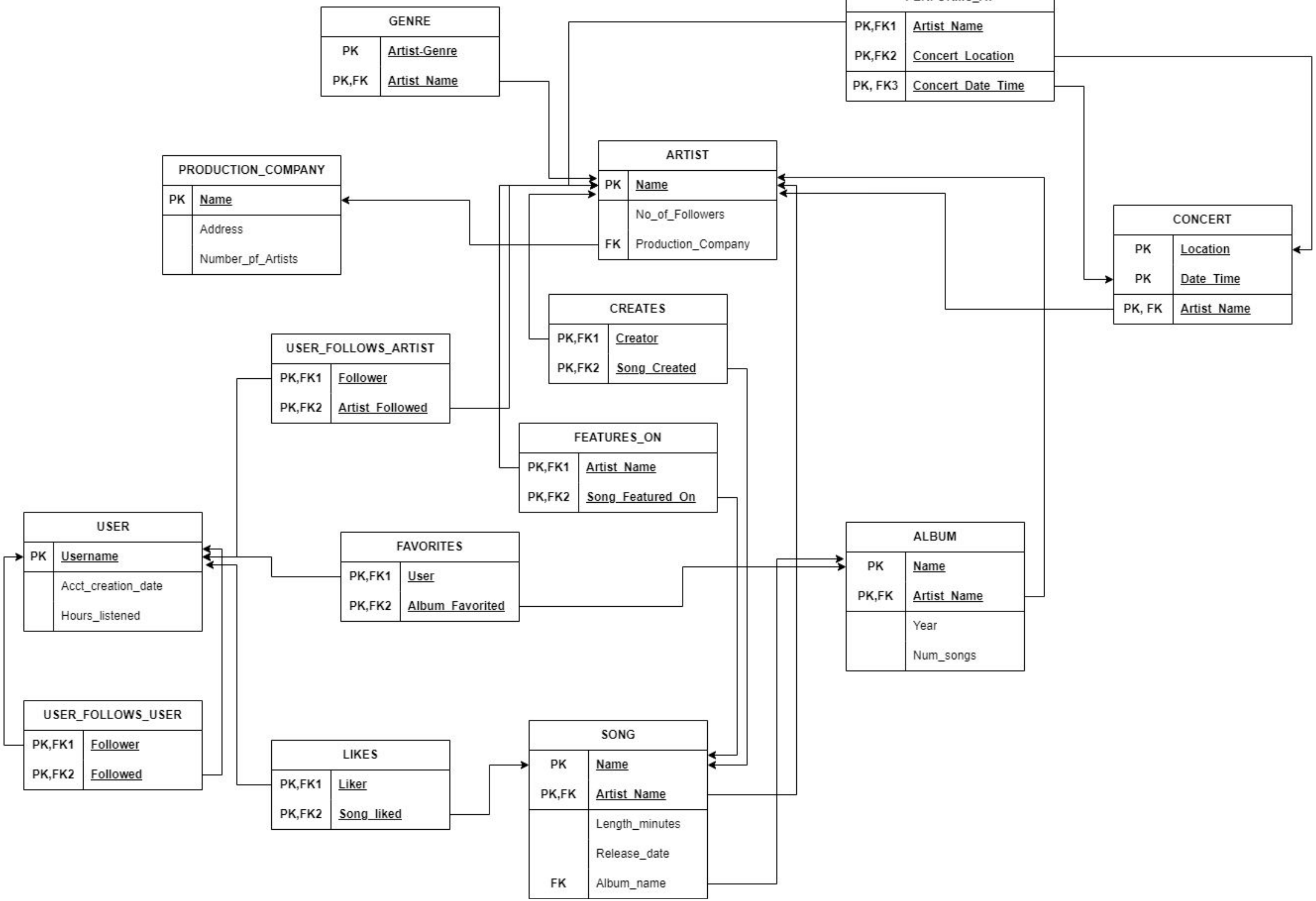
# Topsify Part 2 - Relational Schema

By Ez, Zak, and Tennessee

# Full ER and Schema

The full Images of the ER diagram and relational schema



| GENRE | |
|---|---|
| PK | Artist-Genre |
| PK,FK | Artist_Name |

| | |
|---|---|
| PK,FK1 | Artist_Name |
| PK,FK2 | Concert_Location |
| PK, FK3 | Concert_Date_Time |

| PRODUCTION_COMPANY | |
|---|---|
| PK | Name |
| | Address |
| | Number_pf_Artists |

| ARTIST | |
|---|---|
| PK | Name |
| | No_of_Followers |
| FK | Production_Company |

| CONCERT | |
|---|---|
| PK | Location |
| PK | Date_Time |
| PK, FK | Artist_Name |

| CREATES | |
|---|---|
| PK,FK1 | Creator |
| PK,FK2 | Song_Created |

| USER_FOLLOWS_ARTIST | |
|---|---|
| PK,FK1 | Follower |
| PK,FK2 | Artist_Followed |

| FEATURES_ON | |
|---|---|
| PK,FK1 | Artist_Name |
| PK,FK2 | Song_Featured_On |

| USER | |
|---|---|
| PK | Username |
| | Acct_creation_date |
| | Hours_listened |

