Greg Finkelberg
WinRDBI Assignment

Music Agency Relational Database Schema

recordingLabel(labelID, labelName, location)

cd(cdCode, cdTitle, numberSold, year, labelID, groupCode)

song(songCode, songTitle)

musicalGroup(groupCode, groupName)

artist(artistID, firstName, lastName, yearBorn)

topCDs(cdCode, year, rating)

composedOf (cdCode, songCode, trackNumber)

topSongs(songCode, year, rating)

member(groupCode, artistID, fromDate, toDate)

writtenBy(songCode, artistID)

Queries
The output schema for the query is given in parentheses following the query specification.

1. Which songs appeared on the CD rated number one in 2003?
Order the results in ascending order on track number.
(songCode, songTitle, trackNumber)

```
q1:=
SELECT s.songCode, s.songTitle, co.trackNumber
FROM cd c
JOIN composedOf co ON c.cdCode = co.cdCode
JOIN song s ON co.songCode = s.songCode
WHERE c.cdCode IN (
   SELECT cdCode
   FROM topCDs
   WHERE year = 2003 AND rating = 1
)
ORDER BY co.trackNumber ASC;
```

```
% Greg Finkelberg
% Query 1: Retrieve songs appearing on the CD rated number one in 2003, ordered by track number
q1:=
SELECT s.songCode, s.songTitle, co.trackNumber
FROM cd c
JOIN composedOf co ON c.cdCode = co.cdCode
JOIN song s ON co.songCode = s.songCode
WHERE c.cdCode IN (
   SELECT cdCode
   FROM topCDs
   WHERE year = 2003 AND rating = 1
)
ORDER BY co.trackNumber ASC;
```

Relation Name	# Tuples
q1	10
q2	5
q3	4
q4	18
q5	1

songCode/char	songTitle/char	trackNumber/numeric
'S17'	'Days Go By'	1
'S18'	'Another Day in Paradise'	2
'S1'	'Sweet Dreams'	3
'S2'	'Goodnight'	4
'S7'	'Breathless'	5
'S19'	'Smile'	6
'S8'	'My Oh My'	7
'S9'	'Ooh La La'	8
'S11'	'Hot As Hell'	9
'S12'	'Goldilocks'	10

2. For each group in the database, find the number of CDs rated in the top 10. Order the results in descending order of the number of top 10 CDs.
(groupCode, groupName, numberOfTop10CDs)

```
q2:=
SELECT mg.groupCode, mg.groupName, COUNT(*) AS numberOfTop10CDs
FROM musicalGroup mg
JOIN cd ON mg.groupCode = cd.groupCode
JOIN topCDs ON cd.cdCode = topCDs.cdCode
WHERE topCDs.rating <= 10
GROUP BY mg.groupCode, mg.groupName
ORDER BY numberOfTop10CDs DESC;
```

```
% Query 2: Find the number of CDs rated in the top 10 for each musical group
q2:=
SELECT mg.groupCode, mg.groupName, COUNT(*) AS numberOfTop10CDs
FROM musicalGroup mg
JOIN cd ON mg.groupCode = cd.groupCode
JOIN topCDs ON cd.cdCode = topCDs.cdCode
WHERE topCDs.rating <= 10
GROUP BY mg.groupCode, mg.groupName
ORDER BY numberOfTop10CDs DESC;
```

Relation Name	# Tuples
q1	10
q2	5
q3	4
q4	18
q5	1

groupCode/char	groupName/char	numberOfTop10CDs/numeric
'G4'	'Great Snakes'	4
'G5'	'Keith Urban'	2
'G3'	'Thundering Typhoons'	2
'G2'	'Sweet Symphony'	2
'G1'	'Deutsch Moss'	1

3. What is the maximum, the minimum, and average number of tracks on CDs published since the year 2000? Order the results in chronological order by year.

(year, maxNumber, minNumber, avgNumber)

q3:=
SELECT c.year, MAX(co.trackNumber) AS maxNumber, MIN(co.trackNumber) AS minNumber,
AVG(co.trackNumber) AS avgNumber
FROM cd c
JOIN composedOf co ON c.cdCode = co.cdCode
WHERE c.year >= 2000
GROUP BY c.year
ORDER BY c.year ASC;

```
% Query 3: Calculate the maximum, minimum, and average number of tracks on CDs published since the year 2000
q3:=
SELECT c.year, MAX(co.trackNumber) AS maxNumber, MIN(co.trackNumber) AS minNumber, AVG(co.trackNumber) AS avgNumber
FROM cd c
JOIN composedOf co ON c.cdCode = co.cdCode
WHERE c.year >= 2000
GROUP BY c.year
ORDER BY c.year ASC;
```

Relation Name	# Tuples
q1	10
q2	5
q3	4
q4	18
q5	1

year/numeric	maxNumber/numeric	minNumber/numeric	avgNumber/numeric
2,000	7	1	3.583
2,001	8	1	3.95
2,002	9	1	5
2,003	10	1	3.138

