DataBase Project: Music Recommender Part1 Proposal

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1. High-level Description Of The Application

For project 1, we plan to build a music recommender database based on the data on Spotify and Rovi API. To achieve this goal, we will include entities like users, artists, albums, tracks, playlists, and metadata like moods or genres. The relationship sets will also be built accordingly.

A web application will be implemented in part 3 to incorporate the following functionalities: 1. Once the user has signed up and login, we will show some hot artists or tracks for them to choose for the cold start part, thus we could build the user profile and store them. 2. Based on the user records, we could recommend tracks, artists, playlists to the user once logged in. 3. we offer different playlists for the user according to moods or environments as they wish.

Challenges:

1. To construct suitable database structure to describe the relationships between entities
2. To implement and optimize recommendation algorithm based on user profile (like/ dislike of artists, genre or mood)
3. To design a easy to use, esthetically pleasing web application interface.

Contingency Plan

Should there be any unexpected condition regarding the team formation and contribution effort down-sizing, the recommendation application can be down-graded to an multi-criteria music search application.

2. Entities Sets, Relationship Sets With Attributes And Constraints

The demo of the ER Map:

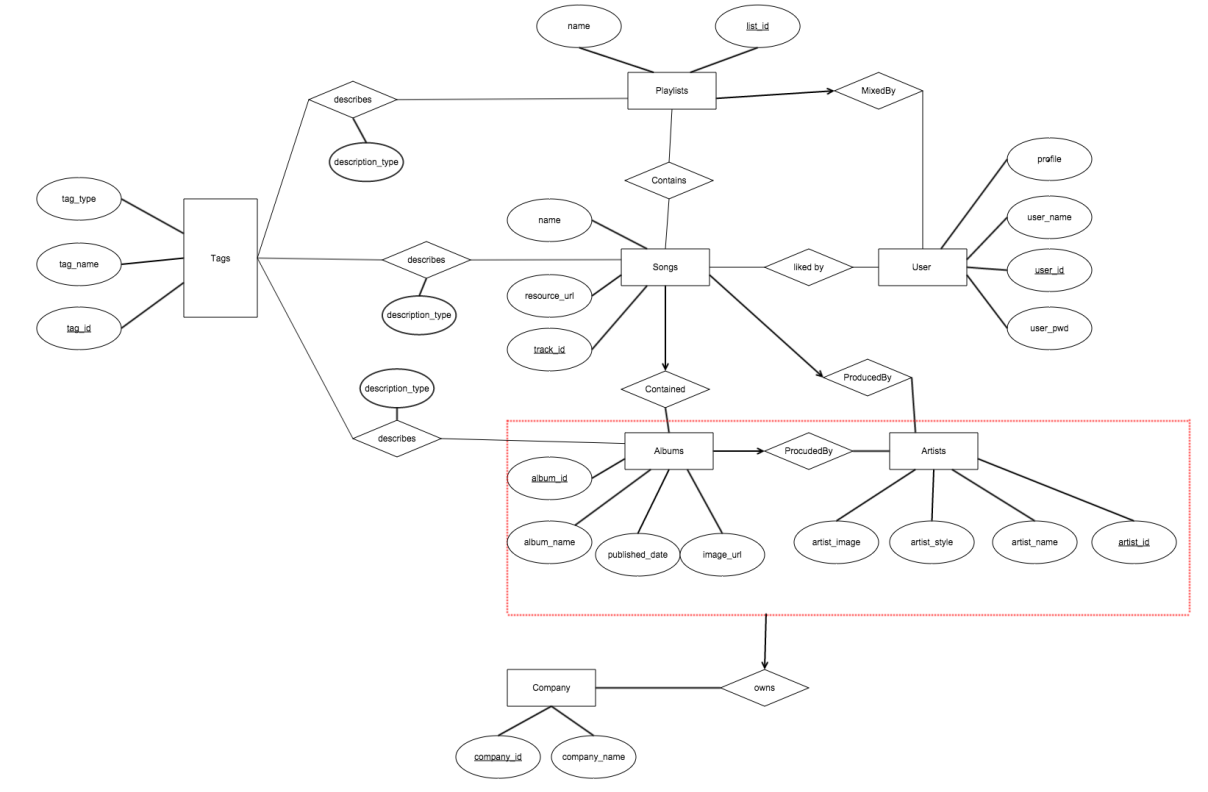
We plan the include the entities sets and relationship sets as following:

Entities Sets:

1. **Users**: User for the recommender application
2. **Songs**: The songs in our database for recommendations.
3. **Albums**: All of singers that has songs included in the songs library.
4. **Artists**: The author of albums and songs in our database.
5. **Playlists**: Personalized playlists created by Users.
6. **Company**: The publication organization for albums.
7. **Tags/Mood/Style**: Description elements for songs and albums.

Relationship Sets:

1. **MixedBy**: Relationship between Users and Playlists
2. **LikedBy**: Relationship between Users and Songs
3. **Contains**: Relationship between (Albums, Songs) and (Playlists, Songs)
4. **Describes**: Relationship between (Tags/Mood/Style, Playlists), (Tags/Mood/Style, Songs), and (Tags/Mood/Style, Albums).
5. **ProducedBy**: Relationship between (Artists, Albums) and (Artists, Songs).
6. **Owns**: Relationship between Company and (Albums, Artists).



3. The Resources of data

For the dataset part, we want to make use the practical data in the real world instead of just generating random and worthless ones. We use the API from Spotify and Rovi to get the informations about artists, albums, tracks and metadata like moods and tags.

For now, parts of the data has been downloaded and stored in JSON format locally. We will import them into database after designing the structure and schema of the whole DB.

Here is a sample of the JSON-format data:


```
{
  "genres": [
    "teen pop"
  ],
  "name": "Miley Cyrus",
  "external_urls": {
    "spotify": "https://open.spotify.com/artist/5YGY8feqx7naU7z4HrwZM6"
  },
  "popularity": 86,
```

```
  "uri": "spotify:artist:5YGY8feqx7naU7z4HrwZM6",
  "href": "https://api.spotify.com/v1/artists/5YGY8feqx7naU7z4HrwZM6",
  "followers": {
    "total": 1159797,
    "href": null
  },
  "images": [
    {
      "url": "https://i.scdn.co/image/a43b45e1a4fb11d428a3e0018122d94829c821
bd",
      "width": 1000,
      "height": 1254
    },
    {
      "url": "https://i.scdn.co/image/f942c1a103d2706643906c412bc5122a557f35
ee",
      "width": 640,
      "height": 802
    },
    {
      "url": "https://i.scdn.co/image/94bcf3604205309e20adccf09a5534457992fc
0c",
      "width": 200,
      "height": 251
    },
    {
      "url": "https://i.scdn.co/image/835259e06462618f2b7d3825d917db0a71cbef
66",
      "width": 64,
      "height": 80
    }
  ],
  "type": "artist",
  "id": "5YGY8feqx7naU7z4HrwZM6"
}
```


4. Contingency Plan

If one of our team members drops this class later, we plan to cut parts of the functions in this application.

Instead of the whole plan, we will focus on implementing the recommending part based on the

existing data in the databased but not based on the behavior records when the user log in.