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Media Cataloging Application

Current Trends in Database Tech

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Phase 1: Database Description

My inspiration for this database stemmed from my favorite music streaming service: Spotify. I wanted to create a media (music) cataloging application that users could log into to listen to their favorite music. They do this by using the available songs stored inside the database to create and share their own playlists. In a sense, there is a database of music that can be searched for by using keywords pertaining to the artist, album, or song. Additionally, since playlists can be shared, other users can search for pre-made playlists based on the below attribute information.

I have 5 entity types: USER, PLAYLIST, SONG, ALBUM, and ARTIST.

1. USER has three attributes: Username (PK), Email, and DOB (date of birth).
2. PLAYLIST has three attributes: Playlist_ID (PK), Given_name, and Tags (multi-valued attribute).
3. SONG has three attributes: Song_ID (PK), Title, and Duration.
4. ALBUM has four attributes: Album_ID (PK), Year_released, Title, and Genre.
5. ARTIST has three attributes: Name (PK), Language, and Style.
    - Side note: PK = Primary Key

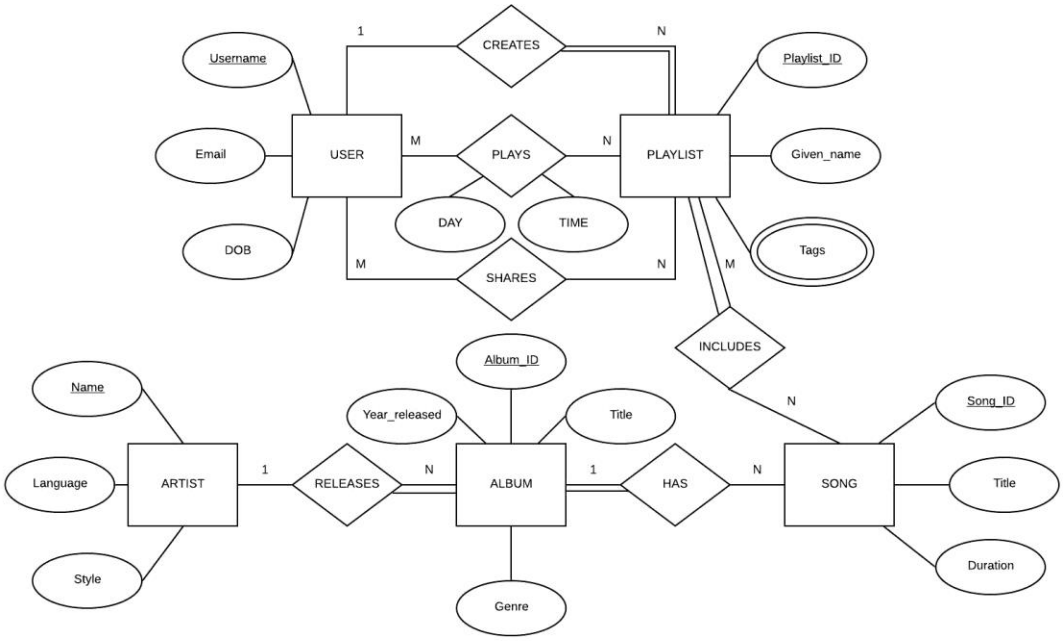
There are 6 actions in my database representing how my entities share information.

1. A user CREATES a playlist ← 1:N cardinality ratio
    - A playlist can be created by only one user, but a user can create many playlists.
2. A user PLAYS a playlist ← M:N cardinality ratio
    - Playlists can be played my multiple users or no users
3. A user SHARES a playlist ← M:N cardinality ratio
    - Playlists can be shared by multiple users or no users
4. A playlist INCLUDES songs ← M:N cardinality ratio
    - Playlists can have zero to multiple songs
5. An artist RELEASES an album ← 1:N cardinality ratio
    - An album can only have one artist, but an artist can release several albums
6. An album HAS songs ←1:N cardinality ratio
    - A song can only belong to one album, but an album can have several songs
        - Side note: 1:N means a one to zero or more ratio and M:N is a zero or more to zero or more ration (many to many).

