Milestone 3: Database Architecture and Modeling

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CSC 600

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Functional Requirements

1. User
   A. User can create a User Profile
   B. User will have a unique email.
   C. User can create a password.
   D. User will have a role (Player, Moderator, Parent)
   E. User will have a unique userID
   F. User will have date of birth
2. UserProfile
   A. UserProfile will have a unique ProfileID
   B. UserProfile will be owned by one and only one user.
   C. UserProfile will have one avatar.
   D. UserProfile will have FreeTime available to play.
   E. UserProfile will have MultiplayerPreference for games.
   F. UserProfile will have SocialPreference for games.
   G. UserProfile will have a Firstname
   H. UserProfile will have a Lastname
   I. UserProfile will have age of User based on date of birth
3. Game
   A. Game will have a unique GameID.
   B. Game will have a title
   C. Game will have complexity level
   D. Game will have FocusLevel required
   E. Game will have prevalence of MicroTransactions
   F. Game will have LearningTime needed to play
   G. Game will have PlatformID it is available for.
   H. Game will be either Multiplayer or Single-player
4. Genre
   A. Genre will have a unique GenreID
   B. Genre will have a unique name.
5. Platform
   A. Platform will have a unique PlatformID
   B. Platform will have a unique name
   C. Platform will have PlatformSpecificFeatures listed
6. Review
   A. Review will have a unique ReviewID
   B. Review will use a unique GameID for reviews
   C. Review will have a unique UserID for reviews
   D. Review will have a rating for reviews
   E. Review will have ReviewText explaining reviews
   F. Review will have TimeSpent on game for reviews
7. Event
   A. Event will have a unique EventID
   B. Event will have GameID for game events
   C. Event will have EventDate for game events
   D. Event will have Description of game events
8. Achievement
   A. Achievement will have unique AchivementID
   B. Achievement will have GameID for achievements earned
   C. Achievement will have UserID for achievements earned by users
   D. Achievement will have AchivmentDetails for achievements
9. UserGame
   A. UserGame will use UserID for user's owned games

   B. UserGame will have GameID for game owned by users
   C. UserGame will have OwnershipStatus of games for users
   D. UserGame will have WishlistStatus of game titles for users
10. GameGenre
   A. GameGenre will use GameID
   B. GameGenre will use GenreID
11. UserGenrePreference
   A. UserGenrePreference will use UserID for users genre preference for games
   B. UserGenrePreference will use GenreID for users chosen genres
12. GameUpdate
   A. GameUpdate will have a unique UpdateID
   B. GameUpdate will use GameID for title that has updates
   C. GameUpdate will have UpdateDescription for updates
   D. GameUpdate will have ReleaseDate for updates
13. ContentModeration
   A. ContentModeration will have a unique ContentID
   B. ContentModeration will use UserID for moderation
   C. ContentModeration will have Approval for moderation
   D. ContentModeration will have ApprovalDate for moderation
   E. ContentModeration will have ContentType for content moderated
14. UserReward
   A. UserReward has a unique RewardID
   B. UserReward will use UserID for user's rewards
   C. UserReward will have RewardType for rewards
   D. UserReward will have EarnedDate for rewards
15. SocialNetwork
   A. SocialNetwork will have a unique SocialNetworkID for social networks
   B. SocialNetwork will use UserID for social networks tied to user
   C. SocialNetwork will have SocialNetworkType for social networks.
   D. SocialNetwork will have AccountDetails for social networks.
16. TechSupportTicket
   A. TechSupportTicket will have TicketID
   B. TechSupportTicket will use UserID for user requesting tech support
   C. TechSupportTicket will have Issue
   D. TechSupportTicket will have Status of tech support

Non Functional Requirements

Database Scalability

- The database should be able to accommodate user and game list growth.
- Performance should be consistent depending on the load.

Database Performance

- The database should be high speed in searching and recommendations.
- There should be regular optimizations to the database performance.

Data Integrity

- The information on the database should be validated regularly to maintain accuracy to recommendations.

User Experience

- The response times should be quick with data entry or retrieval.
- The experience should be similar across different devices and screen sizes.

