# Topsify

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# Background

- Music is a part of most people's everyday life
  - No matter where you live
  - No matter your culture
  - No matter your religion
- This database could connect people over something we all enjoy
- Users of this database would involve anybody who wants a free music listening and ticket selling application

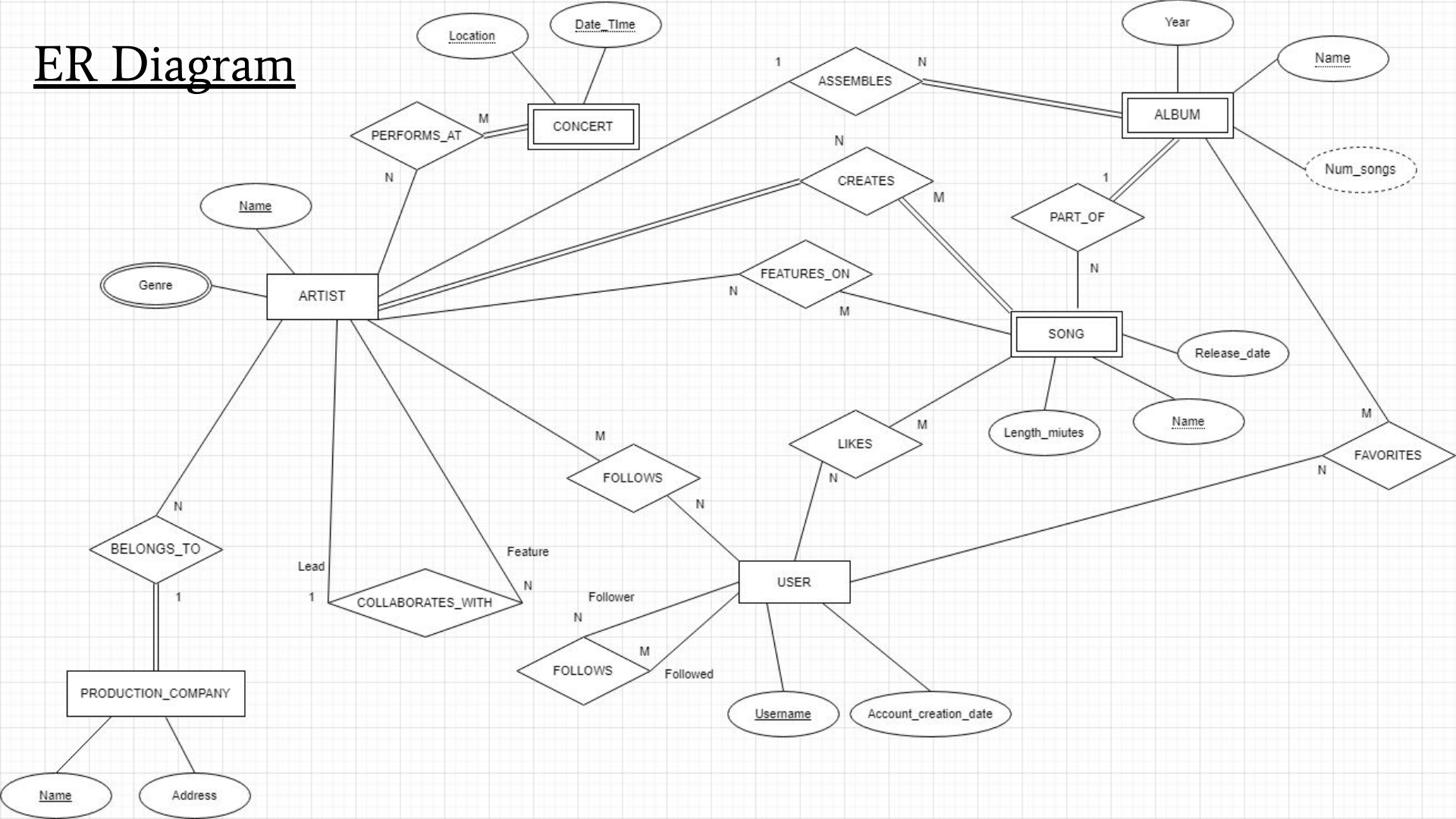
# Requirements of Database: Data Requirements

