

Music Sharing

Database Project Proposal

CSC 455 – Database Design and Implementation

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Project Description

This project will implement a database to track songs uploaded by users and allow the sharing of songs. This system will track information pertaining to each song in the system. User data will also be collected and displayed. There will be three levels of functionality depending on the tier of user that is using the site. Guests will have more limited access than users and users will not have access to administrator tools.

A guest will have the ability to search or browse for music. All music will be able to be listened to but will not be able to be downloaded. Guests will be able to also search for other users and view that user's information.

A user will have the ability to upload their music and download the music of others. Any song uploaded will have a description, a title, and a genre. Users will be able to interact with other users by sending messages. Users will also be able to create playlists of songs they like.

An administrator will have access to all functions including the ability to remove users from the system, delete/edit any song, and delete/edit any playlist.

Functional Requirements

Songs will have to be uploaded by the user. The database will have to store these as actual files or references to files in order to allow for playback or download. There will have to be a method created to collect data such as the amount of plays and downloads for a specific song. This information can be queried and summed to provide total downloads or plays for a specific user. Each song will need to have attributes that will allow for the browsing of songs and filtering the results based on these attributes. Songs uploaded will be associated to the users that upload them. Playlists will be associated to the user that creates them but will also be associated with any song in the system that has been added to the playlist. Searching for songs will require queries based on matching of song name and song artist.

User Interface Specifications

Main Menu

1. User registration
2. Login (access user / administrator functions)
3. Guest functions
4. Quit

Guest Functions

1. Browse songs (by genre, popularity, and most recently uploaded)
2. Search for songs (by song title, artist name)
3. Search for users (by username)
4. Search for playlists (by username, playlist name)
5. Quit

