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CS 486/586 Introduction to DBMS

Summer 2022

Homework Assignment 4

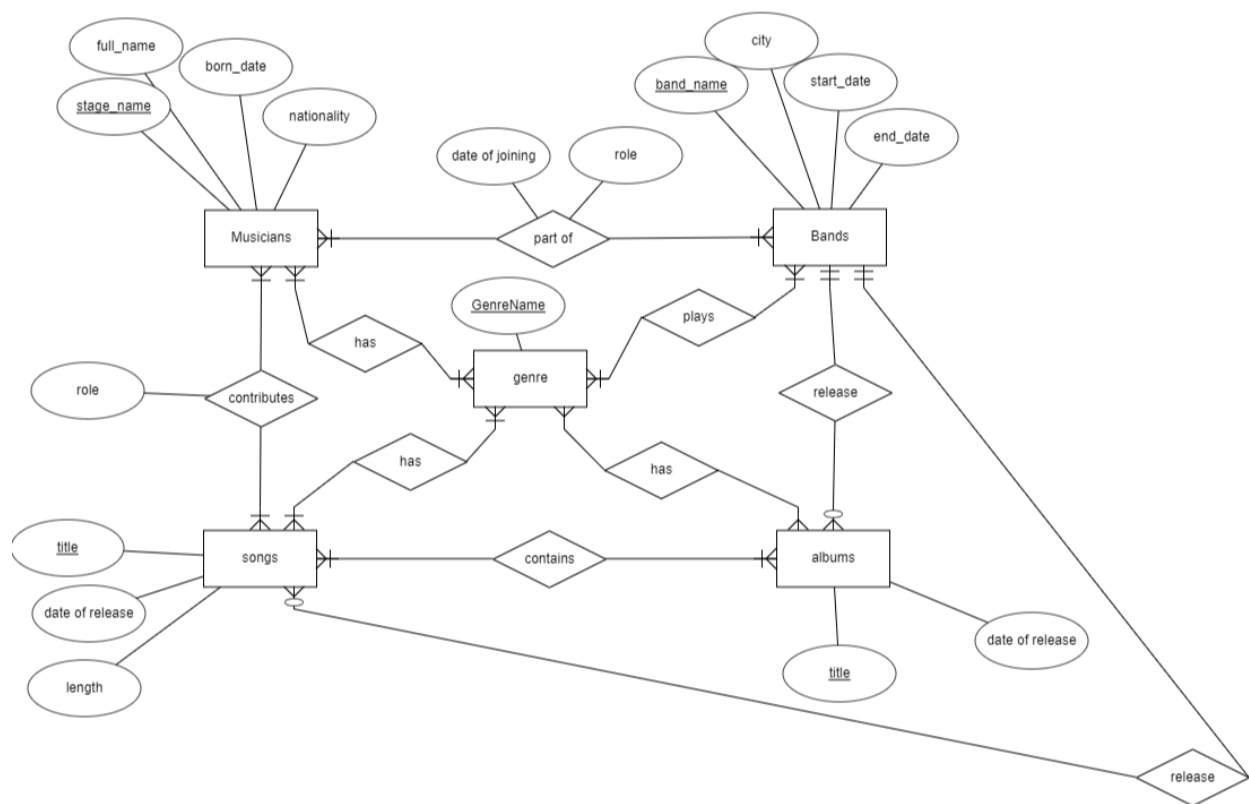
Part I - ER Diagrams and ER->Relations

Consider the following statements about your database:

- There are several core objects to be modeled in your database, including:
 - Musicians. Each musician has a unique stage name, full name, born date, and nationality
 - Bands. Each musical group is called a band, and is identified by their band name. It holds information about the city that they were formed in, the date the band was formed, and the date the band stopped being active (unless it's still active).
 - Songs. Each song is identified by a title, the date it was released, and the Band who released it. It also holds information about the length of the song.
 - Albums. Each album is identified by a title and the band who released it. It holds information about the date it was released.
- Note: Solo acts, like Lady Gaga, are modeled with both a Band named "Lady Gaga" and a musician named "Lady Gaga".
- Note: Album is the term used to release a set of music with a title, even if the music collection is released as a CD, or some other format.
- Here are the key relationships to model in your database...
 - Bands are comprised of Musicians. The database records the date when a musician joined a band, and what role they had in the band (such as Lead Vocals, Bass, Drums, etc)
 - Musicians contribute to Songs, whether or not they are in the Band that released the song. The db records what role the musician had in the song.
 - Albums contain Songs.
- The database has a list of Genre's, and tracks which Genre(s) are applicable to a Band, a Song, a Musician, or an Album.