- Consider the operation of a song database which stores artists and their associated songs/albums along with users who have the ability to search for songs, albums, etc.
- Data stored (Entities)
  - Artists
    - Must have at least one song and can host concerts, can belong to a production company, have many songs, and have album(s)
    - Identified by name, has a genre
  - Songs
    - Identified by name and has a length and release date
  - Albums
    - Name, year, number of songs
  - Concerts
    - Has a location/date and time
    - Can have many artists performing
  - Production Companies
    - Identified by name, has address, enlists artists
  - Users
    - Can like albums and songs, follow artists
    - Identified by username
  - Etc
- Will go in more depth on ER diagram

# Requirements of Database: Functional Requirements

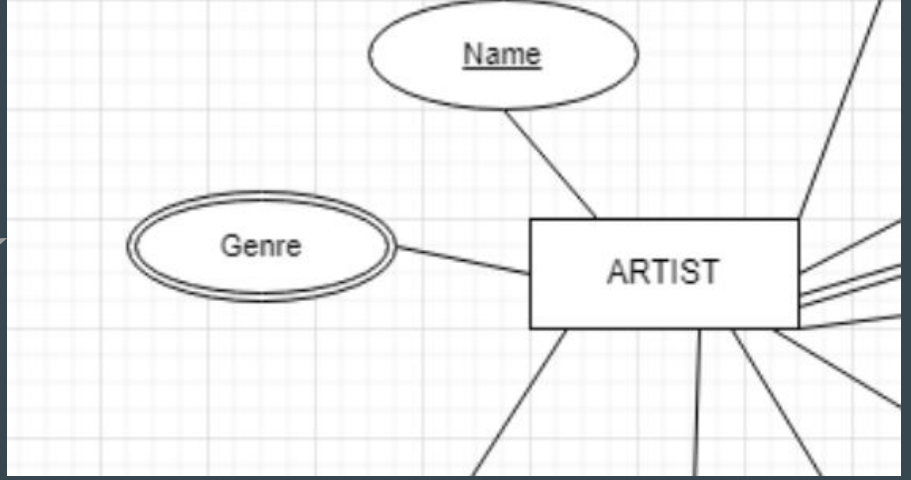
- People can search for
  - Artists
  - Songs
  - Albums
  - Concerts
  - Other Users
- Any of the above can be added at any time
- Anything company can get license for in the music world

