



MUSIC RECOMMENDATION SYSTEM

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Abstract

The Music Recommendation Database Project aims to develop a robust platform for managing music-related data and providing personalized recommendations to users.

Through this project, users can enjoy a seamless music discovery experience while benefiting from personalized recommendations aligned with their musical tastes and interests.

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Music Recommendation System

Project for SQL Module

1. Description:

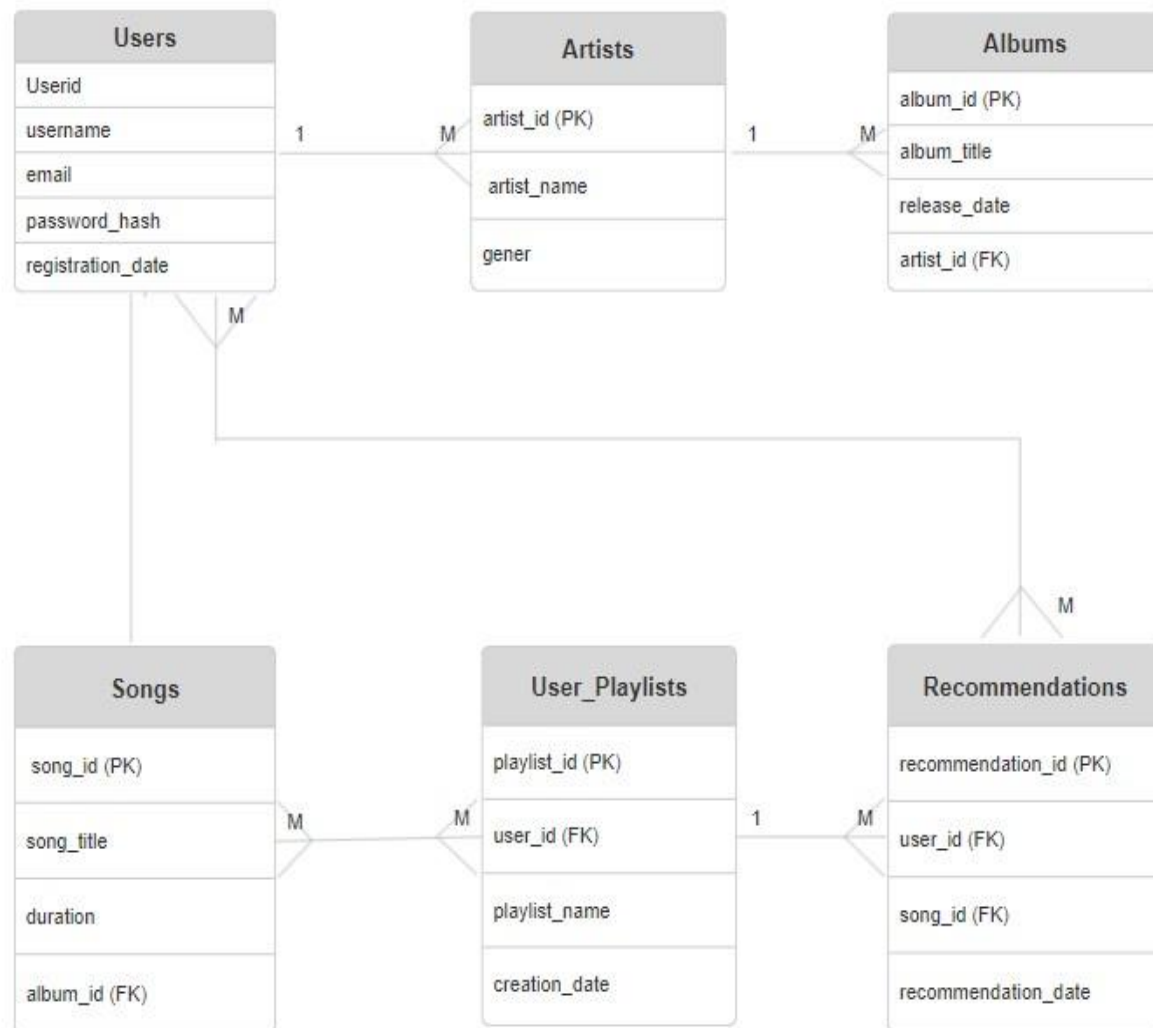
The Music Recommendation Database project aims to create a comprehensive system for managing user accounts, music artists, albums, songs, playlists, and recommendations. This database will serve as the foundation for a music streaming platform where users can discover new music based on their preferences and receive personalized recommendations.