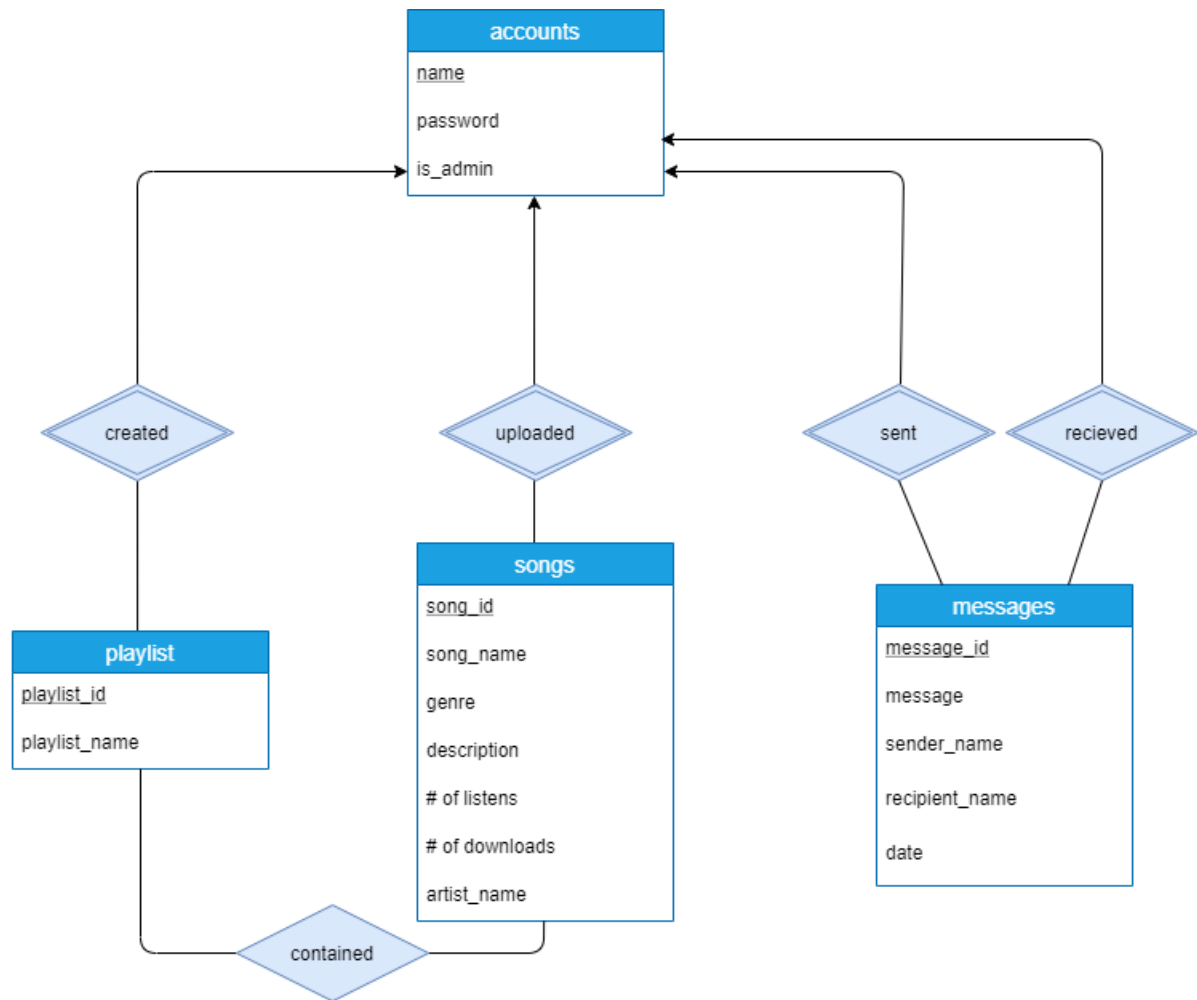
User Functions

1. Upload song (set description, name, artist, genre)
2. Edit uploaded songs (edit description, name, artist, genre)
3. Delete uploaded song
4. Create playlist
5. Edit created playlist
6. Delete created playlist
7. Send message to user
8. Read messages
9. All guest functions