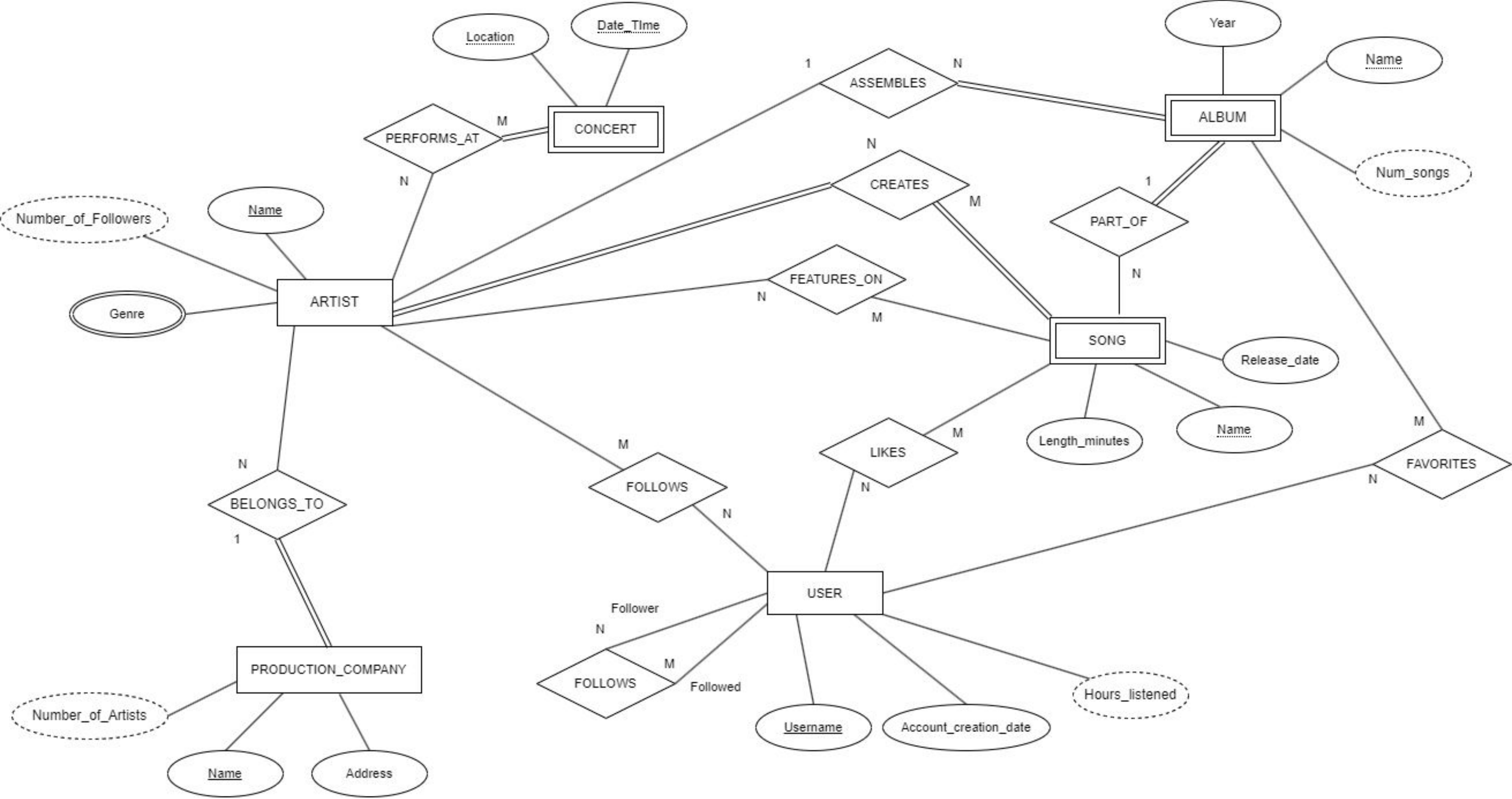
| FAVORITES | |
|---|---|
| PK,FK1 | User |
| PK,FK2 | Album_Favorited |

| ALBUM | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Year |
| | Num_songs |

| USER_FOLLOWS_USER | |
|---|---|
| PK,FK1 | Follower |
| PK,FK2 | Followed |

| LIKES | |
|---|---|
| PK,FK1 | Liker |
| PK,FK2 | Song_liked |

| SONG | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Length_minutes |
| | Release_date |
| FK | Album_name |


Location
Date_TIme
Year
Name
1
ASSEMBLES
N
M
PERFORMS_AT
CONCERT
ALBUM
N
CREATES
M
1
Num_songs
N
Number_of_Followers
Name
PART_OF
N
FEATURES_ON
ARTIST
Genre
N
M
SONG
Release_date
M
M
LIKES
Length_minutes
Name
M
FAVORITES
N
FOLLOWS
N
BELONGS_TO
N
1
USER
Follower
N
M
FOLLOWS
Followed
PRODUCTION_COMPANY
Hours_listened
Number_of_Artists
Username
Account_creation_date
Name
Address

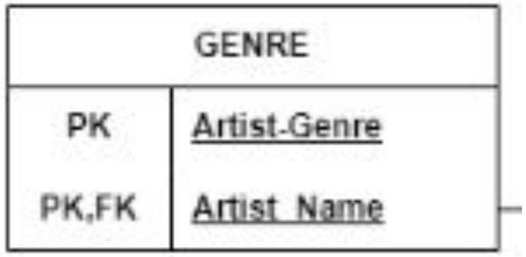
# Attributes

The tables and their attributes

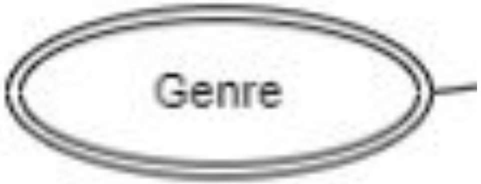
# Genre Table

- Genre is a multi valued attribute in the ER diagram.