This database contains 5 tables:

1. Users
2. Artists
3. Albums
4. Songs
5. Users playlist
6. Recommendations

Through this database project, users can register, explore artists and albums, create playlists, and receive personalized recommendations based on their preferences. The relational structure of the tables facilitates efficient data management and recommendation generation, enhancing the overall music discovery experience for users.

2. ER-Diagram (Entity Relation-Diagram) for Music Recommendation System



3. Table Description:

1. Users

Field	Type	Null	Key	Default	Extra
user_id	int	NO	PRI	NULL	
username	varchar(50)	YES		NULL	
email	varchar(100)	YES		NULL	
password_hash	varchar(255)	YES		NULL	
registration_date	date	YES		NULL	

2. Artists

Field	Type	Null	Key	Default	Extra
artist_id	int	NO	PRI	NULL	
artist_name	varchar(100)	YES		NULL	
genre	varchar(50)	YES		NULL	

3. Albums

Field	Type	Null	Key	Default	Extra
album_id	int	NO	PRI	NULL	
album_title	varchar(100)	YES		NULL	
release_date	date	YES		NULL	
artist_id	int	YES	MUL	NULL	

4. Song

Field	Type	Null	Key	Default	Extra
song_id	int	NO	PRI	NULL	
song_title	varchar(255)	YES		NULL	
duration	time	YES		NULL	
artist_id	int	YES	MUL	NULL	

5. User Playlist

Field	Type	Null	Key	Default	Extra
playlist_id	int	NO	PRI	NULL	
user_id	int	YES	MUL	NULL	
playlist_name	varchar(255)	YES		NULL	
creation_date	date	YES		NULL	

6. Recommendations

Field	Type	Null	Key	Default	Extra
recommendation_id	int	NO	PRI	NULL	
user_id	int	YES	MUL	NULL	
song_id	int	YES	MUL	NULL	
recommendation_date	date	YES		NULL	

4. Commands

- create database shraddha26;
- use shraddha26;
- CREATE TABLE Users (
 user_id INT PRIMARY KEY,
 username VARCHAR(50),
 email VARCHAR(100),
 password_hash VARCHAR(20),
 registration_date DATE
);
- DESC Users;
- INSERT INTO Users (user_id, username, email, password_hash, registration_date)
- VALUES
 (1, 'Ananya', 'ananya@example.com', 'Ananya@1', '2024-04-25'),
 (2, 'Aarav', 'aarav@example.com', 'Aarav@2', '2024-04-25'),
 (3, 'Advait', 'advait@example.com', 'Advait@3', '2024-04-25'),
 (4, 'Ayesha', 'ayesha@example.com', 'Ayesha@4', '2024-04-25'),
 (5, 'Dhruv', 'dhruv@example.com', 'Dhruv@5', '2024-04-25'),
 (6, 'Ishaan', 'ishaan@example.com', 'Ishaan@6', '2024-04-25'),
 (7, 'Kavya', 'kavya@example.com', 'Kavya@7', '2024-04-25'),
 (8, 'Neha', 'neha@example.com', 'Neha@8', '2024-04-25'),
 (9, 'Nikhil', 'nikhil@example.com', 'Nikhil@9', '2024-04-25'),
 (10, 'Priya', 'priya@example.com', 'Priya@10', '2024-04-25'),
 (11, 'Rahul', 'rahul@example.com', 'Rahul@11', '2024-04-25'),
 (12, 'Sahil', 'sahil@example.com', 'Sahil@12', '2024-04-25'),
 (13, 'Tanvi', 'tanvi@example.com', 'Tanvi@13', '2024-04-25'),
 (14, 'Yash', 'yash@example.com', 'Yash@14', '2024-04-25'),
 (15, 'Aaradhya', 'aaradhya@example.com', 'Aaradhya@15', '2024-04-25'),
 (16, 'Arjun', 'arjun@example.com', 'Arjun@16', '2024-04-25'),
 (17, 'Avani', 'avani@example.com', 'Avani@17', '2024-04-25'),
 (18, 'Devika', 'devika@example.com', 'Devika@18', '2024-04-25'),
 (19, 'Ishika', 'ishika@example.com', 'Ishika@19', '2024-04-25'),
 (20, 'Kabir', 'kabir@example.com', 'Kabir@20', '2024-04-25'),
 (21, 'Meera', 'meera@example.com', 'Meera@21', '2024-04-25'),
 (22, 'Rishi', 'rishi@example.com', 'Rishi@22', '2024-04-25'),
 (23, 'Ria', 'ria@example.com', 'Ria@23', '2024-04-25'),
 (24, 'Rohan', 'rohan@example.com', 'Rohan@24', '2024-04-25'),
 (25, 'Sanya', 'sanya@example.com', 'Sanya@25', '2024-04-25'),

```
(26, 'Shiv', 'shiv@example.com', 'Shiv@26', '2024-04-25'),  
(27, 'Tara', 'tara@example.com', 'Tara@27', '2024-04-25'),  
(28, 'Aryan', 'aryan@example.com', 'Aryan@28', '2024-04-25'),  
(29, 'Avni', 'avni@example.com', 'Anvi@29', '2024-04-25'),  
(30, 'Vihaan', 'vihaan@example.com', 'Vihaan@30', '2024-04-25');
```