4. Find the total number of CDs sold by a group with a recording label.
Order the results in descending order by the total number of CDs sold.
(groupCode, groupName, labelID, labelName, totalNumberSold)

q4:=
SELECT mg.groupCode,
    mg.groupName,
    rl.labelID,
    rl.labelName,
    SUM(cd.numberSold) AS totalNumberSold
FROM musicalGroup mg
JOIN cd ON mg.groupCode = cd.groupCode
JOIN recordingLabel rl ON cd.labelID = rl.labelID
GROUP BY mg.groupCode, mg.groupName, rl.labelID, rl.labelName
ORDER BY totalNumberSold DESC;

```
% Query 4: Find the total number of CDs sold by each musical group with a recording label
q4:=
SELECT mg.groupCode,
    mg.groupName,
    rl.labelID,
    rl.labelName,
    SUM(cd.numberSold) AS totalNumberSold
FROM musicalGroup mg
JOIN cd ON mg.groupCode = cd.groupCode
JOIN recordingLabel rl ON cd.labelID = rl.labelID
GROUP BY mg.groupCode, mg.groupName, rl.labelID, rl.labelName
ORDER BY totalNumberSold DESC;
```

Relation Name	# Tuples
q1	10
q2	5
q3	4
q4	18
q5	1

groupCode/char	groupName/char	labelID/char	labelName/char	totalNumberSold/numeric
'G5'	'Keith Urban'	'L1'	'A&M Records'	2,140,000
'G4'	'Great Snakes'	'L3'	'Disney Records'	1,200,000
'G6'	'Beyond'	'L6'	'Disney Records'	800,000
'G3'	'Thundering Typhoons'	'L1'	'A&M Records'	800,000
'G2'	'Sweet Symphony'	'L4'	'Country Club'	800,000
'G6'	'Beyond'	'L2'	'Reprise Records'	790,000
'G3'	'Thundering Typhoons'	'L3'	'Disney Records'	750,000
'G4'	'Great Snakes'	'L1'	'A&M Records'	600,000
'G1'	'Deutsch Moss'	'L1'	'A&M Records'	500,000
'G2'	'Sweet Symphony'	'L5'	'Gray Dot Records'	450,000
'G4'	'Great Snakes'	'L2'	'Reprise Records'	100,000
'G2'	'Sweet Symphony'	'L6'	'Disney Records'	100,000
'G5'	'Keith Urban'	'L6'	'Disney Records'	99,000
'G5'	'Keith Urban'	'L5'	'Gray Dot Records'	89,000
'G6'	'Beyond'	'L5'	'Gray Dot Records'	75,000
'G1'	'Deutsch Moss'	'L4'	'Country Club'	40,000
'G6'	'Beyond'	'L8'	'Universal Records'	34,000
'G6'	'Beyond'	'L4'	'Country Club'	25,000

5. Which artists that have written a top 5 song are currently not members of any group? Order the results alphabetically by last name and first name.
(artistID, firstName, lastName, yearBorn)

```
q5:=
SELECT DISTINCT a.artistID, a.firstName, a.lastName, a.yearBorn
FROM artist a
JOIN writtenBy wb ON a.artistID = wb.artistID
JOIN topSongs ts ON wb.songCode = ts.songCode
WHERE ts.rating <= 5
AND NOT EXISTS (
   SELECT 1
   FROM member m
   WHERE a.artistID = m.artistID
);
```

```
% Query 5: Identify artists who have written a top 5 song and are not currently members of any group
q5:=
SELECT DISTINCT a.artistID, a.firstName, a.lastName, a.yearBorn
FROM artist a
JOIN writtenBy wb ON a.artistID = wb.artistID
JOIN topSongs ts ON wb.songCode = ts.songCode
WHERE ts.rating <= 5
AND NOT EXISTS (
   SELECT 1
   FROM member m
   WHERE a.artistID = m.artistID
);
```

Relation Name	# Tuples
q1	10
q2	5
q3	4
q4	18
q5	1

artistID/char	firstName/char	lastName/char	yearBorn/numeric
'A13'	'Jim'	'Kate'	1,970

Problem Statement

A music survey agency wants to keep track of CD-titles, the songs in each title, the musical group that recorded the CD, the recording label that produced the CD, the artists that wrote the songs in the CD, and the ratings for each CD title and song title.

A recording label has a unique id, a name and a location. Each recording label produces several CD titles. But each CD title may be produced by one and only one recording label. A CD title has a title and a unique code. The year in which the CD was released and the number sold so far must also be recorded.

Each CD title consists of several songs, with a minimum of one song in each CD. Each song has a title and a unique code. The same song could also be present in multiple CD titles. Each song has a unique track number within a particular CD. For each year, the end-of-the-year rating (top 40) of each CD title and song title must be maintained.

A CD title is recorded by a single musical group, which has a name, and a unique code. A musical group may record several CD titles during its life span. The group consists of one or more artists, each of whom has a first name, last name and a unique id. The year in which the artist was born is also recorded. Since any artist may belong to multiple musical groups over time, the database must record the date when an artist joined a particular group and the date when he or she left the group. One or more artists write each song title on a CD. A single artist may contribute towards the writing of multiple song titles within a CD, but it isn't necessary for an artist to write a song.

ER Diagram for the Music Agency Enterprise