

CS-322 Introduction to Database Systems

Project Deliverable #1

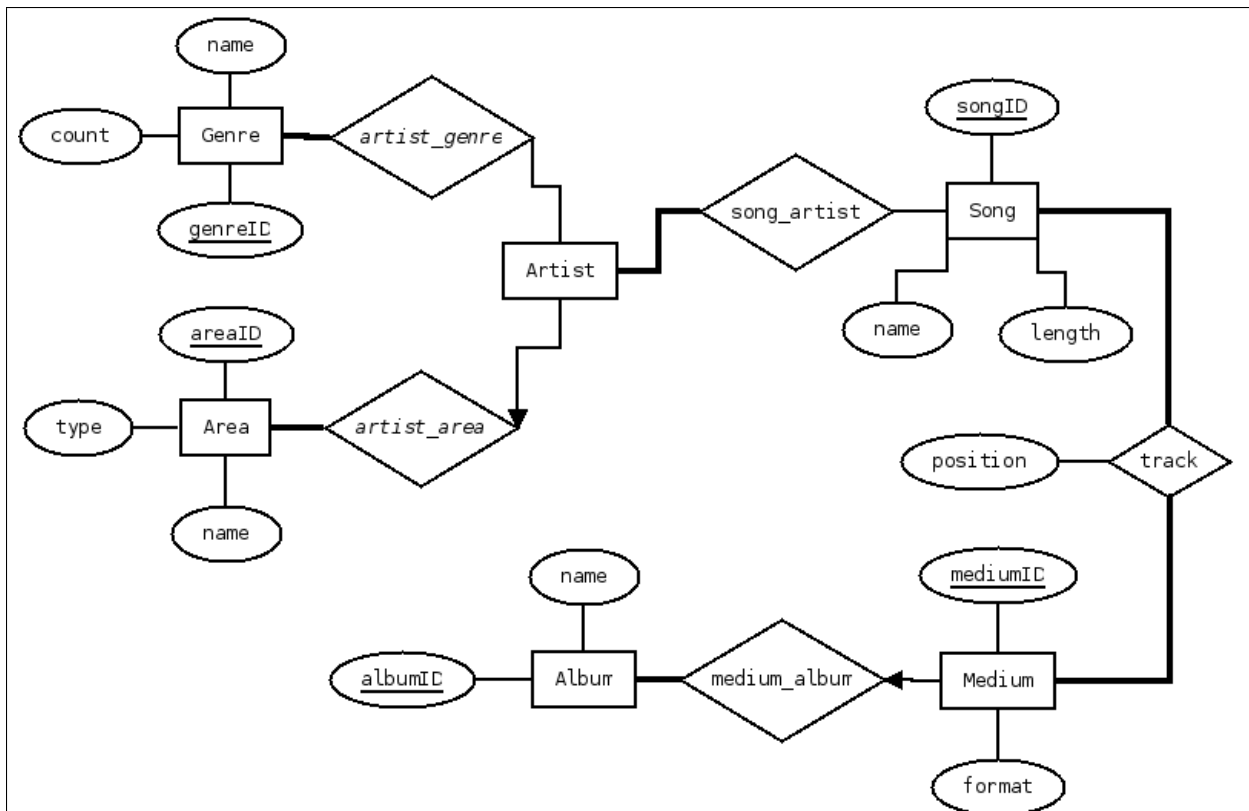
Due on Sunday, March 23rd, 2014

Group 24
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

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Three main concepts: Song, Artist and Album. Both Song and Album were divided between their descriptive data and their physical incarnation. We decided to set Song as the only necessary information, emulating the approach taken by most popular music player softwares, this justifies most of our data constraints.

- A Song is related to:

Artist: A song can exist without known artists, but can also have several artists to describe collaborations.

Medium: Though a song is not necessarily part of an album, it has to be recorded on some medium. There is therefore a participation constraint of Song in Medium. Their relation is characterized by the song's position on the medium.

- An Artist is defined by a:

Genre: A genre can regroup multiple artists, but makes no sense as an empty container, thus triggering a participation constraint, whereas an artist can be difficult to define as catering to a specific genre, or crossing boundaries between genres nullifying the need for a constraint.

Area: An artist's location can be pinpointed to a specific creation grounds, hence the key constraint. But several artists can be compelled to share their musical feelings in the same studio, and a place which doesn't house such a creative conundrum isn't worth keeping track of.

- An Album is the logical aggregation of songs, labeled by a title, and can be recorded on multiple—at least one, participation constraint—media. Conversely, a medium identifies a singular recording of an album, enforced by a key constraint.

```
CREATE TABLE Areas (
    areaID CHAR(20),
    name CHAR(40) NOT NULL,
    type CHAR(20),
5    PRIMARY KEY (areaID) ) ;

CREATE TABLE Genres (
    genreID CHAR(20),
    name CHAR(40) NOT NULL,
10    count INTEGER DEFAULT 0,
    PRIMARY KEY (genreID) ) ;

CREATE TABLE Artists (
    artistID CHAR(20),
    name CHAR(40) NOT NULL,
15    areaID CHAR(20),
    PRIMARY KEY (artistID),
    FOREIGN KEY (areaID) REFERENCES Areas ) ;

20 CREATE TABLE Songs (
    songID CHAR(20),
    name CHAR(40) NOT NULL,
    length INTEGER,
    PRIMARY KEY (songID) ) ;

25 CREATE TABLE Albums (
    albumID CHAR(20),
    name CHAR(40) NOT NULL,
    PRIMARY KEY (albumID) ) ;

30 CREATE TABLE Mediums (
    mediumID CHAR(20),
    albumID CHAR(20),
    format CHAR(20),
35    PRIMARY KEY (mediumID),
    FOREIGN KEY (albumID) REFERENCES Albums ) ;
```

SQL script for entities table creation

```
CREATE TABLE Artist_genre (
    artistID CHAR(20),
    genreID CHAR(20),
    PRIMARY KEY (artistID, genreID),
5    FOREIGN KEY (artistID) REFERENCES Artists,
    FOREIGN KEY (genreID) REFERENCES Genres ) ;

CREATE TABLE Song_artist (
10    songID CHAR(20),
    artistID CHAR(20),
    PRIMARY KEY (songID, artistID),
    FOREIGN KEY (songID) REFERENCES Songs ,
    FOREIGN KEY (artistID) REFERENCES Artists ) ;
```

```
15 CREATE TABLE Tracks (  
    songID CHAR(20),  
    mediumID CHAR(20),  
    position INTEGER,  
    PRIMARY KEY (songID, mediumID),  
20 FOREIGN KEY (songID) REFERENCES Songs ,  
    FOREIGN KEY (mediumID) REFERENCES Mediums ) ;
```

SQL script for relations table creation