- `select * from Users;`
- `CREATE TABLE Artists (
 artist_id INT PRIMARY KEY,
 artist_name VARCHAR(100),
 genre VARCHAR(50)
);`
- `DESC Artists;`
- `INSERT INTO Artists (artist_id, artist_name, genre)
VALUES
 (1, 'Arijit Singh', 'Bollywood'),
 (2, 'Shreya Ghoshal', 'Bollywood'),
 (3, 'A.R. Rahman', 'Bollywood'),
 (4, 'Atif Aslam', 'Bollywood'),
 (5, 'Sunidhi Chauhan', 'Bollywood'),
 (6, 'Neha Kakkar', 'Bollywood'),
 (7, 'Sonu Nigam', 'Bollywood'),
 (8, 'Lata Mangeshkar', 'Bollywood'),
 (9, 'Armaan Malik', 'Bollywood'),
 (10, 'Nusrat Fateh Ali Khan', 'Sufi'),
 (11, 'Rahat Fateh Ali Khan', 'Sufi'),
 (12, 'Amit Trivedi', 'Bollywood'),
 (13, 'Mohit Chauhan', 'Bollywood'),
 (14, 'Shaan', 'Bollywood'),
 (15, 'Udit Narayan', 'Bollywood'),
 (16, 'Javed Ali', 'Bollywood'),
 (17, 'K.K.', 'Bollywood'),
 (18, 'Asees Kaur', 'Bollywood'),
 (19, 'Pritam', 'Bollywood'),
 (20, 'Ankit Tiwari', 'Bollywood');`
- `select * from Artists;`
- `CREATE TABLE Songs (
 song_id INT PRIMARY KEY,
 song_title VARCHAR(255),
 duration TIME,
 artist_id INT,
 FOREIGN KEY (artist_id) REFERENCES Artists(artist_id)`

- ```
);
```
- DESC Songs;
  - INSERT INTO Songs (song\_id, song\_title, duration, artist\_id)  
VALUES  
 (1, 'Tum Hi Ho', '00:04:24', 1),  
 (2, 'Channa Mereya', '00:04:49', 1),  
 (3, 'Kal Ho Naa Ho', '00:05:21', 2),  
 (4, 'Gerua', '00:04:47', 3),  
 (5, 'Jeene Laga Hoon', '00:03:52', 4),  
 (6, 'Tera Ban Jaunga', '00:03:56', 5),  
 (7, 'Dil Diyan Gallan', '00:04:21', 4),  
 (8, 'Dilbar', '00:02:45', 6),  
 (9, 'Mere Sapno Ki Rani', '00:04:46', 7),  
 (10, 'Suraj Hua Maddham', '00:07:05', 3),  
 (11, 'Tera Ghata', '00:02:44', 8),  
 (12, 'Tujhe Kitna Chahne Lage', '00:04:42', 1),  
 (13, 'Tum Se Hi', '00:04:35', 9),  
 (14, 'Iktara', '00:04:13', 10),  
 (15, 'Afreen Afreen', '00:06:45', 11),  
 (16, 'Pehli Nazar Mein', '00:05:27', 12),  
 (17, 'Zara Zara', '00:05:30', 13),  
 (18, 'Bol Do Na Zara', '00:04:53', 14),  
 (19, 'Janam Janam', '00:03:59', 15),  
 (20, 'Tum Mile', '00:05:33', 16);
  - select \* from songs;
  - CREATE TABLE Albums (  
 album\_id INT PRIMARY KEY,  
 album\_title VARCHAR(100),  
 release\_date DATE,  
 artist\_id INT,  
 FOREIGN KEY (artist\_id) REFERENCES Artists(artist\_id)  
 );
  - DESC Albums;
  - INSERT INTO Albums (album\_id, album\_title, release\_date, artist\_id)  
VALUES  
 (1, 'Aashiqui 2', '2013-04-25', 1),  
 (2, 'Ae Dil Hai Mushkil', '2016-10-28', 2),  
 (3, 'Kal Ho Naa Ho', '2003-11-27', 3),  
 (4, 'Dilwale', '2015-12-18', 3),  
 (5, 'Ram-Leela', '2013-11-15', 4),  
 (6, 'Kabir Singh', '2019-06-21', 5),  
 (7, 'Tiger Zinda Hai', '2017-12-22', 4),  
 (8, 'Satyameva Jayate', '2018-08-15', 6),