Data Privacy

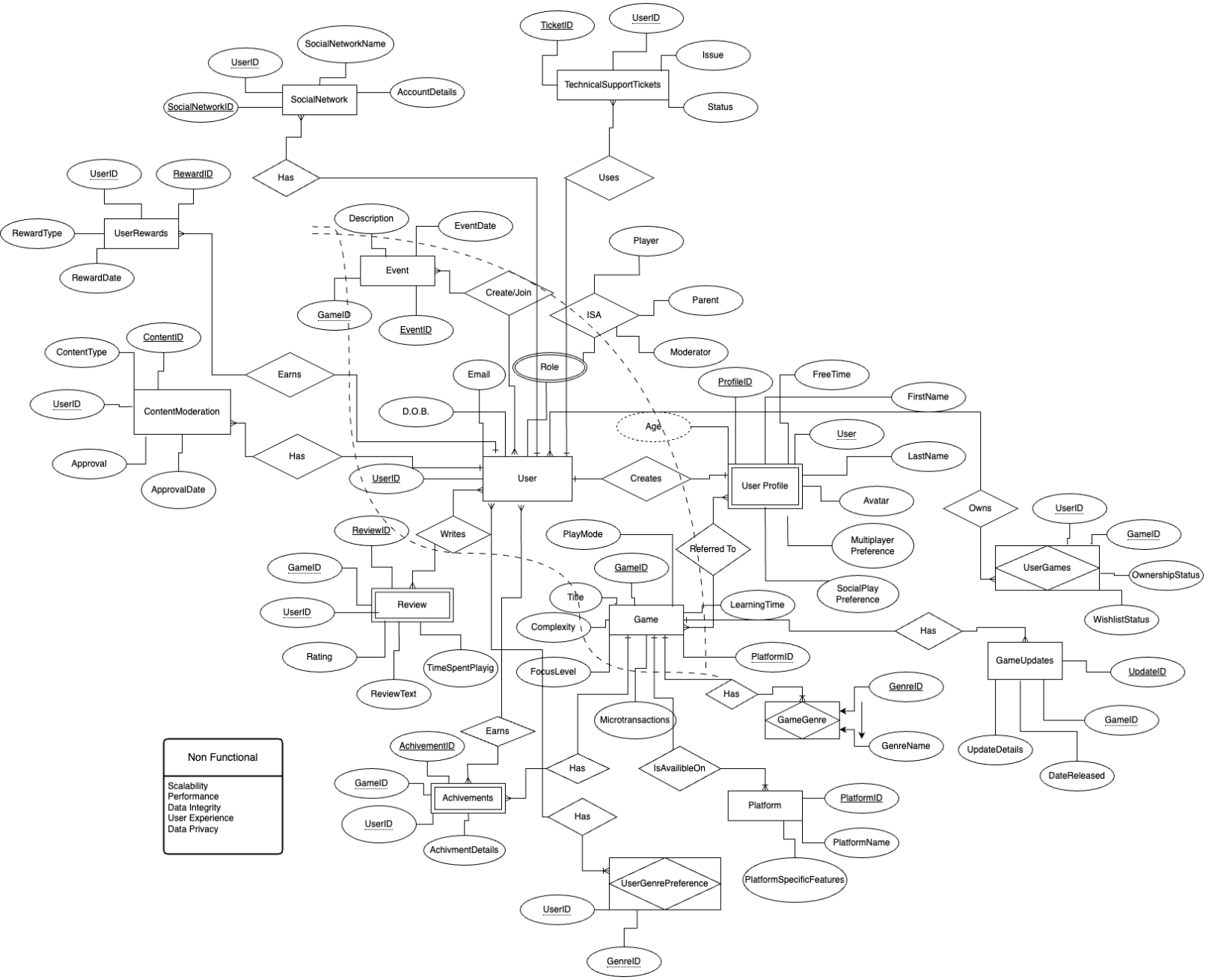
- Users have control of their data and privacy settings.
- Two factor authentication is provided.