- Representation in the relational schema
  - To represent the genre attribute in the relational schema it needs to be its own table
- Genre’s primary key
  - Artist-Genre
- Genre’s primary/foreign key
  - Artist_name linking to the primary key for the “ARTIST” table



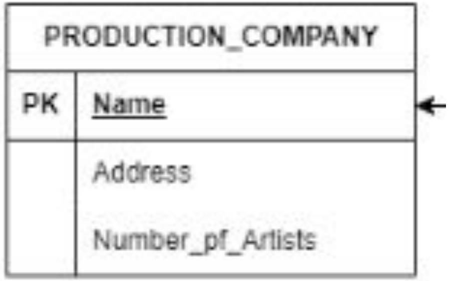
| GENRE | |
|---|---|
| PK | Artist-Genre |
| PK,FK | Artist_Name |



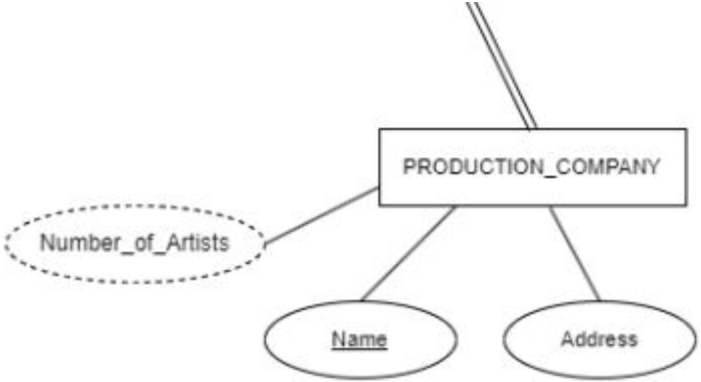
# Production Company Table

Attributes

- Address
  - The location of the company building
- Number_of_Artists
  - The number of artists the company signed
- Name
  - The name of the company and primary key for the table



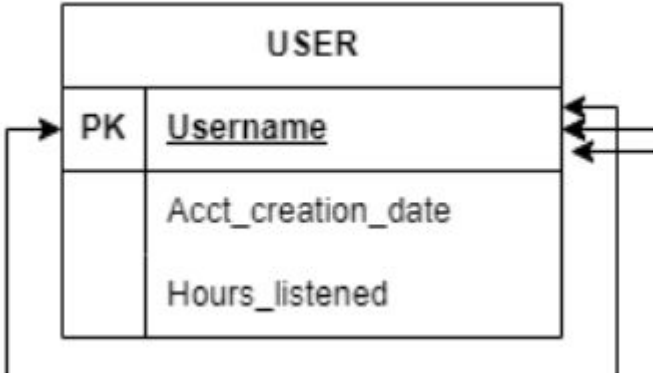
| PRODUCTION_COMPANY | |
|---|---|
| PK | Name |
| | Address<br>Number_pf_Artists |



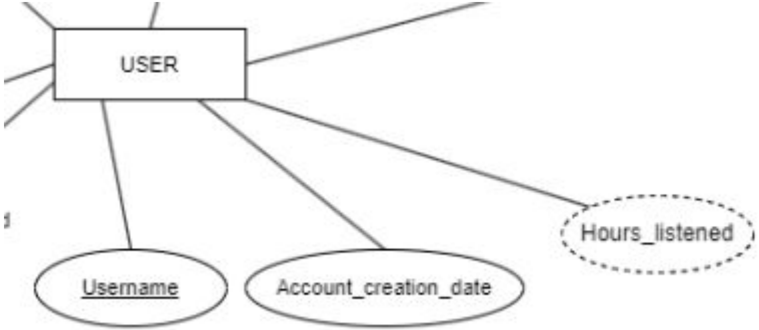
# User Table

Attributes

- Acct_creation_date
  - The date each user made their account
- Hours_listened
  - The hours a user has listened to music on the site
- Username
  - Each user will have a unique username to identify them
  - The username is the primary key for the "USER" table



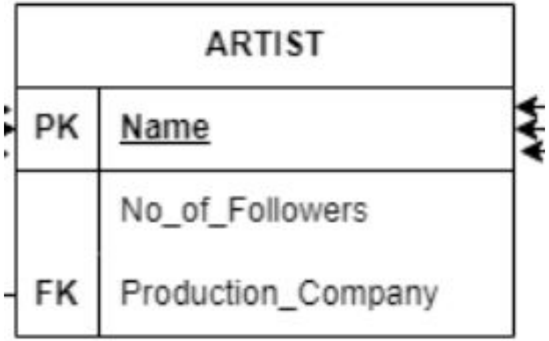
| USER | |
|---|---|
| PK | Username |
| | Acct_creation_date<br>Hours_listened |



