Project Title: Apple iTunes Music Analysis

Problem Statement

Apple iTunes maintains a large digital music store with millions of tracks, thousands of customers worldwide, and a network of employees managing sales operations. As the business expands, the leadership team is looking to gain deeper insights into customer behavior, music preferences, and overall sales performance.

As a Data Analyst, you are tasked with analyzing the iTunes relational database (provided in CSV format) to generate actionable insights that can help improve product offerings, customer targeting, and operational efficiency.

Your role is to build a complete SQL-based analytical pipeline using the available datasets, which include details about customers, employees, invoices, tracks, albums, artists, genres, playlists, and media types.

Business Goals

1. Understand customer behavior and purchasing trends.
2. Identify the most and least popular music genres, tracks, and artists.
3. Evaluate sales performance by employees and customer regions.
4. Analyze revenue trends across time and product types (media types).
5. Uncover growth opportunities by identifying underutilized content or inactive customers.

Key Deliverables

1. **Database Setup**
    - Design a relational schema using the provided CSVs.
    - Create SQL tables and import data.
    - Establish relationships using primary and foreign keys.
2. **Exploratory Analysis**
    - Write SQL queries to summarize and visualize customer, music, and sales data.
    - Track revenue trends, customer engagement, and playlist popularity.
3. **Advanced Analytics**
    - Use window functions, subqueries, and CTEs to generate deeper insights.
    - Segment users and rank products by popularity and sales performance.
4. **Business Dashboards (Optional)**
    - Create visual dashboards using Tableau or Power BI.

    - Track key performance indicators (KPIs) such as monthly revenue, top customers, and most purchased genres.
5. **Final Report**
    - Summarize insights in a structured format.
    - Provide recommendations to marketing, product, and operations teams.

Tools & Technologies

- SQL (PostgreSQL / MySQL / SQLite)
- CSV files for dataset import
- Optional: Tableau, Power BI for visualization
- GitHub or Google Docs for project documentation

Realistic Business Questions

1. Customer Analytics

- Which customers have spent the most money on music?
- What is the average customer lifetime value?
- How many customers have made repeat purchases versus one-time purchases?
- Which country generates the most revenue per customer?
- Which customers haven't made a purchase in the last 6 months?

2. Sales & Revenue Analysis

- What are the monthly revenue trends for the last two years?
- What is the average value of an invoice (purchase)?
- Which payment methods are used most frequently?
- How much revenue does each sales representative contribute?
- Which months or quarters have peak music sales?

3. Product & Content Analysis

- Which tracks generated the most revenue?
- Which albums or playlists are most frequently included in purchases?
- Are there any tracks or albums that have never been purchased?
- What is the average price per track across different genres?
- How many tracks does the store have per genre and how does it correlate with sales?

4. Artist & Genre Performance

- Who are the top 5 highest-grossing artists?
- Which music genres are most popular in terms of:
    - Number of tracks sold
    - Total revenue
- Are certain genres more popular in specific countries?

5. Employee & Operational Efficiency

- Which employees (support representatives) are managing the highest-spending customers?
- What is the average number of customers per employee?
- Which employee regions bring in the most revenue?

6. Geographic Trends

- Which countries or cities have the highest number of customers?
- How does revenue vary by region?
- Are there any underserved geographic regions (high users, low sales)?

7. Customer Retention & Purchase Patterns

- What is the distribution of purchase frequency per customer?
- How long is the average time between customer purchases?
- What percentage of customers purchase tracks from more than one genre?

8. Operational Optimization

- What are the most common combinations of tracks purchased together?
- Are there pricing patterns that lead to higher or lower sales?
- Which media types (e.g., MPEG, AAC) are declining or increasing in usage?