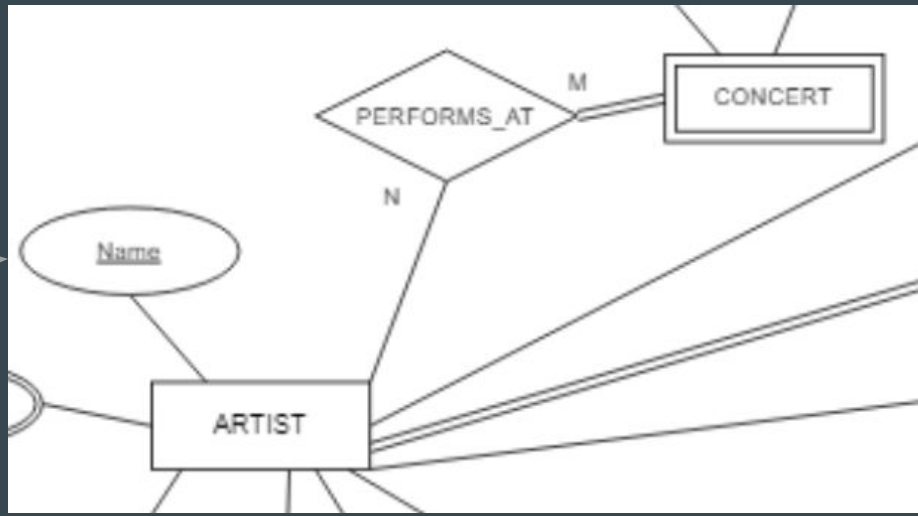
# ER Diagram


Location
Date_TIme
CONCERT
PERFORMS_AT
M
N
1
ASSEMBLES
N
Year
Name
ALBUM
Num_songs
N
CREATES
M
1
PART_OF
N
Name
Genre
ARTIST
FEATURES_ON
N
M
SONG
Release_date
Length_miutes
Name
M
LIKES
M
N
FAVORITES
M
N
FOLLOWS
M
N
N
BELONGS_TO
1
Lead
1
COLLABORATES_WITH
Feature
N
Follower
N
M
FOLLOWS
Followed
USER
PRODUCTION_COMPANY
Username
Account_creation_date
Name
Address

# Artist: Attributes and Concert Relation

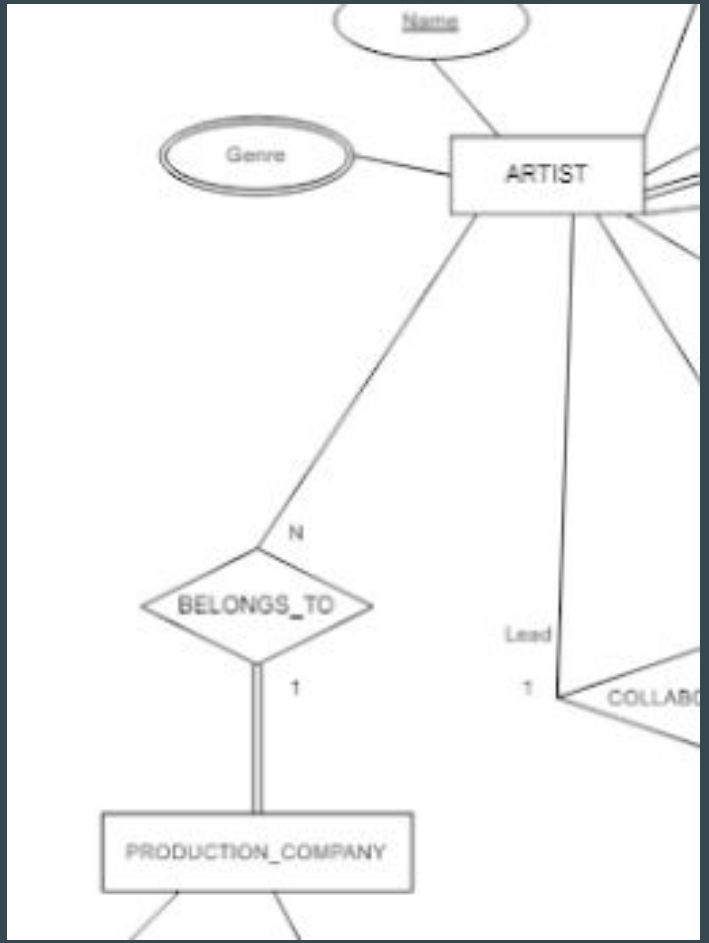
- Attributes
  - KEY: Name
  - Multivalued: Genre
- Relationships
  - PERFORMS_AT Concert
    - N:M
      - Artists perform many concerts
      - Concerts can be performed by many people
    - Single/double participation
      - Not every artist needs a concert
      - Every concert needs at least one artist