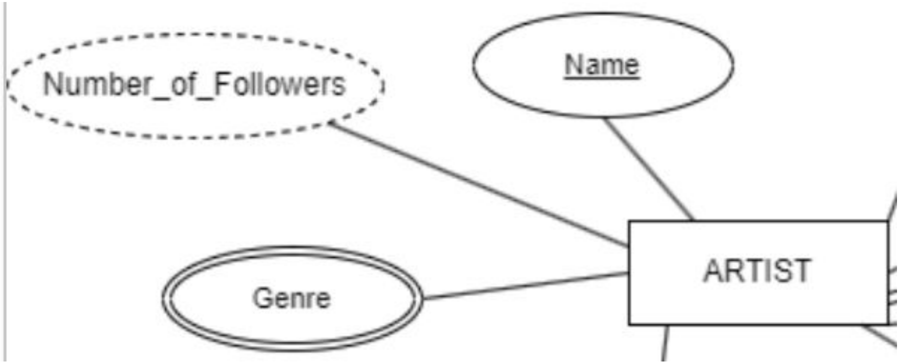
# Artist Table

Attributes

- No_of_Followers
  - The number of users following an artist
- Production_company
  - The production company an artist is signed under
  - Foreign key link to the “PRODUCTION_COMOANY” table
- Name
  - The unique name an artist uses on the site to identify themselves
  - Name is the primary key for the user table



| ARTIST | |
|---|---|
| PK | Name |
| | No_of_Followers |
| FK | Production_Company |



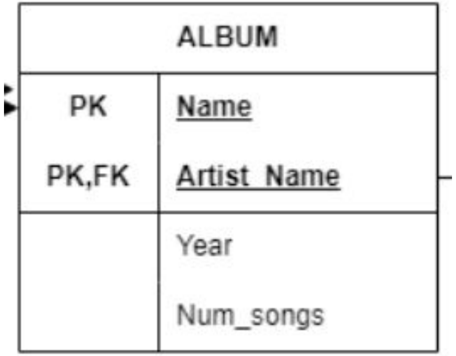
# Album Table

Weak entity

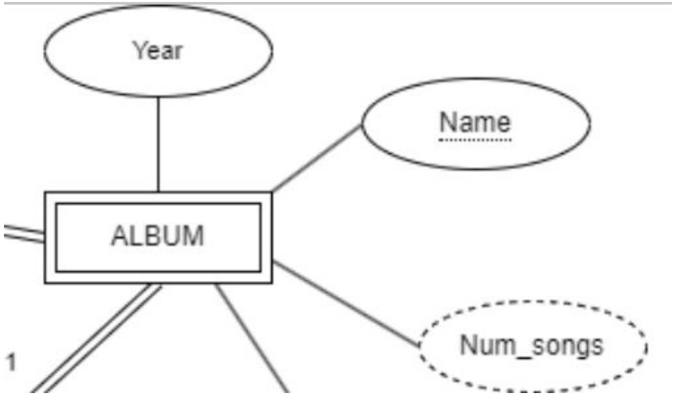
- Dependent on “ARTIST”

Attributes

- Artist_Name
  - The name of the artist that owns a specific album
  - Linked to the primary key for “ARTIST”
- Year
  - The year an album is released
- Num_songs
  - The number of songs in an album
  - Derived from the number of links “SONG” has to “ALBUM”
- Name
  - An artist can not have two albums with the same name
  - Partial key along with Artist_Name



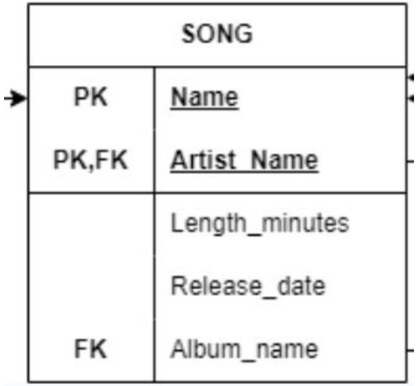
| ALBUM | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Year |
| | Num_songs |



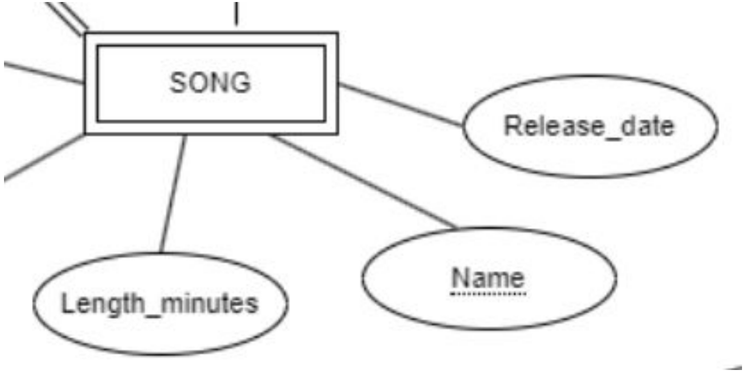
# Song Table

Attributes

- Artist_Name
  - The name of the artist who owns a specific song
  - Links to the primary key for “ARTIST”
- Length_minutes
  - The time the song takes to listen to
- Release_date
  - The date of a songs release
- Album_name
  - Foreign key linked to the album a song is in if a song is in one
- Name
  - Each artist can not have multiple songs with the same name
  - Partial key along with artist_name



| SONG | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Length_minutes |
| | Release_date |
| FK | Album_name |