- (9, 'Aradhana', '1969-09-27', 7),
- (10, 'Kabhi Khushi Kabhie Gham', '2001-12-14', 3),
- (11, 'Lost Stories', '2012-04-30', 8),
- (12, 'Bajrangi Bhaijaan', '2015-07-17', 4),
- (13, 'Rockstar', '2011-11-11', 9),
- (14, 'Wake Up Sid', '2009-10-02', 10),
- (15, 'Raees', '2017-01-25', 11),
- (16, 'Rehnaa Hai Terre Dil Mein', '2001-10-19', 12),
- (17, 'Jab We Met', '2007-10-26', 13),
- (18, 'Azhar', '2016-05-13', 14),
- (19, 'Phir Hera Pheri', '2006-06-09', 15),
- (20, 'Yeh Jawaani Hai Deewani', '2013-05-31', 16);
- select \* from Albums;
- CREATE TABLE User\_Playlists (
  - playlist\_id INT PRIMARY KEY,
  - user\_id INT,
  - playlist\_name VARCHAR(255),
  - creation\_date DATE,
  - FOREIGN KEY (user\_id) REFERENCES Users(user\_id)
 );
- DESC User\_Playlists;
- INSERT INTO User\_Playlists (playlist\_id, user\_id, playlist\_name, creation\_date)
  - VALUES
  - (1, 1, 'Favorites', '2024-04-25'),
  - (2, 2, 'Chill Playlist', '2024-04-25'),
  - (3, 3, 'Road Trip Mix', '2024-04-25'),
  - (4, 4, 'Morning Vibes', '2024-04-25'),
  - (5, 5, 'Workout Jams', '2024-04-25'),
  - (6, 6, 'Relaxation Station', '2024-04-25'),
  - (7, 7, 'Study Beats', '2024-04-25'),
  - (8, 8, 'Party Playlist', '2024-04-25'),
  - (9, 9, 'Throwback Hits', '2024-04-25'),
  - (10, 10, 'Rainy Day Melodies', '2024-04-25'),
  - (11, 11, 'Romantic Ballads', '2024-04-25'),
  - (12, 12, 'Feel-Good Tunes', '2024-04-25'),
  - (13, 13, 'Travel Playlist', '2024-04-25'),
  - (14, 14, 'Emotional Rollercoaster', '2024-04-25'),
  - (15, 15, 'Groovy Funk', '2024-04-25'),
  - (16, 16, 'Indie Vibes', '2024-04-25'),
  - (17, 17, 'Summer Anthems', '2024-04-25'),
  - (18, 18, 'Late Night Jazz', '2024-04-25'),
  - (19, 19, 'Soulful Rhythms', '2024-04-25'),
  - (20, 20, 'EDM Extravaganza', '2024-04-25');

- `select * from User_Playlists;`
- `CREATE TABLE Recommendations (  
    recommendation_id INT PRIMARY KEY,  
    user_id INT,  
    song_id INT,  
    recommendation_date DATE,  
    FOREIGN KEY (user_id) REFERENCES Users(user_id),  
    FOREIGN KEY (song_id) REFERENCES Songs(song_id)  
);`
- `DESC Recommendations;`
- `INSERT INTO Recommendations (recommendation_id, user_id, song_id,  
recommendation_date)  
VALUES  
    (1, 1, 1, '2024-04-25'),  
    (2, 1, 2, '2024-04-25'),  
    (3, 2, 3, '2024-04-25'),  
    (4, 2, 4, '2024-04-25'),  
    (5, 3, 5, '2024-04-25'),  
    (6, 3, 6, '2024-04-25'),  
    (7, 4, 7, '2024-04-25'),  
    (8, 4, 8, '2024-04-25'),  
    (9, 5, 9, '2024-04-25'),  
    (10, 5, 10, '2024-04-25'),  
    (11, 6, 11, '2024-04-25'),  
    (12, 6, 12, '2024-04-25'),  
    (13, 7, 13, '2024-04-25'),  
    (14, 7, 14, '2024-04-25'),  
    (15, 8, 15, '2024-04-25'),  
    (16, 8, 16, '2024-04-25'),  
    (17, 9, 17, '2024-04-25'),  
    (18, 9, 18, '2024-04-25'),  
    (19, 10, 19, '2024-04-25'),  
    (20, 10, 20, '2024-04-25');`
- `select * from Recommendations;`

## 5. Sub-Queries

1. Find the username of the user who registered first:

- `SELECT user_id, username, email, registration_date FROM Users WHERE registration_date = (SELECT MIN(registration_date) FROM Users);`