Entities and Attributes

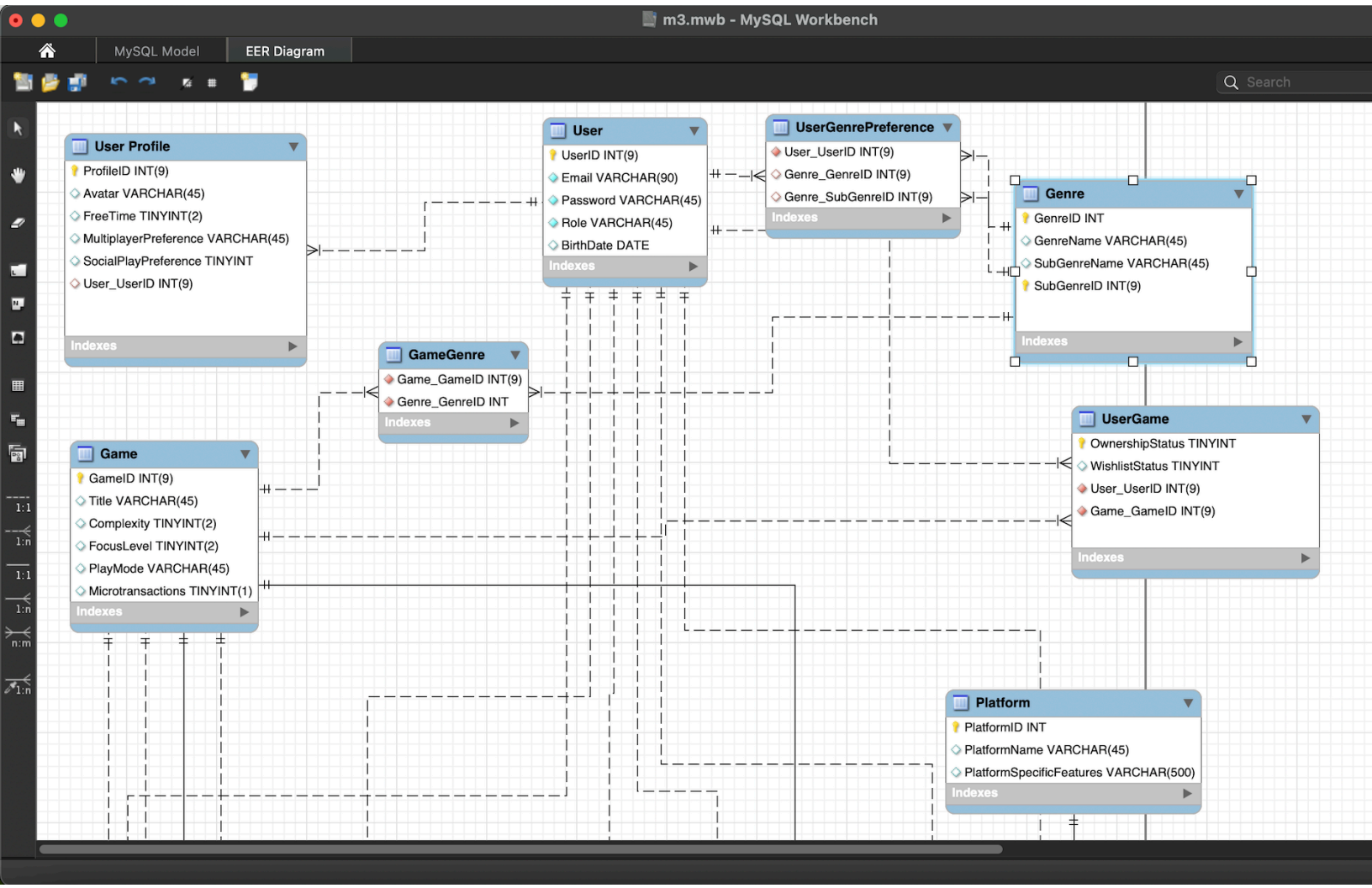
1. UserProfile (Weak Entity)
    A. ProfileID: PK, numeric
    B. UserID: FK, numeric
    C. Avatar: alphanumeric
    D. FreeTime: numeric
    E. MultiplayerPreference: Enum, alphanumeric
    F. SocialPlayPreference: Boolean
2. User (Strong Entity)
    A. UserID: PK, numeric
    B. Email: Key, alphanumeric
    C. Password: alphanumeric
    D. Role: Enum, alphanumeric
    E. D.O.B.: date
3. Game (Strong Entity)
    A. GameID: PK, numeric
    B. Title: alphanumeric
    C. Complexity: numeric
    D. FocusLevel: numeric
    E. PlayMode: Enum, alphanumeric
    F. MicroTransactions: Boolean
4. Genre (Strong Entity)
    A. GenreID: PK, numeric
    B. GenreName: alphanumeric
    C. SubGenreName: alphanumeric
    D. SubGenreID: PK, numeric
5. Platform (Strong Entity)
    A. PlatformID: PK, numeric
    B. PlatformName: alphanumeric
    C. PlatformSpecificFeatures: alphanumeric
6. Review (Weak Entity)
    A. ReviewID: PK, numeric
    B. GameID: FK, numeric
    C. UserID: FK, numeric
    D. Rating: numeric
    E. ReviewText: alphanumeric
    F. TimeSpent: int
7. Event (Strong Entity)
    A. EventID: PK, numeric
    B. GameID: FK, numeric
    C. EventDate: Date/Time
    D. Description: alphanumeric
8. Achievement (Weak Entity)
    A. AchivementID: PK, numeric
    B. GameID: FK, numeric
    C. UserID: FK, numeric
    D. AchivmentDetails: alphanumeric
9. UserGame (Associative Entity)
    A. UserID: FK, numeric
    B. GameID: FK, numeric
    C. OwnershipStatus: Boolean
    D. WishlistStatus: Boolean
10. GameGenre (Associative Entity)