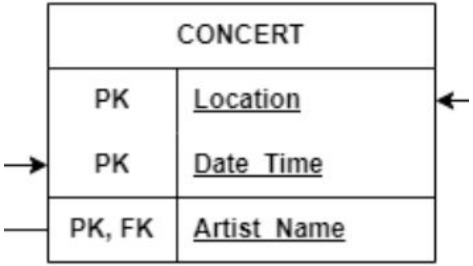
# Concert Table

“CONCERT” a weak entity in the ER diagram

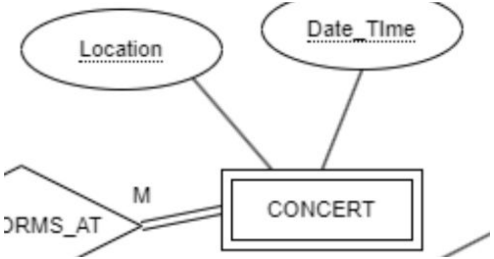
- Dependent on the “ARTIST” table
  - The primary key of “ARTIST” the owner of “CONCERT”, Artist_name is needed to identify it

Attributes

- Location
  - The location of a concert
  - One of the partial keys
- Date_Time
  - The date and time a concert will be held at
  - Another one of the partial keys
- Artist_name
  - Name of the artist or artists performing at a concert
  - Linked to the primary key for “ARTIST”
  - Another partial key



| CONCERT | |
|---|---|
| PK | Location |
| PK | Date_Time |
| PK, FK | Artist_Name |

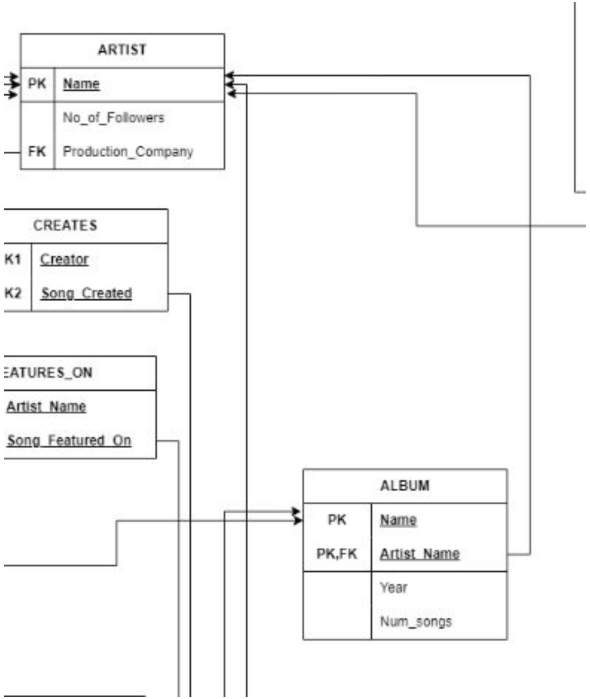


# Many-to-One

N:1 relationships

# Artist Table to Album Table

- Weak Entity in ER Diagram, so it needs the foreign key of its owner in the table to act as a primary key alongside its weak key
- Including the Artist as the foreign key also takes care of the 1:N Assembles relation

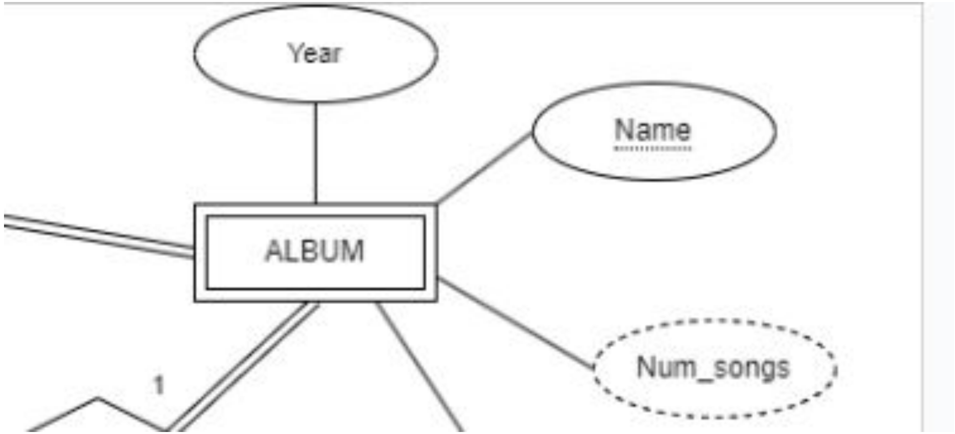


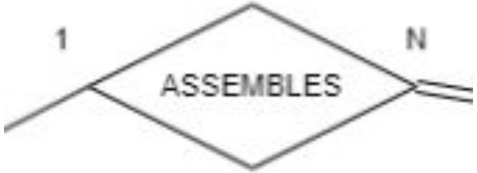
| ARTIST | |
|---|---|
| PK | Name |
| | No_of_Followers |
| FK | Production_Company |