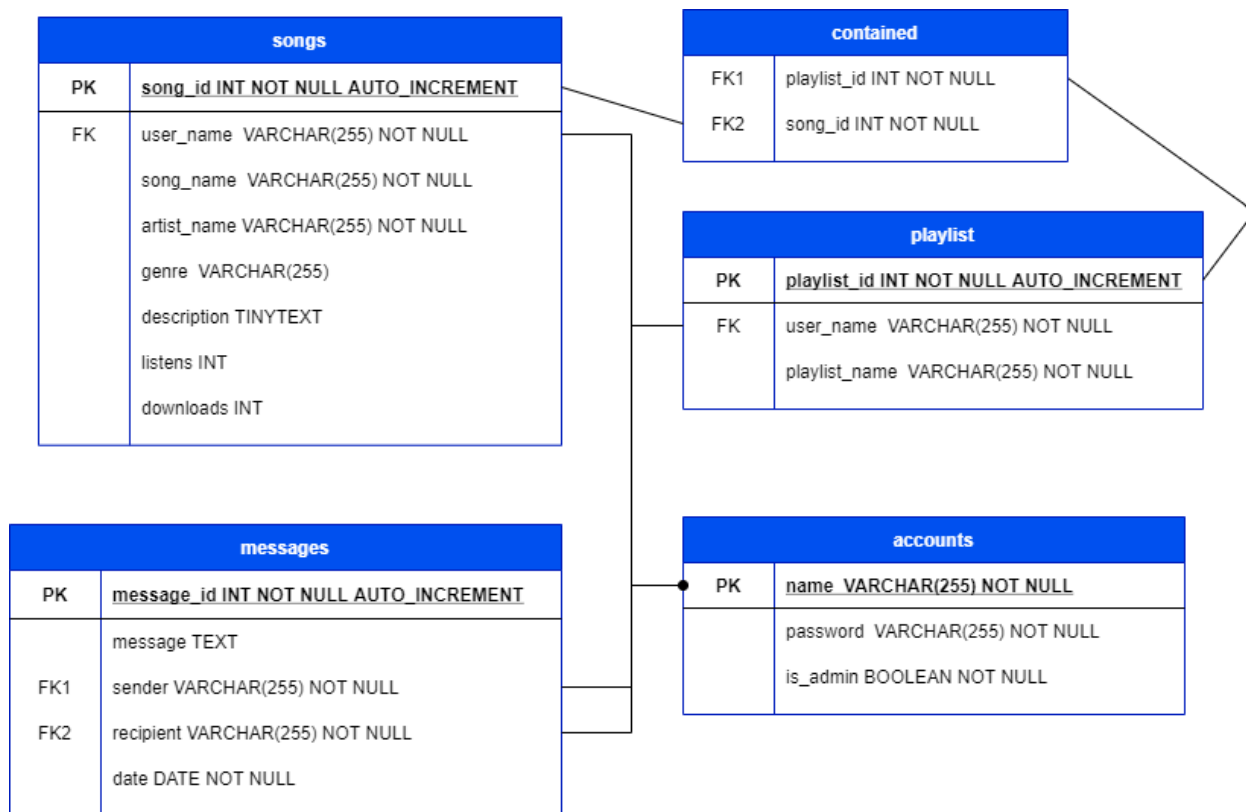
Administrator Functions

1. Remove user
2. Edit or delete any song
3. Edit or delete any playlist
4. All user functions

E-R Diagram



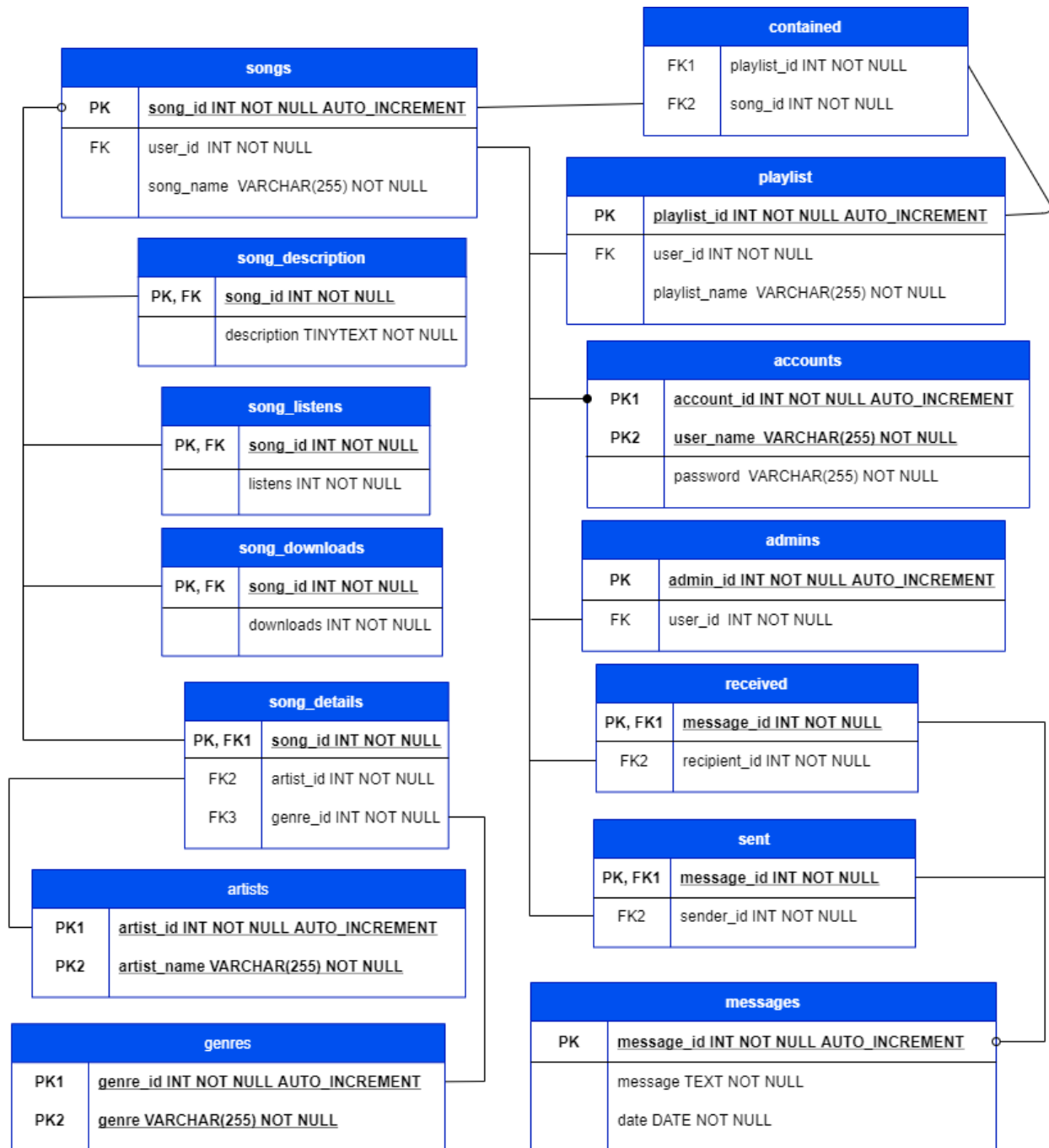
Tables



Normalized Tables

Normalization allows tables to be reduced and at the same time reference other tables. "id" attributes are static and allows this reference of tables from another table. This allows other attributes such as name to be modified with no issues.

- Songs
 - Descriptions, listens, and downloads are separate tables. Each attribute only affects themselves. The attributes also aren't explicitly required. If the table was un-normalized, it may take longer to reach the attribute because there are more attributes to edit for each row in the table.
 - Artists and Genres are tables added for the Details table. Artists and genres can repeat so if the table was un-normalized, it runs the risk of not updating all artists or genres in the rows where a specific artist or genre needed to be updated.
- Messages
 - Senders and recipients of messages are separate tables. In the un-normalized table, it might take longer to update the table because there are more attributes to edit for each row.
- Accounts
 - Admins are user accounts upgraded to administrators. The boolean aspect is removed.



Normalized Tables (Updated)

