## About the Database:

For this project, a database was made in MySQL named "music\_recommendation\_system" in order to achieve our objective. Based on the workings of a music recommendation system, following tables were made in the database to meet the requirements:

1. "user\_table": This table stores the information about the user and their preferred artists.

<pre>mysql&gt; desc user_table;</pre>						
Field	Туре	Null	Key	Default	Extra	
user_id username favorite_artist_id	int   varchar(100)   int		PRI MUL	NULL NULL NULL	auto_increment   	
3 rows in set (0.00 sec)						

2. "mood\_table": This table stores the different mood that can influence music preference.

```
mysql> desc mood_table;
  Field
                              Null
                                            Default
              Type
                                     Key
  mood_id
                              NO
                                            NULL
                                                      auto_increment
              int
                                     PRI
              varchar(100)
 mood_name
                              NO
                                     UNI
                                            NULL
 rows in set (0.01 sec)
```

3. "genre\_table": This table stores the genres based on the mood/emotion of the user.

```
mysql> desc genre_table;
  Field
                                Null
                                       Key
                                              Default
                                                        Extra
                Type
                                              NULL
  genre_id
                int
                                NO
                                       PRI
                                                         auto_increment
                varchar(100)
                                NO
                                       UNI
                                              NULL
  genre_name
  mood_id
                int
                                YES
                                       MUL
                                              NULL
 rows in set (0.00 sec)
```

4. "artist\_table": This table stores the information about artists and their associated genres.

mysql> desc artist_table;					
Field	Туре	Null	Key	Default	Extra
artist_id artist_name genre_id	int varchar(100) int	NO	PRI UNI MUL	NULL   NULL   NULL	auto_increment     auto_increment   
3 rows in set (0.00 sec)					

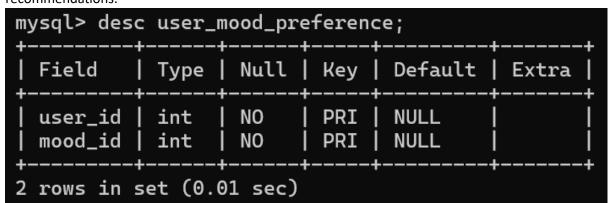
5. "album\_table": This table stores albums made by the artists.

mysql> desc album_table;							
Field	Туре	Null	Key	Default	Extra		
-	int varchar(100) int	NO		NULL NULL NULL	auto_increment     		
3 rows in set (0.03 sec)							

6. "user\_genre\_preference": A genre may attract many user and a user may like more than one genre. This table establishes a many-to-many relationship between the user and their preferred genres which captures their preferences across genres and is useful for personalized recommendations.

```
mysql> desc user_genre_preference;
  Field
                              Key
              Type
                      Null
                                    Default
                                                Extra
  user_id
              int
                      NO
                              PRI
                                    NULL
                              PRI
                                    NULL
                      NO
  genre_id
  rows in set (0.00 sec)
```

7. "user\_mood\_preference": A mood/emotion of a genre is relatable for many users and many user may have multiple mood for a genre. This table establishes a many-to-many relationship between the user and their moods which is useful for personalized recommendations.



8. "prediction\_model\_table": This table keeps track of user's recommended artists based on the predictions.

```
mysql> desc prediction_model_table;
  Field
                  Type
                           Null
                                   Key
                                         Default
                                                   Extra
  prediction_id
                                   PRI
                                         NULL
                                                    auto_increment
                   int
                           NO
                           YES
                                   MUL
  user_id
                   int
                                         NULL
  artist_id
                   int
                           YES
                                   MUL
                                         NULL
                   float
  score
                           YES
                                         NULL
 rows in set (0.01 sec)
```

The "music\_recommendation\_system" database would be deployed on XAAMP with the Frontend for data collection from the users who interact with the Frontend. Once the data is collected from the users, the tables in the database is converted into excel worksheet through Python.

```
import pandas as pd
db_config = {
    'host': 'localhost',
    'password': 'root',
    'database': 'music_recommendation_system',
# xlsx file creation:
output_file = 'music_recommendation_system_xl.xlsx'
def export_database_to_excel():
        connection = mysql.connector.connect(**db_config)
        cursor = connection.cursor()
        tables = cursor.fetchall()
        with pd.ExcelWriter(output_file, engine='openpyxl') as writer:
            for (table_name,) in tables:
                 query = f"SELECT * FROM {table_name}"
                 df = pd.read sql(query, connection)
                 df.to_excel(writer, sheet_name=table_name, index=False)
        print(f"All tables have been exported to {output_file}")
        print(f"Error: {e}")
    finally:
            cursor.close()
export_database_to_excel()
```

Once the .xlsx is made, the data is processed and converted into .csv file. This .csv file would be used for machine learning model to predict user's artists based on their current mood.