ANS:

| user_id | username | email                | registration_date |
|---------|----------|----------------------|-------------------|
| 1       | Ananya   | ananya@example.com   | 4/25/2024         |
| 2       | Aarav    | aarav@example.com    | 4/25/2024         |
| 3       | Advait   | advait@example.com   | 4/25/2024         |
| 4       | Ayesha   | ayesha@example.com   | 4/25/2024         |
| 5       | Dhruv    | dhruv@example.com    | 4/25/2024         |
| 6       | Ishaan   | ishaan@example.com   | 4/25/2024         |
| 7       | Kavya    | kavya@example.com    | 4/25/2024         |
| 8       | Neha     | neha@example.com     | 4/25/2024         |
| 9       | Nikhil   | nikhil@example.com   | 4/25/2024         |
| 10      | Priya    | priya@example.com    | 4/25/2024         |
| 11      | Rahul    | rahul@example.com    | 4/25/2024         |
| 12      | Sahil    | sahil@example.com    | 4/25/2024         |
| 13      | Tanvi    | tanvi@example.com    | 4/25/2024         |
| 14      | Yash     | yash@example.com     | 4/25/2024         |
| 15      | Aaradhya | aaradhya@example.com | 4/25/2024         |
| 16      | Arjun    | arjun@example.com    | 4/25/2024         |
| 17      | Avani    | avani@example.com    | 4/25/2024         |
| 18      | Devika   | devika@example.com   | 4/25/2024         |
| 19      | Ishika   | ishika@example.com   | 4/25/2024         |
| 20      | Kabir    | kabir@example.com    | 4/25/2024         |
| 21      | Meera    | meera@example.com    | 4/25/2024         |
| 22      | Rishi    | rishi@example.com    | 4/25/2024         |
| 23      | Ria      | ria@example.com      | 4/25/2024         |
| 24      | Rohan    | rohan@example.com    | 4/25/2024         |
| 25      | Sanya    | sanya@example.com    | 4/25/2024         |
| 26      | Shiv     | shiv@example.com     | 4/25/2024         |
| 27      | Tara     | tara@example.com     | 4/25/2024         |
| 28      | Aryan    | aryan@example.com    | 4/25/2024         |
| 29      | Avni     | avni@example.com     | 4/25/2024         |
| 30      | Vihaan   | vihaan@example.com   | 4/25/2024         |

2. Retrieve the title of the album with the highest-rated song

- `SELECT album_id, album_title, release_date FROM Albums  
WHERE album_id = ( SELECT album_id FROM Songs WHERE  
song_id = (SELECT song_id FROM Recommendations  
GROUP BY song_id ORDER BY COUNT(*) DESC LIMIT 1));`

ANS:

| album_id | album_title                  | release_date |
|----------|------------------------------|--------------|
| 1        | Aashiqui 2                   | 4/25/2013    |
| 2        | Ae Dil Hai Mushkil           | 10/28/2016   |
| 3        | Kal Ho Naa Ho                | 11/27/2003   |
| 4        | Dilwale                      | 12/18/2015   |
| 5        | Ram-Leela                    | 11/15/2013   |
| 6        | Kabir Singh                  | 6/21/2019    |
| 7        | Tiger Zinda Hai              | 12/22/2017   |
| 8        | Satyameva Jayate             | 8/15/2018    |
| 9        | Aradhana                     | 9/27/1969    |
| 10       | Kabhi Khushi Kabhie<br>Gham  | 12/14/2001   |
| 11       | Lost Stories                 | 4/30/2012    |
| 12       | Bajrangi Bhaijaan            | 7/17/2015    |
| 13       | Rockstar                     | 11/11/2011   |
| 14       | Wake Up Sid                  | 10/2/2009    |
| 15       | Raees                        | 1/25/2017    |
| 16       | Rehnaa Hai Terre Dil<br>Mein | 10/19/2001   |
| 17       | Jab We Met                   | 10/26/2007   |
| 18       | Azhar                        | 5/13/2016    |
| 19       | Phir Hera Pheri              | 6/9/2006     |
| 20       | Yeh Jawaani Hai<br>Deewani   | 5/31/2013    |

3. Retrieve the names of users who have not received any recommendations:

- `SELECT username FROM Users WHERE user_id NOT IN (SELECT DISTINCT user_id FROM Recommendations);`

ANS:

| username |
|----------|
| Rahul    |
| Sahil    |
| Tanvi    |
| Yash     |
| Aaradhya |
| Arjun    |
| Avani    |
| Devika   |
| Ishika   |
| Kabir    |
| Meera    |
| Rishi    |
| Ria      |
| Rohan    |
| Sanya    |
| Shiv     |
| Tara     |
| Aryan    |
| Avni     |
| Vihaan   |