1) Draw an ER diagram that represents these data requirements. Be sure to mark the key attributes and include cardinality constraints on relationships (1, many). Don't specify the types of attributes.

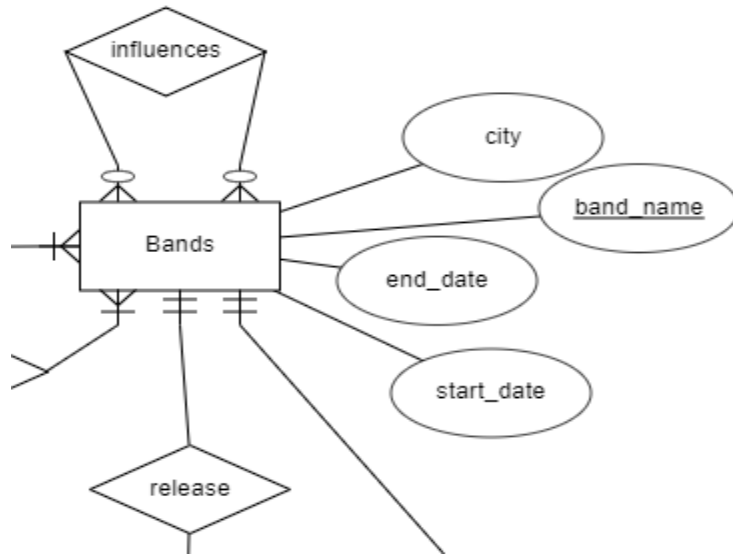
Answer



2) Modify your ER diagram to handle the following extensions. Do each part as a separate change from the original diagram. You only need to show the parts of the diagram that change. (10 points each part which is 20 points total)

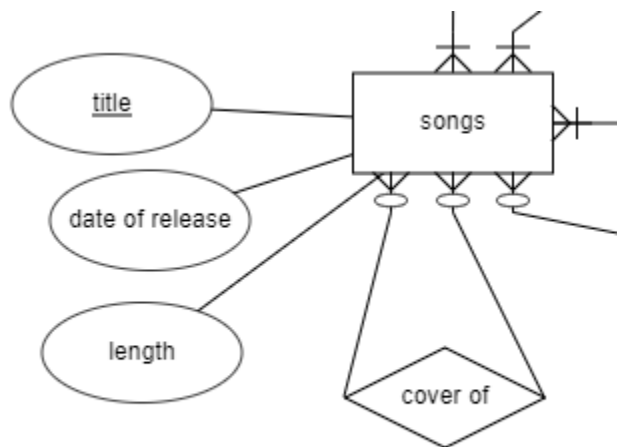
a) A band may have one or more influences, which are other bands.

Answer



b) A song may be a cover of another (one) song.

Answer



3) Translate Musicians, Bands, Songs and Albums (any relations that tie those relations together) from your ERD into a db schema using the format:

TableName1(Attribute1, Attribute2, Attribute3,...)

Attribute2 is a foreign key referencing Table3.

Underline the attributes making up the primary key of each table. Describe foreign keys in a separate line.

1. Musicians (stage_name, full_name, born_date, nationality, genrename)
 - a. genrename is foreign key referencing Genre
2. Bands (band_name, city, start_date, end_date, genrename)
 - a. genrename is foreign key referencing Genre
3. Songs (title, date_of_release, length, genrename)
 - a. genrename is foreign key referencing Genre
4. Albums (title, date_of_release, genrename)
 - a. genrename is foreign key referencing Genre
5. part_of (musician_name, band_name, date_of_joining, role)
 - a. musician_name is foreign key referencing Musicians
 - b. band_name is foreign key referencing Bands
6. Contributes (name, title, role)
 - a. name is foreign key referencing Musicians
 - b. title is foreign key referencing Songs
7. Contains (album_title, song_title)
 - a. album_title is foreign key referencing Albums
 - b. song_title is foreign key referencing Songs
8. Release (name, album_title, song_title)
 - a. name is foreign key referencing Bands
 - b. album_title is foreign key referencing Albums
 - c. song_title is foreign key referencing Songs
9. Genre(genrename)