| CREATES | |
|---|---|
| K1 | Creator |
| K2 | Song_Created |

| EATURES_ON |
|---|
| Artist_Name |
| Song_Featured_On |

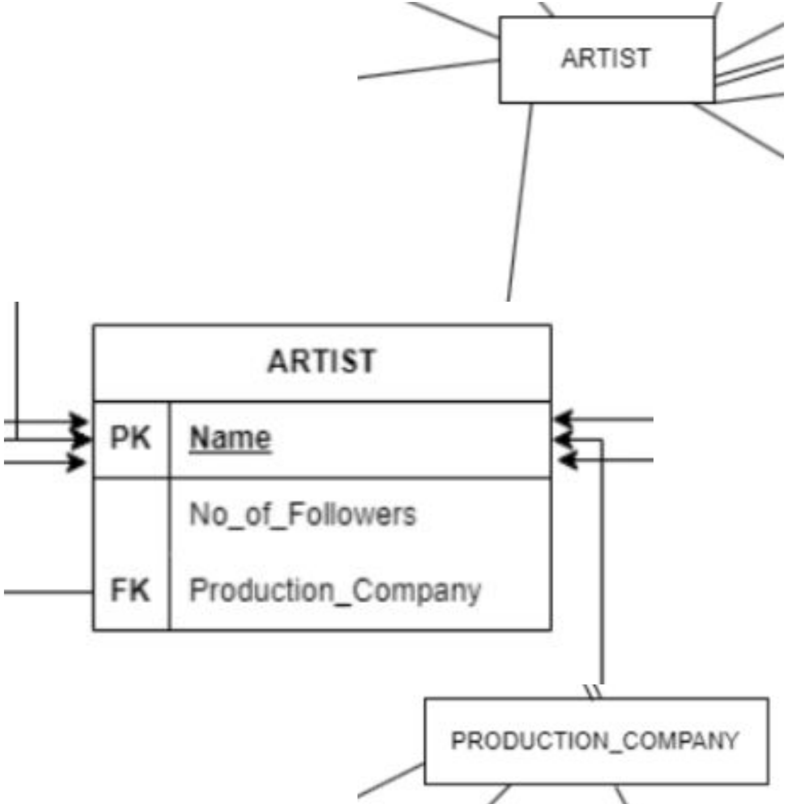
| ALBUM | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Year |
| | Num_songs |





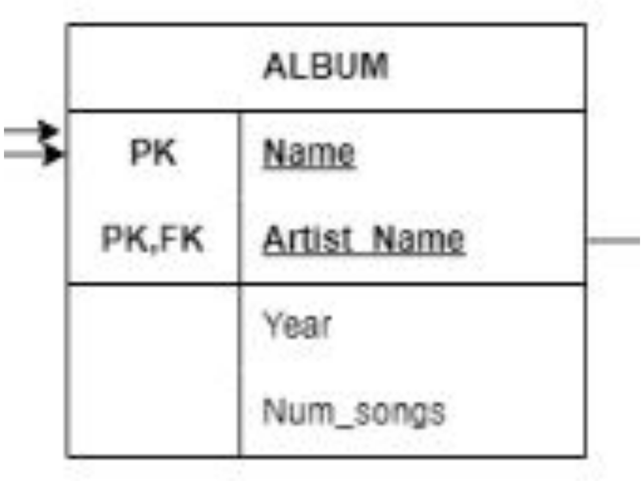
# Artist Table to Production Company Table

- BELONGS_TO" in the ER diagram is the relationship between "Artist" and "Production_Company"
    - N on the side of artist and 1 on the production company side
        - Signifying that multiple artists can be associated with one production company.
- The ”ARTIST” table has the foreign key for the production company table

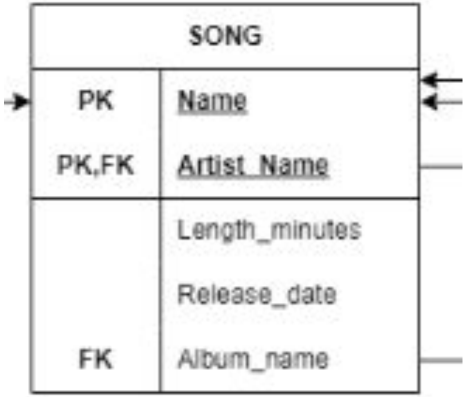


# Song Table to Album Table

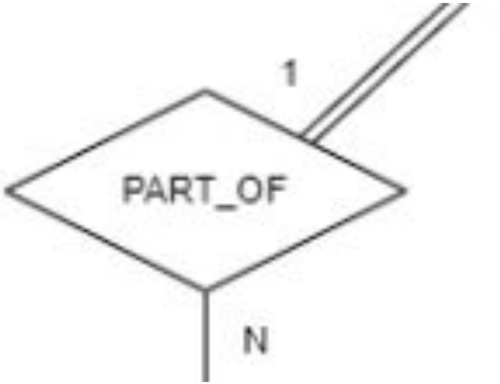
- Corresponds to the “PART_OF” relation in the ER Diagram
    - An album has many songs, not every song has to be in an album
- Songs can have the foreign key of “Album_name” since, if they are included on an album, a song must be related to that album by its name



| ALBUM | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Year |
| | Num_songs |



| SONG | |
|---|---|
| PK | Name |
| PK,FK | Artist_Name |
| | Length_minutes |
| | Release_date |
| FK | Album_name |