4. Find all users who have created playlists

- `SELECT username FROM Users WHERE user_id IN (SELECT DISTINCT user_id FROM User_Playlists);`

ANS:

| user_id | username |
|---------|----------|
| 1       | Ananya   |
| 2       | Aarav    |
| 3       | Advait   |
| 4       | Ayesha   |
| 5       | Dhruv    |
| 6       | Ishaan   |
| 7       | Kavya    |

|    |          |
|----|----------|
| 8  | Neha     |
| 9  | Nikhil   |
| 10 | Priya    |
| 11 | Rahul    |
| 12 | Sahil    |
| 13 | Tanvi    |
| 14 | Yash     |
| 15 | Aaradhya |
| 16 | Arjun    |
| 17 | Avani    |
| 18 | Devika   |
| 19 | Ishika   |
| 20 | Kabir    |

5. Find all songs released by artists who belong to a specific genre:

- `SELECT song_title FROM Songs WHERE artist_id IN (SELECT artist_id FROM Artists WHERE genre = 'Bollywood');`

ANS:

| song_title              |
|-------------------------|
| Tum Hi Ho               |
| Channa Mereya           |
| Tujhe Kitna Chahne Lage |
| Kal Ho Naa Ho           |
| Gerua                   |
| Suraj Hua Maddham       |
| Jeene Laga Hoon         |
| Dil Diyan Gallan        |
| Tera Ban Jaunga         |
| Dilbar                  |
| Mere Sapno Ki Rani      |
| Tera Ghata              |
| Tum Se Hi               |
| Pehli Nazar Mein        |
| Zara Zara               |
| Bol Do Na Zara          |
| Janam Janam             |
| Tum Mile                |

6. Find the names of users who have not created any playlists.

- `SELECT username, user_id FROM Users WHERE user_id NOT IN (SELECT user_id FROM User_Playlists);`

ANS:

| username | user_id |
|----------|---------|
| Meera    | 21      |
| Rishi    | 22      |
| Ria      | 23      |
| Rohan    | 24      |
| Sanya    | 25      |
| Shiv     | 26      |
| Tara     | 27      |
| Aryan    | 28      |
| Avni     | 29      |
| Vihaan   | 30      |

## 6. JOINS

1. List all songs with their corresponding artists:

- `SELECT Songs.song_title, Artists.artist_name FROM Songs  
INNER JOIN Artists ON Songs.artist_id = Artists.artist_id;`

ANS:

| song_title              | artist_name           |
|-------------------------|-----------------------|
| Tum Hi Ho               | Arijit Singh          |
| Channa Mereya           | Arijit Singh          |
| Kal Ho Naa Ho           | Shreya Ghoshal        |
| Gerua                   | A.R. Rahman           |
| Jeene Laga Hoon         | Atif Aslam            |
| Tera Ban Jaunga         | Sunidhi Chauhan       |
| Dil Diyan Gallan        | Atif Aslam            |
| Dilbar                  | Neha Kakkar           |
| Mere Sapno Ki Rani      | Sonu Nigam            |
| Suraj Hua Maddham       | A.R. Rahman           |
| Tera Ghata              | Lata Mangeshkar       |
| Tujhe Kitna Chahne Lage | Arijit Singh          |
| Tum Se Hi               | Armaan Malik          |
| Iktara                  | Nusrat Fateh Ali Khan |
| Afreen Afreen           | Rahat Fateh Ali Khan  |
| Pehli Nazar Mein        | Amit Trivedi          |
| Zara Zara               | Mohit Chauhan         |
| Bol Do Na Zara          | Shaan                 |
| Janam Janam             | Udit Narayan          |
| Tum Mile                | Javed Ali             |



2. Retrieve all songs, including those without an associated album.

- `SELECT Songs.song_id, Songs.song_title, Songs.duration,  
Songs.artist_id, Albums.album_id  
FROM Songs  
LEFT JOIN Albums ON Songs.song_id = Albums.album_id;`

