**Final Project**

**Final Project Objective:**

The goal is to enhance the music database by adding a new MediaType table, integrating it with the existing schema. You will need to create queries to accommodate these changes.

**Fields and Values for MediaType Table:**

* MediaTypeID: Integer
* Name: Text
* Values:
  + 1, 'MPEG audio file'
  + 2, 'Protected AAC audio file'
  + 3, 'Protected MPEG-4 video file'
  + 4, 'Purchased AAC audio file'
  + 5, 'AAC audio file'

**Logic for Assigning MediaTypeID:**

The MediaTypeID will be assigned based on the duration of the tracks:

* MediaTypeID **1**: MPEG audio file   
  (**Duration < 180 seconds**)
* MediaTypeID **2**: Protected AAC audio file   
  (**Duration between 180 and 239 seconds**)
* MediaTypeID **3**: Protected MPEG-4 video file   
  (**Duration between 240 and 299 seconds**)
* MediaTypeID **4**: Purchased AAC audio file   
  (**Duration between 300 and 359 seconds**)
* MediaTypeID **5**: AAC audio file   
  (**Duration >= 360 seconds**)

**Planning the Project (Hint):**

Divide the project into smaller tasks, for example, creating the MediaType table, modifying existing tables, and writing new queries.

**Executing the Project:**

Apply what you've learned to design the new table, integrate it into the existing schema, and write queries against it once it’s implemented.

**GUIDED WALKTHROUGH:**

**Creating an Initial Conceptual Model:**

1. Update the ERD to include the MediaType table and its relationships.  
   * **Your Updated ERD Here**
   * **Updated ERD:**
   * Artists (ArtistID, Name, BirthDate, GenreID)
   * Albums (AlbumID, Title, ReleaseDate, ArtistID)
   * Tracks (TrackID, Title, Duration, AlbumID, MediaTypeID)
   * Genres (GenreID, Name)
   * MediaType (MediaTypeID, Name)
2. **Create MediaType Table:**
   * **Your Query Here**:

CREATE TABLE MediaType (

MediaTypeID INTEGER PRIMARY KEY,

Name TEXT NOT NULL

);

INSERT INTO MediaType (MediaTypeID, Name) VALUES

(1, 'MPEG audio file'),

(2, 'Protected AAC audio file'),

(3, 'Protected MPEG-4 video file'),

(4, 'Purchased AAC audio file'),

(5, 'AAC audio file');

1. **Insert values into MediaType table:**
   * **Your Query Here**:

INSERT INTO MediaType (MediaTypeID, Name) VALUES

(1, 'MPEG audio file'),

(2, 'Protected AAC audio file'),

(3, 'Protected MPEG-4 video file'),

(4, 'Purchased AAC audio file'),

(5, 'AAC audio file');

1. **Modify Existing Tracks Table to Include MediaTypeID:**
   * **Your Query Here**:

ALT ER ALTER TABLE Tracks ADD COLUMN MediaTypeID INTEGER;

1. **Update Tracks with appropriate MediaTypeID based on Duration:**
   * **Your Query Here**:

UPDATE Tracks SET MediaTypeID = 1 WHERE Duration < 180; -- MPEG audio file for short tracks

UPDATE Tracks SET MediaTypeID = 2 WHERE Duration >= 180 AND Duration < 240; -- Protected AAC audio file for short-medium tracks

UPDATE Tracks SET MediaTypeID = 3 WHERE Duration >= 240 AND Duration < 300; -- Protected MPEG-4 video file for medium tracks

UPDATE Tracks SET MediaTypeID = 4 WHERE Duration >= 300 AND Duration < 360; -- Purchased AAC audio file for medium-long tracks

UPDATE Tracks SET MediaTypeID = 5 WHERE Duration >= 360; -- AAC audio file for long tracks

1. **Make sure foreign key relationships are enabled:**
   * **Your Query Here**:

PRAGMA foreign\_keys = ON;

**REVIEW AND VALIDATION:**

1. **Validate MediaType to Track Values:**
   * **Join the Tracks table with the MediaType.**
   * **Validate that MediaType information is correctly associated with each track.**
   * **Your Query Here**:

SELECT Tracks.TrackID, Tracks.Title, MediaType.Name AS MediaType

FROM Tracks

JOIN MediaType ON Tracks.MediaTypeID = MediaType.MediaTypeID;

1. **Validate Data Integrity:**
   * Check for orphan records: Make sure all MediaTypeID values in Tracks table reference valid MediaType records.
   * Validate that no records are returned, confirming data integrity.
   * **Your Query Here**:

SELECT \* FROM Tracks WHERE MediaTypeID NOT IN (SELECT MediaTypeID

FROM MediaType);

**3. Review Schema Modifications:**

* + Make sure the MediaType table has been correctly created.
  + Verify the Tracks table includes the new MediaTypeID column.
  + **Your Query Here:**

PRAGMA table\_info(MediaType);

PRAGMA table\_info(Tracks);

**4. Make sure the Project Meets All Requirements and Performs Optimally:**

* + Confirm that the new table and relationships have been implemented as specified.
  + Validate the performance of new queries using EXPLAIN QUERY PLAN.
  + **Your Query Here**:

EXPLAIN QUERY PLAN SELECT Tracks.TrackID, Tracks.Title, MediaType.Name AS MediaType

FROM Tracks

JOIN MediaType ON Tracks.MediaTypeID = MediaType.MediaTypeID;

**Closing:**

* Congratulations on completing the final project! You've successfully applied all the skills and concepts learned throughout this course to enhance your music database. Well done!