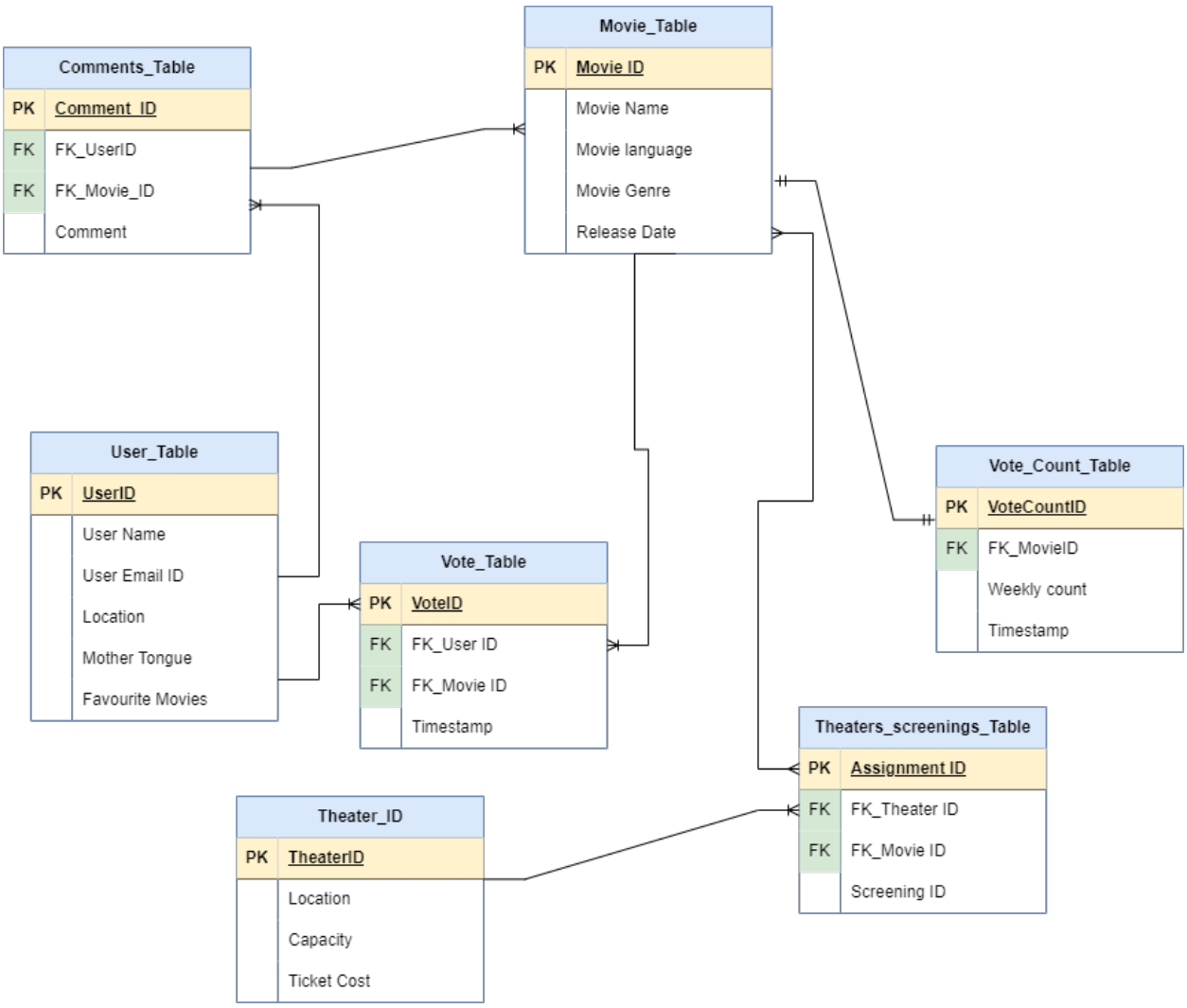
User Persona 4 : Sam, the Snack Stall Owner :

Sam, the owner of a snack stand within the local theater, views the app as an invaluable resource for aligning his inventory with the audience's expectations regarding the featured movies. By staying updated on trending films through the app, Sam can customize his snack offerings to complement the selected movies, ensuring that they cater to the diverse tastes of theater goers.

Business Rules and Logic :

- **Voting Mechanism :** Users have the option to cast votes for multiple movies, and the system will prioritize the films based on the number of votes received.
- **User Feedback :** Users are encouraged to share their thoughts and insights by leaving comments on movies, promoting community interaction.
- **Data Security :** Its imperative to handle user data with utmost security and comply with data protection regulations to ensure user confidence and legal compliance.
- **Premium features** : In the event of implementing a freemium model, certain advanced features like an ad-free experience or enhanced analytics may necessitate in-app purchases or subscription plans.
- **Theater Analytics** : The app offers comprehensive analytics tools for theater owners and managers, empowering them to make informed decisions regarding movie selections.

Table Design and Analysis :



Entities :

As you can see in the Entity Relationship (ER Diagram) there are in total 7 Entities(Tables).Each serving a specific purpose in the app's ecosystem. Movie_Table, User_Table, Theater_Id are the

only entities with no foreign keys. All other entities has foreign keys. That explains us that,these 3 entities are central to storing and organizing relevant information.