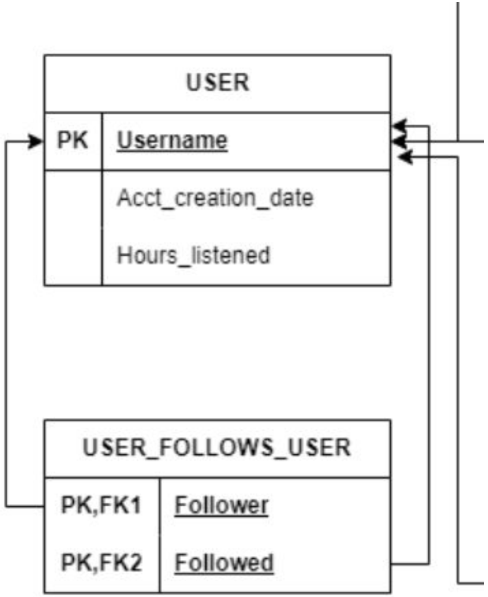


# Many-to-Many

N:M relationships

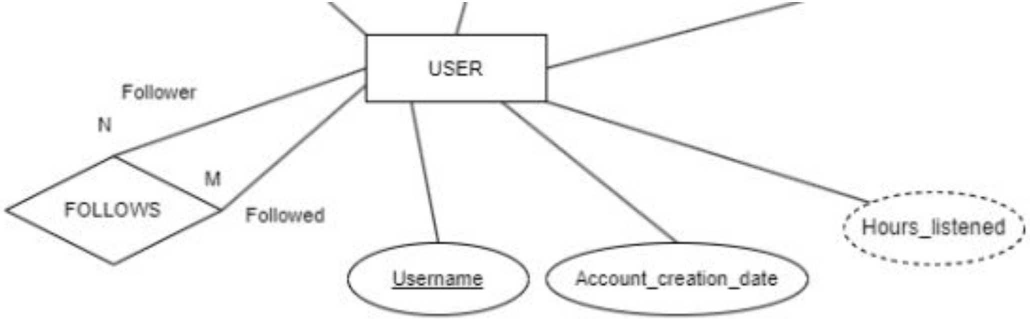
# User Follows User Table

- The “FOLLOWS” relationship is a recursive many-to-many (N:M) relationship between the follower(USER) and the followed(USER)
  - Table for this relationship will have the primary/foreign keys “Follower” and “Followed” both linked to the primary key for “USER” because of its recursive property.



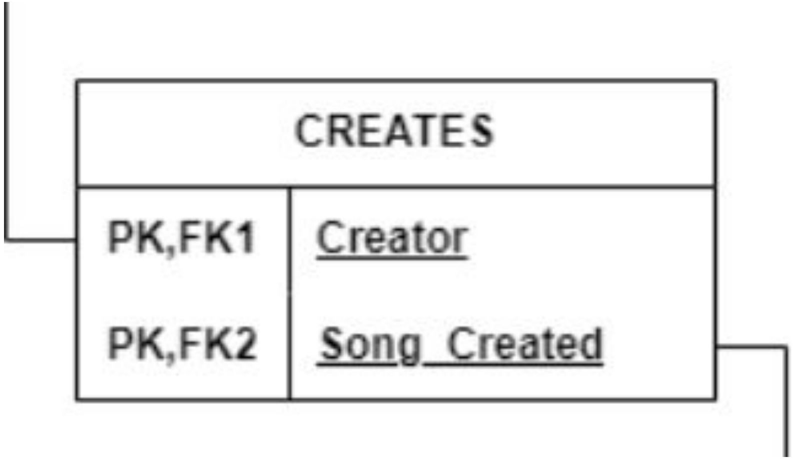
| USER | |
|---|---|
| PK | Username |
| | Acct_creation_date |
| | Hours_listened |

| USER_FOLLOWS_USER | |
|---|---|
| PK,FK1 | Follower |
| PK,FK2 | Followed |

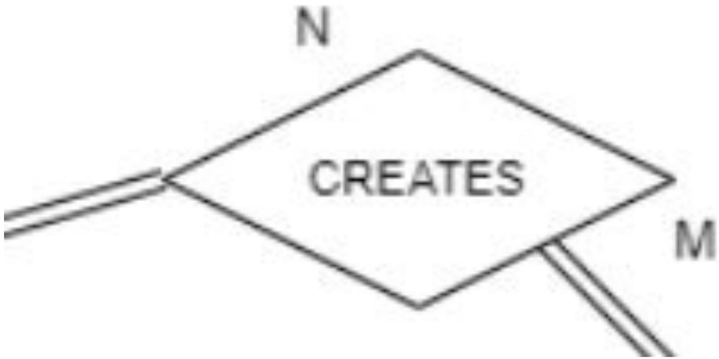


# Creates Table

- The “CREATES” relationship is a many-to-many relationship between “ARTIST” and “ALBUM”
  - Multiple artists can have any number of albums and multiple  albums can have many different artists associated with them
  - To accurately represent this relationship a table with the primary/foreign keys to both “ARTIST” and “ALBUM” is needed

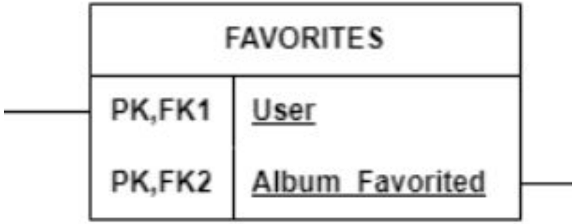


| CREATES | |
|---|---|
| PK,FK1 | Creator |
| PK,FK2 | Song_Created |

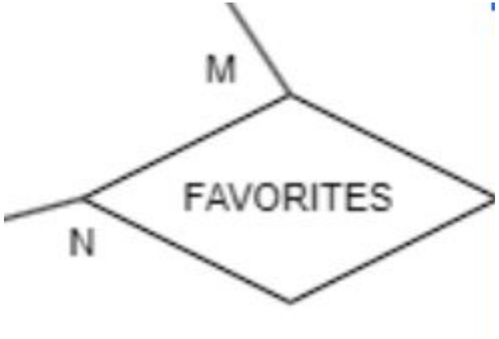


# Favorites Table

- The “FAVORITES” table is a many-to-many relationship between “USER” and “ALBUM”
  - Many users can favorite many different albums and vice versa
  - The table for this relationship will have the primary/foreign keys “User” link to the “USER” table and “Album_Favorited” linked to the “ALBUM” table