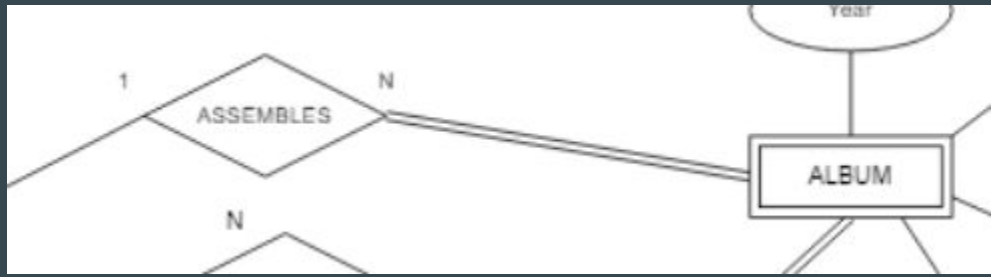
# Artist: Production Company Relation

- BELONGS_TO Production Company
  - N:1
    - An artist can have only one production company
    - A production company can have many artists
  - Single/Double Participation
    - An artist does not need a production company
    - A P_C must have at least one artist



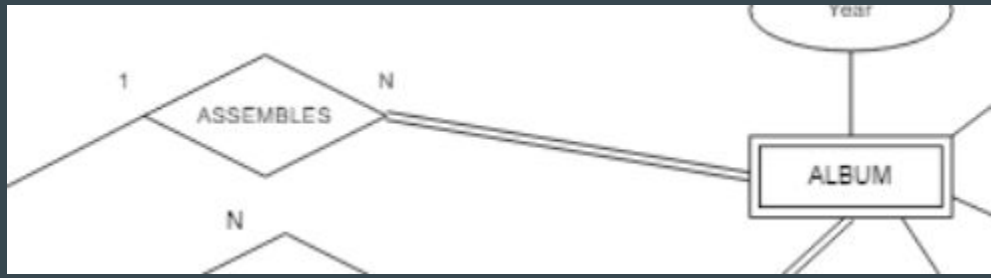
# Artist: Album Relation

- Artist ASSEMBLES Album
  - 1:N
    - Every artist can have many albums
    - Albums can belong to one artist (For our intents and purposes)
  - Single/Double Participation
    - Not every artist needs an album
    - Every album must belong to an artist



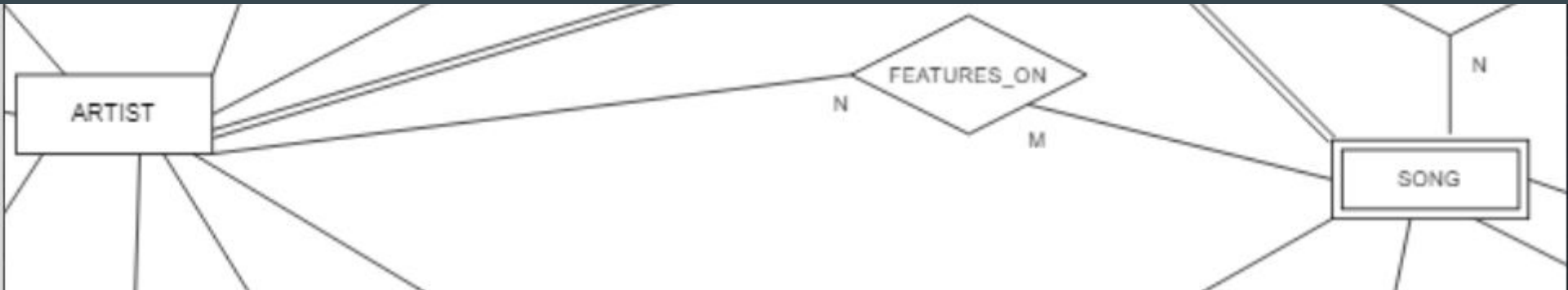
# Artist: Song First Relation (Creates)

- Artist CREATES Song
  - N:M
    - Every artist can have many songs
    - Songs can belong to many artists
  - Double/Double Participation
    - Every artist must have a song
    - Every song must belong to an artist



