

CMPSC 221

OO Programming with Web-Based Applications

Spring 2021

Due Date: Wednesday, May 5th, 2021 (11:59 p.m. EDT)

Name: _____

Instructions: Create a Java application to solve the following problem. Submit electronic (Canvas Dropbox) copies of your project files (specified below) and **one** sample run to me by the deadline. For the electronic submission of your project: 1) place your Java source code file(s), Java class file(s), SQL script, and sample run in a folder; 2) compress the folder; and 3) upload the compressed archive to Canvas. References, additional information (*Please read!*), and documentation requirements follow the problem specification. **Important Note:** Please be sure to upload your Project 5 files to Canvas by the deadline. If you miss the deadline, you WILL automatically receive a grade of 0 (zero).

1. Write a Java program that queries a database of song titles and/or albums and awards they have won. Begin by writing an SQL script to create a `music` database in the IDE of your choice (e.g., NetBeans, IntelliJ, etc.) and fill it with data. Required tables are:
 - `musicTitles`, with fields `musicID`, `genre`, `artist`, `title`, `album`, and `releaseDate`; `musicID` and `releaseDate` will hold integers, while the rest of the fields will hold strings; `musicID` is also the primary key. (Hint: Use the “authors” table from the “books_v2.sql” script as your model.)
 - `musicAwards`, with fields `musicID`, `award`, and `awardYear`; `musicID` and `awardYear` will hold integers, while `award` will hold a string; `musicID` is also the foreign key. (Hint: Use the “authorISBN” table from the “books_v2.sql” script as your model.)

Data requirements:

- Populate the `musicTitles` table with at least 10 song titles and/or albums.
- Populate the `musicAwards` table with 5 to 10 awards. Each song title or album listed in `musicTitles` must have 0 or 1 actual award.

Once you have created your `music` database, write a Java program to query it. Queries may be hard-coded or entered interactively. The two demo programs posted on Canvas, “DisplayAuthorsSpring2019.java” and “DisplayAuthorsSpring2019_withUserInput.java,” are good models for completing this project.

Required queries are:

- A query to display all information in the `musicTitles` table sorted in ascending order by artist.
- A query to display all information in the `musicAwards` table sorted in descending order by award year.
- A query to display genre, artist, award, and award year for only those song titles and/or albums that have won awards. (Hint: You must “join” the two tables to extract the required information.)
- A query to display all information except for `musicID`, `award`, and `award year` for those musical listings whose genre is “Rock.”

Note: I strongly recommend running your queries using the SQL editor before trying to program them.

Java class requirements:

- One class is sufficient. Place all of your code in `main`, if you like.

As usual, your program output should resemble the sample run at the end of this document. Formatting of the query results is up to you, as long as the required content is present and readable.

References:

- Deitel & Deitel (Ed. 9): Chapter 28
- Savitch: Chapter 19
- Resources posted on Canvas under Chapter 19 on the Demo Programs page

Additional Information:

- You may work on this assignment individually or with one of your classmates (i.e., as a pair). If you decide to work as a pair, please turn in one electronic submission for both of you containing both of your names. (I recommend adding a comment in Canvas stating who you worked with when you submit the project.)
- Please note that this project only counts half as much as each of the previous four projects (50 points instead of 100 points).

Documentation Requirements:

1) Each program source code file (i.e., Java class) must have a header at the beginning of the class containing the following:

- Name of author, PSU e-mail address of author, name of course, assignment number and due date, name of file, purpose of class, compiler/IDE, operating system, and any external references used (e.g., Website)
- Example:

```
/*
Author:          Wanda Kunkle
E-mail:          wmk12@psu.edu
Course:          CMPSC 221
Assignment:      Programming Assignment 5
Due date:        Wednesday, May 5th, 2021
File:            QueryMusicAndAwards.java
Purpose:         Java application that queries a database of song titles and/or
                  albums and awards they have won and displays the results of the
                  queries
Compiler/IDE:    Java SE Development Kit 15.0.2/Apache NetBeans IDE 12
Operating
system:          MS Windows 10 Home
Reference(s):    Java 15 API - Oracle Documentation
                  (https://docs.oracle.com/en/java/javase/15/docs/api/index.html);
                  (Include ALL additional references (Web page, etc.) here.)
*/
```

2) The purpose of each method in the source code file(s) must be documented as shown in the example below. I prefer that you use the **javadoc** comment style.

```
/** This method prompts for and returns a user-entered query.
 *
 * @return          The query entered by the user
 */
public String getQuery()
{
    // Method definition (i.e., body)
}
```

One complete sample run appears on the next page ...

run:

"musicTitles" Table Of Music Database:

| MUSICID | GENRE | ARTIST | TITLE | ALBUM | RELEASEDATE |
|---------|---------------------|-------------------|-------------------------|--|-------------|
| 8 | Pop | Adele | Hello | 25 | 2015 |
| 9 | Classical | Andrea Bocelli | Because We Believe | Amore | 2006 |
| 4 | Jazz | Branford Marsalis | N/A | I Heard You Twice the First Time | 1992 |
| 7 | Pop | Elton John | Candle in the Wind 1997 | Something About the Way You Look Tonight | 1997 |
| 10 | Easy Listening | James Galway | The Dawning Of The Day | Wings of Song | 2004 |
| 1 | Rock | Led Zeppelin | N/A | Celebration Day | 2012 |
| 2 | Rock | Pink Floyd | Marooned | The Division Bell | 1994 |
| 3 | Jazz | Spyro Gyra | Best Friends | Road Scholars | 1998 |
| 6 | Classical Crossover | Yo-Yo Ma | Gabriel's Oboe | Yo-Yo Ma Plays Ennio Morricone | 2004 |
| 5 | Classical Crossover | Yo-Yo Ma | N/A | Yo-Yo Ma & Friends: Songs Of Joy And Peace | 2008 |

"musicAwards" Table Of Music Database:

| MUSICID | AWARD | AWARDYEAR |
|---------|------------------------------------|-----------|
| 8 | Song of the Year | 2016 |
| 1 | Best Rock Album | 2013 |
| 5 | Best Classical Crossover Album | 2009 |
| 7 | Best Male Pop Vocal Performance | 1997 |
| 2 | Best Rock Instrumental Performance | 1994 |
| 4 | Best Jazz Instrumental Performance | 1992 |

Musical Artists Who Have Received Awards:

| GENRE | ARTIST | AWARD | AWARDYEAR |
|---------------------|-------------------|------------------------------------|-----------|
| Classical Crossover | Yo-Yo Ma | Best Classical Crossover Album | 2009 |
| Jazz | Branford Marsalis | Best Jazz Instrumental Performance | 1992 |
| Pop | Adele | Song of the Year | 2016 |
| Pop | Elton John | Best Male Pop Vocal Performance | 1997 |
| Rock | Pink Floyd | Best Rock Instrumental Performance | 1994 |
| Rock | Led Zeppelin | Best Rock Album | 2013 |

Musical Listings Where The Genre Is "Rock":

| GENRE | ARTIST | TITLE | ALBUM | RELEASEDATE |
|-------|--------------|----------|-------------------|-------------|
| Rock | Led Zeppelin | N/A | Celebration Day | 2012 |
| Rock | Pink Floyd | Marooned | The Division Bell | 1994 |

BUILD SUCCESSFUL (total time: 0 seconds)