Database Systems 10127

Homework Problem 2

Due Date: January 4, 2017

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This is an assignment about SQL. Please submit a document that contains the code for each query. It is highly recommended that you test your answers with MS SQL Server and verify that they are correct before submitting.

A database contains information about products in a catalog of a bookstore that sells books and music. There are six tables in the database.

**Product (**PID, ptype, supplier, price)

**Book** (PID\*, author, title, publisher, year, edition)

**CD** (PID\*, artist, title, tracks, length)

**DVD** (PID\*, title, studio, year, length)

**Song** (SID, artist, name, album\*, track, length)

**Actor** (AID, name, movie\*)

The table ‘Product’ includes the product ID, the type of product (‘Book’, ‘CD’ or ‘DVD’), the name of the supplier, and the price.

A book has a PID (foreign key referencing to the Product table), an author, a title, a publisher, year published and edition.

A CD has a PID (foreign key referencing to the Product table), an artist, a title, the number of tracks, and the length of the CD in minutes.

A DVD has a PID (foreign key referencing to the Product table), a title, the studio where it was made, the year, and the length in minutes.

To make searching for albums easier, the store maintains a list of songs. Each song has an artist, a name, the album it is in (foreign key to PID in the ‘CD’ table), the track number and length in seconds. If a song appears in more than one album it will appear in the ‘Song’ table once for each album.

To make searching for movies easier, the store maintains a list of actors. Each actor has a name and a movie. If an actor is in more than one movie, s/he will appear in the table once for each movie.

An Excel file that contains sample data is included for testing the queries. It can be imported into your SQL Server database by right-clicking the name of the database, selecting Tasks and then Import Data, and following the import wizard. The imported tables do not have key constraints.

1. **Query the data**
2. Find the average length of all CDs
3. Find the average length of all CDs made by ‘The Beatles’
4. Find the average length of all CDs that come from supplier ‘B’
5. Find all suppliers that sell CDs that have at least 100 minutes of music
6. For each supplier, find the average DVD length
7. Find the songs that can be found on more than one CD
8. Find all books that have the word ‘hundred’ in the title
9. Find all suppliers that sell books but not CDs
10. Find the average price of all books and DVDs made by supplier ‘B’
11. Find suppliers that sell at least two different products (book or DVD) that were made in 2011
12. Find manufacturers who sell at least three different DVDs
13. Find the books with the highest price
14. For each author, list the number of books that are available for sale
15. Find all the suppliers that sell DVDs with ‘Rebel Wilson’
16. **(Bonus)** Create a table with columns for supplier, book, CD and DVD. For each supplier, the book column should state the number of different books s/he sells, the CD column should state how many different CDs she sells, and the DVD column should state how many different DVDs s/he sells. If the manufacturer does not sell this type of product, output a zero in that column. Note that if the supplier sells products with the same title they should only be counted once.
17. **Update the data**
18. Add key constraints to the tables according to the data definitions
19. Add to the database the movie ‘Stardust’ from supplier C that was made by Paramount in 2007 (use two insert statements)
20. Supplier C buys manufacturer B. Change all the products made by B so they are listed as made by C
21. For each CD made by ‘Sting’, add five minutes to the length of the CD
22. For each book sold by supplier B, add 1 to the edition
23. Delete all books that were published before 1980
24. Delete all books sold by a supplier that does not sell CDs
25. **(Bonus)** For each DVD, add a soundtrack CD from the same supplier with the same name. The artist of the CD will be the studio that produced the DVD. The length is 1/3 the length of the movie, and the price is half the price of the DVD. Leave the number of tracks empty.