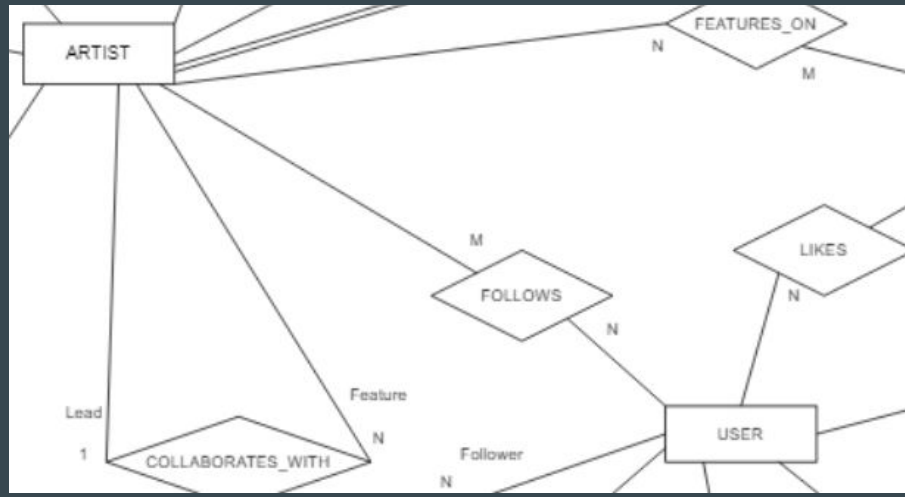
# Artist: Song Second Relation (Features)

- Artist FEATURES_ON Song
  - N:M
    - Every artist can feature on many songs
    - Every song can have many features
  - Single/single Participation
    - Not every artist must feature on a song
    - Not every song must have a feature artist



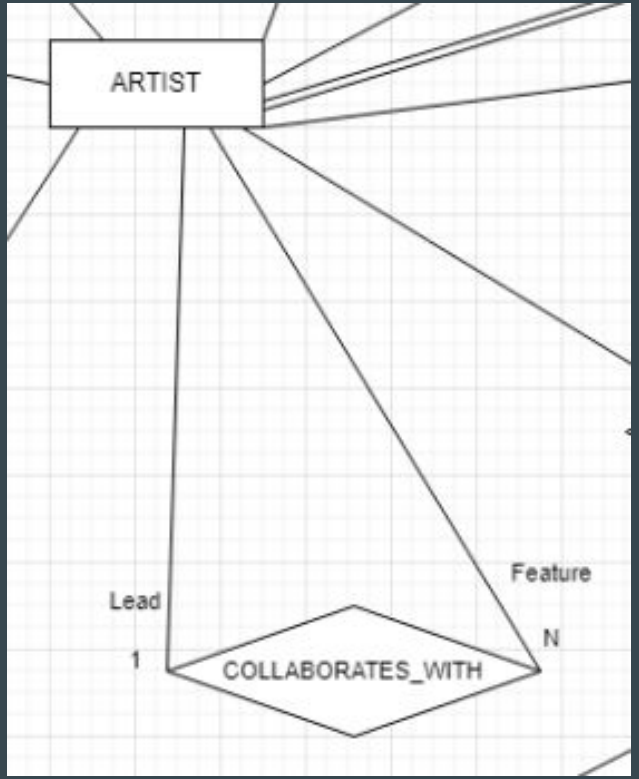
# Artist: User Relation

- Artist FOLLOWS User
  - M:N
    - An artist can have many followers
    - Users can follow many artists
  - Single/Single Participation
    - Not every artist needs a follower
    - Not every user needs to follow an artist