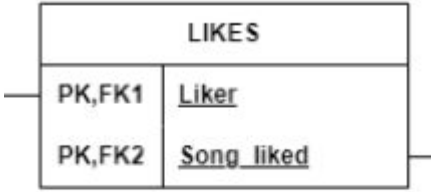


| FAVORITES | |
|---|---|
| PK,FK1 | User |
| PK,FK2 | Album_Favorited |

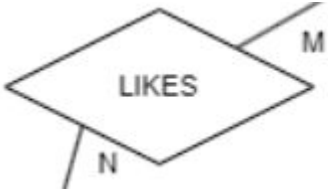


# Likes Table

- The relationship “LIKES” is the N:M relationship between “USER” and “SONG”.
    - Many users can like many songs and songs can be liked by many users.
    - The “LIKES” table has two primary/foreign keys “Liker” connecting to the “USER” table and “Song_liked” connecting to the “SONG” table

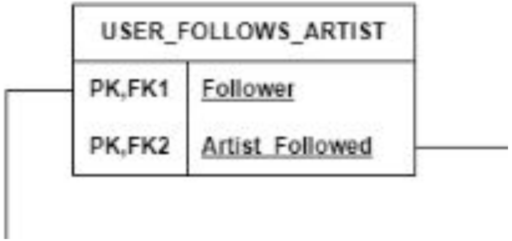


| LIKES | |
|---|---|
| PK,FK1 | Liker |
| PK,FK2 | Song_liked |

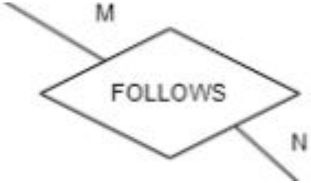


# User Follows Artist Table

- The “FOLLOWS” many-to-many relationship between “USER” and “ARTIST”.
  - In this relationship many users can follow many different artists and many artists can be followed by many users
  - The relationship is represented as the “USER_FOLLOWS_ARTIST” table in the relational schema. This table has the primary/foreign keys “Follower” linked to the “USER” table and “Artist_Followed” linked to the “ARTIST” table

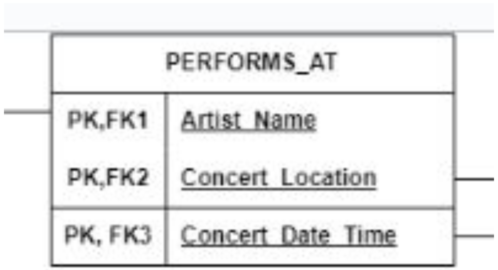


| USER_FOLLOWS_ARTIST | |
|---|---|
| PK,FK1 | Follower |
| PK,FK2 | Artist_Followed |

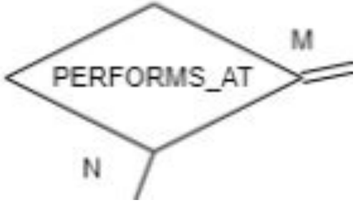


# Performs At Table

- The “PERFORMS_AT” relationship is an N:M relationship
  - between “ARTIST” and “CONCERT”.
- In the ER diagram “CONCERT” is a weak entity
  - with two partial keys “Concer_Location” and “Cocert_Date_Time”.
- Primary/foreign keys of “PERFORMS_AT”
  - Will be both of the partial keys from “CONCERT” and the primary key from “ARTIST”



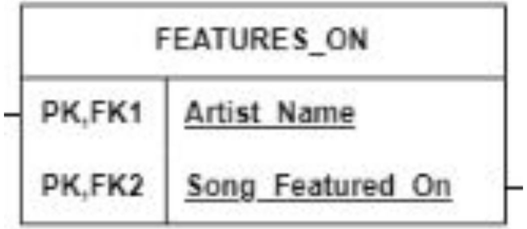
| PERFORMS_AT | |
|---|---|
| PK,FK1 | Artist Name |
| PK,FK2 | Concert Location |
| PK, FK3 | Concert Date Time |



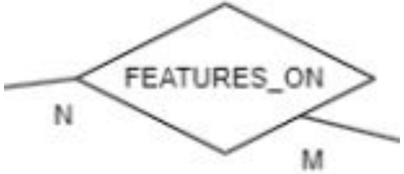
# Features On Table

In the ER diagram the “FEATURES_ON” is an N:M relationship between “ARTIST” and “SONG”.

- Many artists can feature on many songs and many song can have many artists featured on it
- Primary/foreign key “Artist_Name”
  - Name of an artist featured on a song
  - Linked to the primary key of the “ARTIST” table
- Primary/foreign key “Song_Featured_On”
  - Name of a song an artist features on
  - Linked to the primary key of the “SONG” table



| FEATURES_ON | |
|---|---|
| PK,FK1 | Artist_Name |
| PK,FK2 | Song_Featured_On |


FEATURES_ON
N
M