ANS:

| song_id | song_title              | duration | artist_id | album_id |
|---------|-------------------------|----------|-----------|----------|
| 1       | Tum Hi Ho               | 0:04:24  | 1         | 1        |
| 2       | Channa Mereya           | 0:04:49  | 1         | 2        |
| 3       | Kal Ho Naa Ho           | 0:05:21  | 2         | 3        |
| 4       | Gerua                   | 0:04:47  | 3         | 4        |
| 5       | Jeene Laga Hoon         | 0:03:52  | 4         | 5        |
| 6       | Tera Ban Jaunga         | 0:03:56  | 5         | 6        |
| 7       | Dil Diyan Gallan        | 0:04:21  | 4         | 7        |
| 8       | Dilbar                  | 0:02:45  | 6         | 8        |
| 9       | Mere Sapno Ki Rani      | 0:04:46  | 7         | 9        |
| 10      | Suraj Hua Maddham       | 0:07:05  | 3         | 10       |
| 11      | Tera Ghata              | 0:02:44  | 8         | 11       |
| 12      | Tujhe Kitna Chahne Lage | 0:04:42  | 1         | 12       |
| 13      | Tum Se Hi               | 0:04:35  | 9         | 13       |
| 14      | Iktara                  | 0:04:13  | 10        | 14       |
| 15      | Afreen Afreen           | 0:06:45  | 11        | 15       |
| 16      | Pehli Nazar Mein        | 0:05:27  | 12        | 16       |
| 17      | Zara Zara               | 0:05:30  | 13        | 17       |
| 18      | Bol Do Na Zara          | 0:04:53  | 14        | 18       |
| 19      | Janam Janam             | 0:03:59  | 15        | 19       |
| 20      | Tum Mile                | 0:05:33  | 16        | 20       |

3. Show all recommendations made to users, including recommendations where the associated user has been deleted.

- SELECT Recommendations.recommendation\_id,  
Recommendations.user\_id, Recommendations.song\_id,  
Recommendations.recommendation\_date

FROM Users

Right JOIN Recommendations ON  
Users.user\_id=Recommendations.user\_id;

ANS:

| recommendation_id | user_id | song_id | recommendation_date |
|-------------------|---------|---------|---------------------|
| 1                 | 1       | 1       | 4/25/2024           |
| 2                 | 1       | 2       | 4/25/2024           |
| 3                 | 2       | 3       | 4/25/2024           |
| 4                 | 2       | 4       | 4/25/2024           |
| 5                 | 3       | 5       | 4/25/2024           |
| 6                 | 3       | 6       | 4/25/2024           |
| 7                 | 4       | 7       | 4/25/2024           |
| 8                 | 4       | 8       | 4/25/2024           |
| 9                 | 5       | 9       | 4/25/2024           |
| 10                | 5       | 10      | 4/25/2024           |
| 11                | 6       | 11      | 4/25/2024           |
| 12                | 6       | 12      | 4/25/2024           |
| 13                | 7       | 13      | 4/25/2024           |
| 14                | 7       | 14      | 4/25/2024           |
| 15                | 8       | 15      | 4/25/2024           |
| 16                | 8       | 16      | 4/25/2024           |
| 17                | 9       | 17      | 4/25/2024           |
| 18                | 9       | 18      | 4/25/2024           |
| 19                | 10      | 19      | 4/25/2024           |
| 20                | 10      | 20      | 4/25/2024           |

4. Retrieve all songs and their corresponding artists' names, including songs without an associated artist and artists without any songs

- `SELECT Songs.song_id, Songs.song_title, Artists.artist_name  
FROM Songs  
left JOIN Artists ON Songs.artist_id = Artists.artist_id  
union  
SELECT Songs.song_id, Songs.song_title, Artists.artist_name  
FROM Songs  
Right JOIN Artists ON Songs.artist_id = Artists.artist_id;`

ANS:

| song_id | song_title              | artist_name           |
|---------|-------------------------|-----------------------|
| 1       | Tum Hi Ho               | Arijit Singh          |
| 2       | Channa Mereya           | Arijit Singh          |
| 3       | Kal Ho Naa Ho           | Shreya Ghoshal        |
| 4       | Gerua                   | A.R. Rahman           |
| 5       | Jeene Laga Hoon         | Atif Aslam            |
| 6       | Tera Ban Jaunga         | Sunidhi Chauhan       |
| 7       | Dil Diyan Gallan        | Atif Aslam            |
| 8       | Dilbar                  | Neha Kakkar           |
| 9       | Mere Sapno Ki Rani      | Sonu Nigam            |
| 10      | Suraj Hua Maddham       | A.R. Rahman           |
| 11      | Tera Ghata              | Lata Mangeshkar       |
| 12      | Tujhe Kitna Chahne Lage | Arijit Singh          |
| 13      | Tum Se Hi               | Armaan Malik          |
| 14      | Iktara                  | Nusrat Fateh Ali Khan |
| 15      | Afreen Afreen           | Rahat Fateh Ali Khan  |
| 16      | Pehli Nazar Mein        | Amit Trivedi          |
| 17      | Zara Zara               | Mohit Chauhan         |
| 18      | Bol Do Na Zara          | Shaan                 |
| 19      | Janam Janam             | Udit Narayan          |
| 20      | Tum Mile                | Javed Ali             |
| NULL    | NULL                    | K.K.                  |
| NULL    | NULL                    | Asees Kaur            |
| NULL    | NULL                    | Pritam                |
| NULL    | NULL                    | Ankit Tiwari          |

5. .Generate a list of all possible combinations of songs and artists, regardless of whether they are related or not.