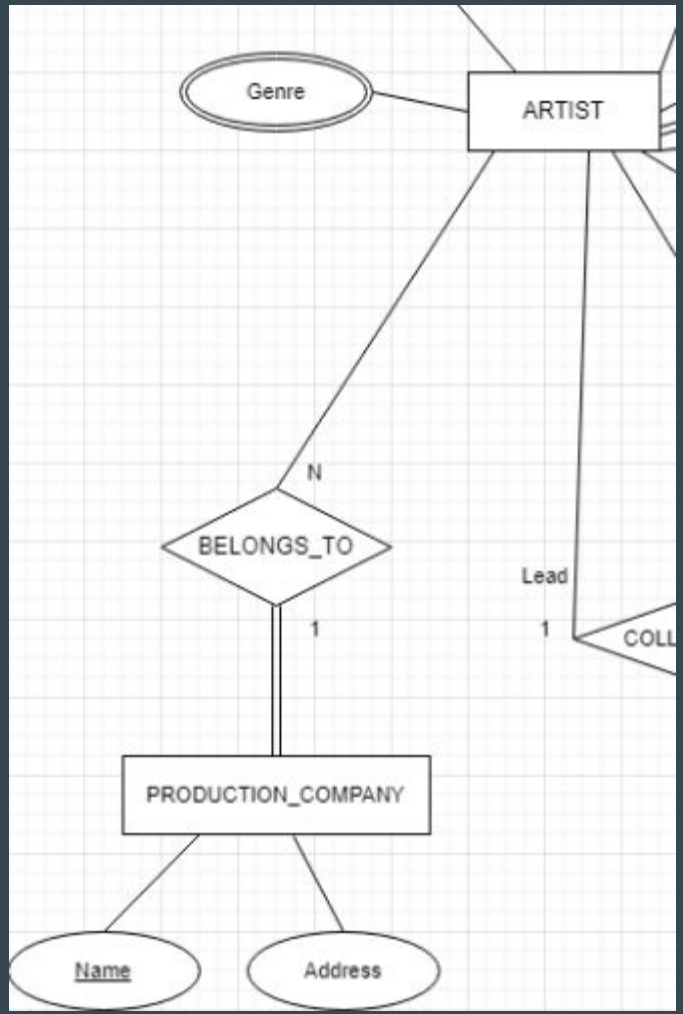
# Artist: Collaborates_With Relation

- An Artist COLLABORATES_WITH other artists
  - There is 1 main artist who is the lead, and N artists who are the features
  - Artists do not have to collaborate with each, so both relations are partial



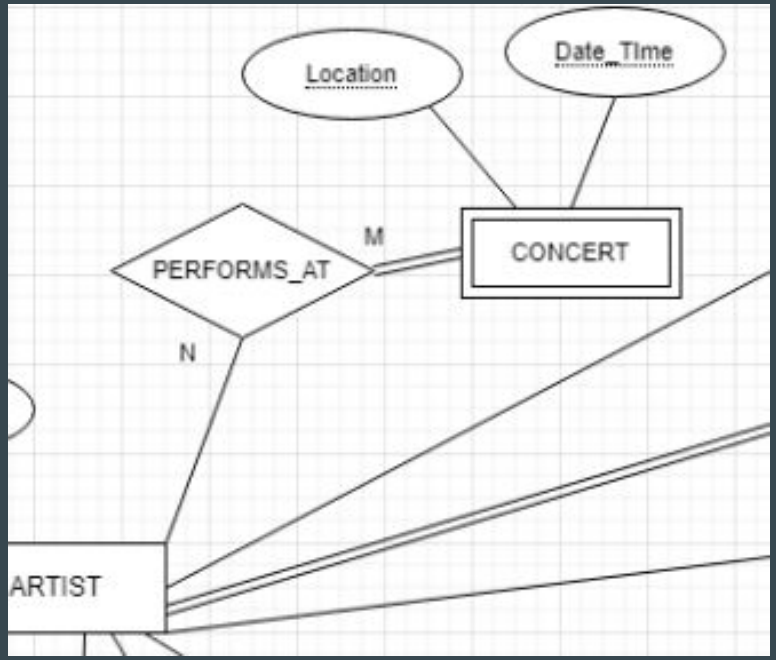
# Production Company

- Attributes
  - Key: Name
    - Each production company has a unique trademarked name
  - Address
- Single-to-double participation
  - Artists do not need production companies, but production companies need artists for their business



