

CMPG321

Homework Assignment 1

27347435

DB Nel

Submission Date: 03/09/2021

The submission is solely my own work – DB Nel - 27347435

Table of Contents

[1. MISTAKES IN THE GIVEN DATABASE 2](#_Toc81515774)

[2. CONCEPTUAL DESIGN 2](#_Toc81515775)

[3. LOGICAL DESIGN 2](#_Toc81515776)

[4. PHYSICAL DESIGN 3](#_Toc81515777)

[4.1 Users 3](#_Toc81515778)

[4.2 Indexing Strategy 4](#_Toc81515779)

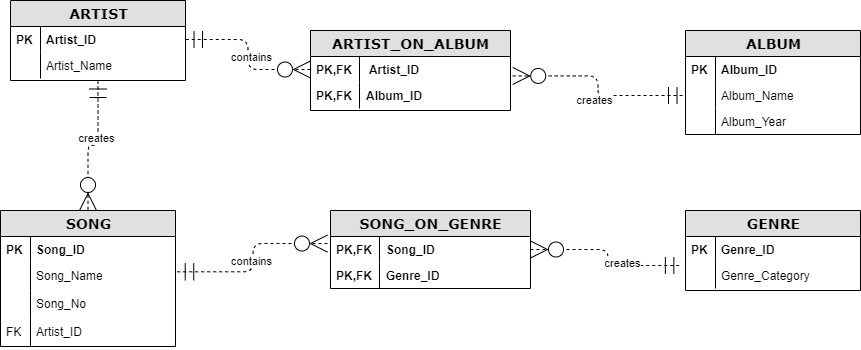
# MISTAKES IN THE GIVEN DATABASE

The following mistakes were made in the example database:

* The database is not in 3rd normal form;
* Data anomalities will occur when updating:
  + Artist
  + Album
  + Year
* A genre can be one or more genre;
* Genre is listed as POP and pop, you must always be consistent in naming conventions;
* A problem could arise when there is a feature artist, i.e. Taylor Swift fear. Kendrick, there must be a clear distinction between the main artist and the featuring artist.

# CONCEPTUAL DESIGN

The following conceptual design was created:



# LOGICAL DESIGN

The logical design SQL code:

|  |
| --- |
| CREATE TABLE artist    (       artist\_id   INT NOT NULL,       artist\_name VARCHAR(50) NOT NULL,       CONSTRAINT pk\_artist\_id PRIMARY KEY (artist\_id)    );  CREATE TABLE album    (       album\_id    INT NOT NULL,       artist\_name VARCHAR(50) NOT NULL,       CONSTRAINT pk\_album\_id PRIMARY KEY (album\_id)    );  CREATE TABLE song    (       song\_id   INT NOT NULL,       song\_name VARCHAR(50) NOT NULL,       song\_no   INT NOT NULL,       artist\_id INT NOT NULL,       CONSTRAINT pk\_song\_id PRIMARY KEY (song\_id),       CONSTRAINT fk\_artist\_id FOREIGN KEY (artist\_id) REFERENCES artist (       artist\_id)    );  CREATE TABLE genre    (       genre\_id       INT NOT NULL,       genre\_category VARCHAR(50) NOT NULL,       CONSTRAINT pk\_genre\_id PRIMARY KEY (genre\_id)    );  CREATE TABLE song\_on\_genre    (       song\_id  INT NOT NULL,       genre\_id INT NOT NULL,       CONSTRAINT pk\_song\_id\_genre\_id PRIMARY KEY(song\_id, genre\_id),       CONSTRAINT fk\_song\_id FOREIGN KEY (song\_id) REFERENCES song (song\_id),       CONSTRAINT fk\_genre\_id FOREIGN KEY (genre\_id) REFERENCES genre (genre\_id)    );  CREATE TABLE artist\_on\_album    (       artist\_id INT NOT NULL,       album\_id  INT NOT NULL,       CONSTRAINT pk\_artist\_id\_album\_id PRIMARY KEY (artist\_id, album\_id),       CONSTRAINT fk\_artist\_id FOREIGN KEY (artist\_id) REFERENCES artist (       artist\_id),       CONSTRAINT fk\_album\_id FOREIGN KEY (album\_id) REFERENCES album (album\_id)    ); |

# PHYSICAL DESIGN

## Users

* + 1. Database Administrator
    2. Parametric End Users
    3. System Analyst
    4. Database Designers
    5. Sophisticated Users
    6. Temporary Users

## Indexing Strategy

* + 1. Table access: when searching for a genre/specific artist