- `SELECT Songs.song_title, Artists.artist_name FROM Songs CROSS JOIN Artists;`

ANS:

| song_title              | artist_name    |
|-------------------------|----------------|
| Tum Mile                | Arijit Singh   |
| Janam Janam             | Arijit Singh   |
| Bol Do Na Zara          | Arijit Singh   |
| Zara Zara               | Arijit Singh   |
| Pehli Nazar Mein        | Arijit Singh   |
| Afreen Afreen           | Arijit Singh   |
| Iktara                  | Arijit Singh   |
| Tum Se Hi               | Arijit Singh   |
| Tujhe Kitna Chahne Lage | Arijit Singh   |
| Tera Ghata              | Arijit Singh   |
| Tum Mile                | Shreya Ghoshal |
| Janam Janam             | Shreya Ghoshal |
| Bol Do Na Zara          | Shreya Ghoshal |
| Zara Zara               | Shreya Ghoshal |
| Pehli Nazar Mein        | Shreya Ghoshal |
| Afreen Afreen           | Shreya Ghoshal |
| Iktara                  | Shreya Ghoshal |
| Tum Se Hi               | Shreya Ghoshal |
| Tujhe Kitna Chahne Lage | Shreya Ghoshal |
| Tum Mile                | A.R. Rahman    |
| Janam Janam             | A.R. Rahman    |
| Bol Do Na Zara          | A.R. Rahman    |
| Zara Zara               | A.R. Rahman    |
| Pehli Nazar Mein        | A.R. Rahman    |
| Afreen Afreen           | A.R. Rahman    |
| Iktara                  | A.R. Rahman    |
| Tum Se Hi               | A.R. Rahman    |
| Tujhe Kitna Chahne Lage | A.R. Rahman    |

## 7.OTHER QUESTIONS

1.Retrieve all artists whose names start with a certain letter or letters

- `SELECT * FROM Artists WHERE artist_name LIKE 'A%';`

ANS:

| artist_id | artist_name     | genre     |
|-----------|-----------------|-----------|
| 1         | Arijit Singh    | Bollywood |
| 3         | A.R.<br>Rahman  | Bollywood |
| 4         | Atif Aslam      | Bollywood |
| 9         | Armaan<br>Malik | Bollywood |
| 12        | Amit Trivedi    | Bollywood |
| 18        | Asees Kaur      | Bollywood |
| 20        | Ankit Tiwari    | Bollywood |

2. Find all songs with titles containing a specific word or phrase

- `SELECT * FROM Songs WHERE song_title LIKE 'T%';`

ANS:

| song_id | song_title                 | duration | artist_id |
|---------|----------------------------|----------|-----------|
| 1       | Tum Hi Ho                  | 0:04:24  | 1         |
| 6       | Tera Ban Jaunga            | 0:03:56  | 5         |
| 11      | Tera Ghata                 | 0:02:44  | 8         |
| 12      | Tujhe Kitna Chahne<br>Lage | 0:04:42  | 1         |
| 13      | Tum Se Hi                  | 0:04:35  | 9         |
| 20      | Tum Mile                   | 0:05:33  | 16        |

3. Retrieve all songs with durations between two specific values:

- `SELECT * FROM Songs WHERE duration BETWEEN '00:03:00' AND '00:05:00';`

ANS:

| song_id | song_title              | duration | artist_id |
|---------|-------------------------|----------|-----------|
| 1       | Tum Hi Ho               | 0:04:24  | 1         |
| 2       | Channa Mereya           | 0:04:49  | 1         |
| 4       | Gerua                   | 0:04:47  | 3         |
| 5       | Jeene Laga Hoon         | 0:03:52  | 4         |
| 6       | Tera Ban Jaunga         | 0:03:56  | 5         |
| 7       | Dil Diyan Gallan        | 0:04:21  | 4         |
| 9       | Mere Sapno Ki Rani      | 0:04:46  | 7         |
| 12      | Tujhe Kitna Chahne Lage | 0:04:42  | 1         |
| 13      | Tum Se Hi               | 0:04:35  | 9         |
| 14      | Iktara                  | 0:04:13  | 10        |
| 18      | Bol Do Na Zara          | 0:04:53  | 14        |
| 19      | Janam Janam             | 0:03:59  | 15        |