Assumptions for the above:

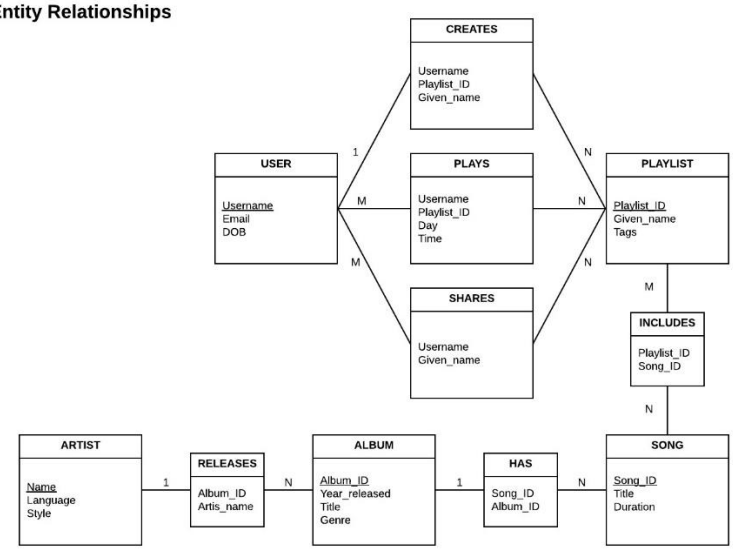
- Every playlist was created by a user.
- Every album was released by an artist.
- Every song belongs to an album.
- For each 1:N relationship, there is mandatory participation for the entity type on the “N” side.

Media Cataloging Application



Phase 2: Relation Schema (3NF)

Entity Relationships



USERINFO(Username, Email, DOB)

PLAYLIST(Playlist_ID, Given_name, Username)

Playlist_Tags(Playlist_ID, Tags)

SONG(Song_ID, Title, Duration, Album_ID)

ALBUM(Album_ID, Title, Genre, Year_released, Artist_name)

ARTIST(Name, Language, Style)

PLAYS(Username, Playlist_ID, Day, Time)

SHARES(Playlit_ID, Username)