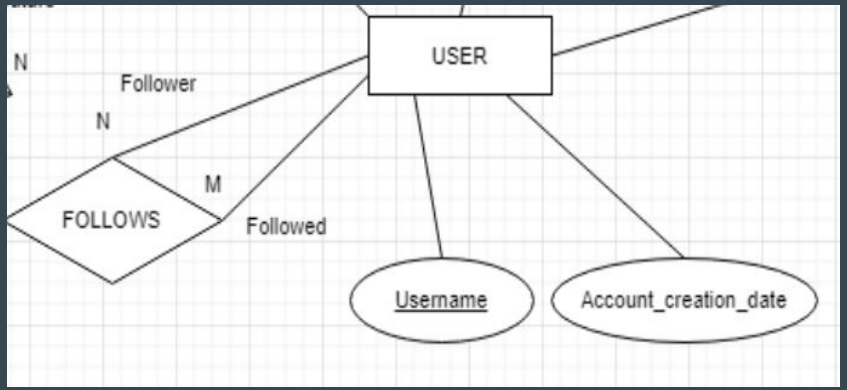
# Concert

- Entity Type
  - Weak since a concert cannot be identified solely by its location and date/time because multiple concerts can happen at the same venue and concerts can have multiple artists
- Attributes
  - Weak Key: Location
    - Location of the concert would be used in tandem with the artist's name to determine the exact concert
  - Weak Key: Date_Time
    - Date and time of the concert would be used in tandem with the artist's name to find the exact concert



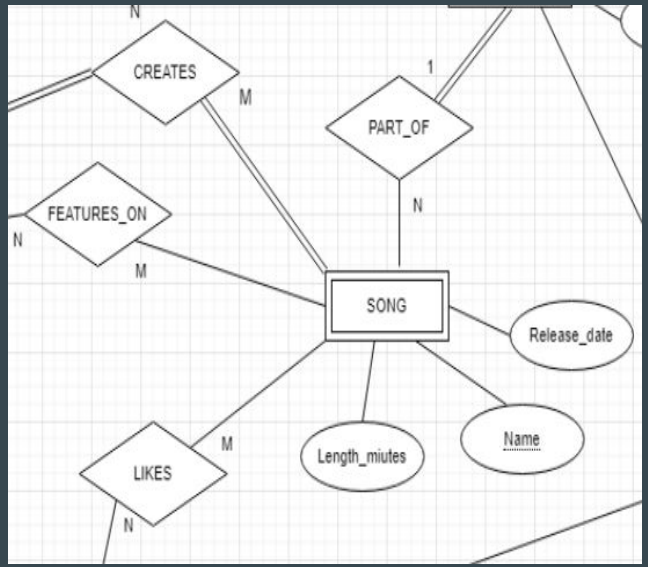
# User

- Attributes
  - KEY: Username
  - Account_creation_date
- Relationships
  - FOLLOWS
    - N:M
      - Users can follow multiple other users
      - Users can be followed by multiple different users
    - Single/Single Participation
      - Not every user is following someone and not every user has followers
  - LIKES
    - N:M
      - Users can like multiple songs
      - Songs can be liked by multiple users
    - Single/Single Participation
      - Not every song has a like and not every user likes a song



# Song

- Attributes
  - PARTIAL KEY: Name
  - Lenght_minutes
  - Release_date
- Relationships
  - PART_OF
    - N:1
      - Many songs can be in one album
      - A song can only belong to one album
    - Single/Double Participation
      - Every album needs at least one song but not every song needs to be part of an album



# Album

- Entity Choice: Weak entity
  - Depends on artist for identification
  - Multiple albums can have same name, but not for the same artist
- Attributes
  - Weak Key: Name
    - Makes up PK with Artist name
  - Year
  - Num_songs
    - Derived (number of connections between specific song and album)