    A. GameID : FK, numeric
    B. GenreID: FK, numeric
    C. SubGenreID: FK, numeric
11. UserGenrePreference (Associative Entity)
    A. UserID: FK, numeric
    B. GenreID: FK, numeric
    C. SubGreneID: FK, numeric
12. GameUpdate (Strong Entity)
    A. UpdateID: PK, numeric
    B. GameID: FK, numeric
    C. UpdateDescription: alphanumeric
    D. ReleaseDate: Date/Time
13. ContentModeration (Strong Entity)
    A. ContentID: PK, numeric
    B. UserID: FK, numeric
    C. Approval: Enum, alphanumeric
    D. ApprovalDate: Date/Time
    E. ContentType: Enum, alphanumeric
14. UserReward (Strong Entity)
    A. RewardID: PK, numeric
    B. UserID: FK, numeric
    C. RewardType: alphanumeric
    D. EarnedDate: Date/Time
15. SocialNetwork (Strong Entity)
    A. SocialNetworkID: PK, numeric
    B. UserID: FK, numeric
    C. SocialNetworkType: Enum, alphanumeric
    D. AccountDetails: alphanumeric
16. TechSupportTicket (Strong Entity)
    A. TicketID: PK, numeric
    B. UserID: FK, numeric
    C. Issue: alphanumeric
    D. Status: enum, alphanumeric

Video Game Database ERD



Video Game Database EER


m3.mwb - MySQL Workbench
MySQL Model
EER Diagram
Search
User Profile
ProfileID INT(9)
Avatar VARCHAR(45)
FreeTime TINYINT(2)
MultiplayerPreference VARCHAR(45)
SocialPlayPreference TINYINT
User_UserID INT(9)
Indexes
User
UserID INT(9)
Email VARCHAR(90)
Password VARCHAR(45)
Role VARCHAR(45)
BirthDate DATE
Indexes
UserGenrePreference
User_UserID INT(9)
Genre_GenreID INT(9)
Genre_SubGenreID INT(9)
Indexes
Genre
GenreID INT
GenreName VARCHAR(45)
SubGenreName VARCHAR(45)
SubGenreID INT(9)
Indexes
GameGenre
Game_GameID INT(9)
Genre_GenreID INT
Indexes
Game
GameID INT(9)
Title VARCHAR(45)
Complexity TINYINT(2)
FocusLevel TINYINT(2)
PlayMode VARCHAR(45)
Microtransactions TINYINT(1)
Indexes
UserGame
OwnershipStatus TINYINT
WishlistStatus TINYINT
User_UserID INT(9)
Game_GameID INT(9)
Indexes
Platform
PlatformID INT
PlatformName VARCHAR(45)
PlatformSpecificFeatures VARCHAR(500)
Indexes