INCLUDES(Playlist_ID, Song_ID

Phase 3: Create and populate database

```
CREATE TABLE UserInfo (Username varchar(30) PRIMARY KEY, Email varchar (40), DOB INT);

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('MusicLover', 'media@gmail.com', '1991');

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('JohnnyRocket', 'coolkid09@sbcglobal.net', '1991');

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('Pixiegirl69r', 'madethisup@yahoo.com', '1996');

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('SeeGmaRun', 'whatisthis@sbcglobal.net', '1951');

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('Gemin369', 'lysol4less@gmail.com', '1969');

INSERT INTO UserInfo (Username, Email, DOB)

VALUES ('PeaceBeWithYou', 'PleaseRecycle@yahoo.com', '1998');


CREATE TABLE Playlist (Playlist_ID varchar(10) PRIMARY KEY, Given_name varchar(25), Username
varchar(30));

INSERT INTO Playlist (Playlist_ID, Given_name, Username)

VALUES ('12345', 'New Stuff', 'JohnnyRocket');
```

```
INSERT INTO Playlist (Playlist_ID, Given_name, Username)
VALUES (45, 'Work Out Time', 'Pixiegirl69');
INSERT INTO Playlist (Playlist_ID, Given_name, Username)
VALUES ('445', 'Guilty Pleasure', 'SeeGmaRun');
INSERT INTO Playlist (Playlist_ID, Given_name, Username)
VALUES ('561', 'Favorites', 'Gemini369');
INSERT INTO Playlist (Playlist_ID, Given_name, Username)
VALUES ('441', 'Relaxation', 'PeaceBeWithYou');

CREATE TABLE Playlist_Tags (Playlist_ID varchar(10), Tags varchar(25));
INSERT INTO Playlist_Tags (Playlist_ID, Tags)
VALUES ('12368', 'Classic Rock');
INSERT INTO Playlist_Tags (Playlist_ID, Tags)
VALUES (5469, 'Hard Rock');
INSERT INTO Playlist_Tags (Playlist_ID, Tags)
VALUES ('4569', 'Rock');
INSERT INTO Playlist_Tags (Playlist_ID, Tags)
VALUES ('8694', 'Hip-Hop');
INSERT INTO Playlist_Tags (Playlist_ID, Tags)
VALUES ('3269', 'Rock N Roll');

CREATE TABLE Song (Song_ID varchar(10), Duration varchar(10), Title varchar(50));
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('145', 268, 'Dream On');
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('14', 430, 'The Wicked End');
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('65', 234, 'Second Chance');
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('55698', 298, 'Beautiful');
```

```
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('5579', 235, 'Du Hast');
INSERT INTO Song (Song_ID, Duration, Title)
VALUES ('4628', 144, 'Ring of Fire');

CREATE TABLE Album (Album_ID varchar(10) PRIMARY KEY, Year_released INT, Title varchar(50), Genre varchar(20));
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('4819', 1973, 'Aerosmith', 'Rock');
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('476', 2005, 'City of Evil', 'Hard Rock');
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('567', 2008, 'The Sound of Madness', 'Rock');
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('8697', 2002, 'Paid that Cost to Be da Boss', 'Rap');
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('2456', 1997, 'Sehnsucht', 'Metal');
INSERT INTO Album (Album_ID, Year_released, Title, Genre)
VALUES ('5466', 1963, 'The Best of Johnny Cash', 'Country');

CREATE TABLE Artist (Name varchar(40) PRIMARY KEY, Language varchar(25), Style varchar(10));
INSERT INTO Artist (Name, Language, Style)
VALUES ('Aerosmith', 'English', 'Rock');
INSERT INTO Artist (Name, Language, Style)
VALUES ('Avenged Sevenfold', 'English', 'Hard Rock');
INSERT INTO Artist (Name, Language, Style)
VALUES ('Shinedown', 'English', 'Rock');
INSERT INTO Artist (Name, Language, Style)
VALUES ('Snoop Dogg', 'English', 'Rap');
INSERT INTO Artist (Name, Language, Style)
```

VALUES ('Rammstein', 'German', 'Metal');

INSERT INTO Artist (Name, Language, Style)

VALUES ('Johnny Cash', 'English', 'Country');

Phase 4-5: Write Application Program

1. SELECT (Given_name)
   FROM Playlist;

```
GIVEN_NAME
------------------------
New Stuff
Work Out Time
Guilty Pleasure
Favorites
Relaxation
```

2. SELECT (Title)
   FROM Song
   ORDER BY Title ASC;

```
TITLE
--------------------------------------------------
Beautiful
Dream On
Du Hast
Ring of Fire
Second Chance
The Wicked End

6 rows selected.
```

3. SELECT SUM(Duration)
   FROM Song;

```
SUM(DURATION)
-------------
         1609
```

4. SELECT Title
   FROM Album
   WHERE Genre = 'Rock';

```
TITLE
--------------------------------------------------
Aerosmith
The Sound of Madness
```

5. SELECT Name
   FROM Artist
   WHERE Language = 'German' or Language = 'English';

```
NAME
----------------------------------------
Aerosmith
Avenged Sevenfold
Shinedown
Snoop Dogg
Rammstein
Johnny Cash

6 rows selected.
```

6. SELECT Max(Duration)
   FROM Song;

```
MAX(DURATI
----------
430
```

7. SELECT Email
   FROM UserInfo
   WHERE Email like '%yahoo%';

```
EMAIL
----------------------------------------
madethisup@yahoo.com
PleaseRecycle@yahoo.com
```

8. Select Username, Email
   FROM UserInfo
   WHERE DOB > '1990';

USERNAME	EMAIL
MusicLover	media@gmail.com
JohnnyRocket	coolkid09@sbcglobal.net
Pixiegirl69r	madethisup@yahoo.com
PeaceBeWithYou	PleaseRecycle@yahoo.com