- **Movie_Table** : This table stores all the information about the movie. Like movie name,movie genre,Movie language etc..
- **User_Table** : This table stores all the information about the User. Like user name,User Email Id etc..
- **Theater_ID** : This table stores all the information about the Theater. Like its Locations,capacity etc…
- **Comments_Table** : All the comments an user gives to a movie will be stored here.User_ID,Movie_ID are the foreign keys ,used to maintain relationships.
- **Vote_Table :** All the votes any user gives to any movie will be stored here.User_ID,Movie_ID are the foreign keys ,used to maintain relationships.
- **Vote_count_Table :** Number of votes a particular movie got in that week will be stored here.
- **Theaters_screenings_Table :** Information regarding screenings will be stored here.Data regarding what movie is going to play in what cinemas will be retrieved from this entity.

Relationships :

- **User and Vote (one to many)** : One User can have multiple votes,but each vote belongs to one user.
- **Movie and Vote (one to many)** : One movie can receive multiple votes,but each vote is for one movie.
- **Movie and VoteCount (one to one) :** Each Movie has only one VoteCount.
- **Theater and Theater_screening (one to many)** : One theater can have multiple screenings.
- **Movie and Theater_screening (Many to Many)** : One movie can be assigned to multiple theaters,and one theater can have multiple movie assignments.
- **User and Comments(one to many):** One user can make many comments.

Database Implementation :

I have created all 7 tables in my Movie buffs database. Gave names of the tables according to ER diagrams. And created relationships between each table by using foreign keys.

SQL Examples :

```
 select MovieID,Movie_name,Movie_language ,
VoteCountID , vote_count ,
AssignmentID,FK_Cinema_Hall_ID,Screening_time from movie join vote_count_table on
Movie.MovieID = vote_count_table.FK_MovieID join screenings
on Movie.MovieID = screenings.FK_MovieID ;
```

	MovieID	Movie_name	Movie_language	VoteCountID	vote_count	AssignmentID	FK_Cinema_Hall_ID	Screening_time
1	1	The Avengers	English	1000000	6547	10000000	100000	2024-02-20 10:30:00
2	2	Train to busan	Korean	1000001	3452	10000001	100001	2024-02-21 11:30:00
3	3	RRR	Telugu	1000002	5744738	10000002	100002	2024-02-22 12:30:00
4	4	An Elephant Sitting Still	Chinese	1000003	48328	10000003	100003	2024-02-23 01:30:00

In this query we joined the movie table,vote count table and screenings table and retrieved data from all three tables. I have given sample data in the DB browser just to make my SQL codes more understandable.

Example 2 :

```
select userID,User_name,User_mail,Location,Mother_tongue,MovieID,Movie_name,
Movie_genre ,VoteID,Time_stamp from Vote_Table join User_table
on Vote_Table.FK_userId = User_table.userID
join Movie on Vote_Table.FK_MovieID=Movie.MovieID where UserID = 100 ;
```

	UserID	User_name	User_mail	location	Mother_tongue	MovieID	Movie_name	Movie_genre	VoteID	Time_stamp
1	100	Prabhakar	Prabhakarockstar@gmail.com	7 south street	Telugu	1	The Avengers	Science Fantasy	10000	2024-01-29 10:22:04

Here we retrieved data of the person who has User ID = 100. We retrieved data from the Vote table, user table and Movie table. Here we can see from the query that, Prabhakar has voted for The Avengers on 2024-01-29 10:22:04 .

Metrics for each persona :

User :

- Number of comments.
- Number of likes for comments.
- Number of replies for comments.

Movie Advertiser :

- Views (AKA Eyeballs)
- Retention rate (How many minutes are they watching the ad)

Cinema Hall Manager :

- Number of votes for a movie.
- Number of movies releasing.
- Number of active users in that locality.

Security concerns :

Security concerns in application development include authenticate and authorization, data protection, input validation, session management, security headers, and third-party integrations. Mitigation strategies involve implementing strong authentication mechanisms ,encryptions for data transmission and storage, input validation to prevent injection attacks, secure session management, and the use of security headers to prevent common vulnerabilities. Regular security testing , including penetration testing and code reviews, helps identify and address security vulnerabilities. Ensuring compliance with security best practices and standards enhances the overall security posture of the application, protecting sensitive data and maintaining user trust.

Server Architecture :

For the planned Movie Buffs application , it's vital to have a scalable and resilient server infrastructure to manage user requests, handle data ,and maintain consistent performance. A suitable hosting approach may involve leveraging cloud based solutions like AWS or Microsoft Azure, offering flexibility, Scalabalability, and reliability. By employing a mix of virtual machines, containers and serverless computing, the system can effectively allocate resources according to varying demand levels.

Project Wrap up :

The completion of sample database for the Movie Buffs app marks a significant milestone in the project's development. With essential tables created and relationships established, the foundation is set for building the application's functionality.

Future Considerations :

Moving forward, attention will be directed towards developing the application's features, such as user authentication, movie voting, and theater management. Additionally, ensuring data security, scalability, and seamless user experience will remain key priorities throughout the development process.