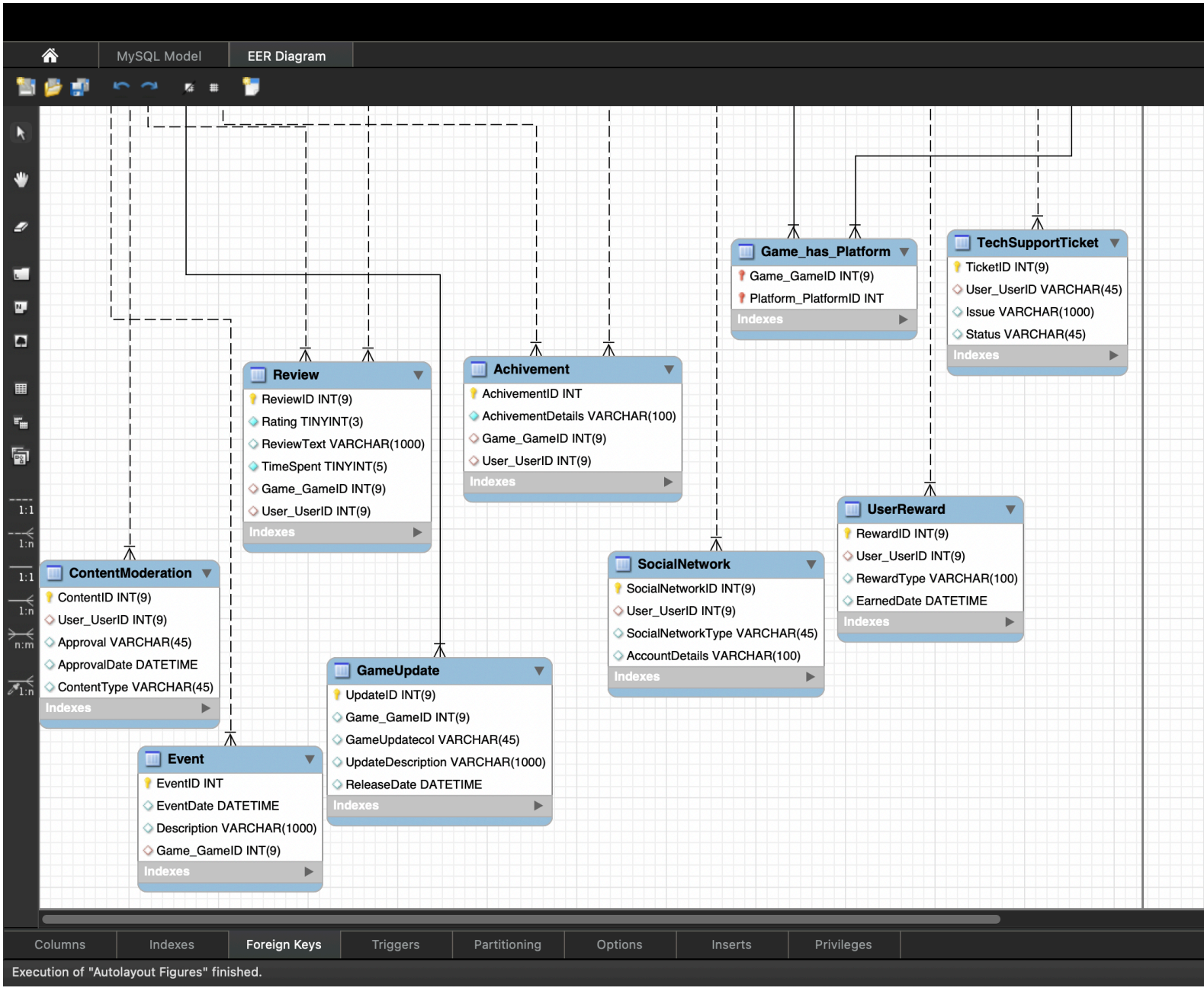

MySQL Model
EER Diagram
Review
ReviewID INT(9)
Rating TINYINT(3)
ReviewText VARCHAR(1000)
TimeSpent TINYINT(5)
Game_GameID INT(9)
User_UserID INT(9)
Indexes
Achivement
AchivementID INT
AchivementDetails VARCHAR(100)
Game_GameID INT(9)
User_UserID INT(9)
Indexes
Game_has_Platform
Game_GameID INT(9)
Platform_PlatformID INT
Indexes
TechSupportTicket
TicketID INT(9)
User_UserID VARCHAR(45)
Issue VARCHAR(1000)
Status VARCHAR(45)
Indexes
ContentModeration
ContentID INT(9)
User_UserID INT(9)
Approval VARCHAR(45)
ApprovalDate DATETIME
ContentType VARCHAR(45)
Indexes
GameUpdate
UpdateID INT(9)
Game_GameID INT(9)
GameUpdatecol VARCHAR(45)
UpdateDescription VARCHAR(1000)
ReleaseDate DATETIME
Indexes
SocialNetwork
SocialNetworkID INT(9)
User_UserID INT(9)
SocialNetworkType VARCHAR(45)
AccountDetails VARCHAR(100)
Indexes
UserReward
RewardID INT(9)
User_UserID INT(9)
RewardType VARCHAR(100)
EarnedDate DATETIME
Indexes
Event
EventID INT
EventDate DATETIME
Description VARCHAR(1000)
Game_GameID INT(9)
Indexes
1:1
1:n
1:1
1:n
n:m
1:n
Columns
Indexes
Foreign Keys
Triggers
Partitioning
Options
Inserts
Privileges
Execution of "Autolayout Figures" finished.

TABLE	FK	ON DELETE	ON UPDATE
UserProfile	UserID	Cascade	Cascade
GameGenre	GameID	Cascade	No Action
UserGame	UserID	Cascade	Cascade
UserGame	GameID	Cascade	Cascade
Game	PlatformID	Cascade	Cascade
Review	UserID	Cascade	No Action
Achivements	GameID	Cascade	No Action
Review	GameID	Cascade	No Action