UNIVERSITY OF LEEDS

# School of Computing: Assessment brief

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| **Module title** | Databases |
| **Module code** | COMP1121 |
| **Assignment title** | Coursework 1 |
| **Assignment type and description** | In-course assessment, writing SQLite queries |
| **Rationale** | Write SQLite queries to retrieve data from a database |
| **Word limit and guidance** | This coursework should take less than 10 hours to complete |
| **Weighting** | 30% |
| **Submission deadline** | 10:00 16 March 2023 |
| **Submission method** | Online through Gradescope |
| **Feedback provision** | Within 3 weeks after submission deadline |
| **Learning outcomes assessed** | LO2: use appropriate tools to manipulate database systems<br>LO3: design and implement a database using appropriate tools |
| **Module lead** | Hui Lau |
| **Other Staff contact** | |

## 1. Assignment guidance

### A. Introduction

For this coursework, you will be utilising the `Chinook` database, which comprises of 11 tables: `albums`, `artists`, `employees`, `customers`, `genres`, `invoice_items`, `invoices`, `media_types`, `playlist_track`, `playlists` and `tracks`. Your task is to write SQLite queries to retrieve data from multiple tables within the `Chinook` database. The queries will demonstrate your understanding of the structure of the Chinook database and your ability to retrieve data from multiple tables through the use of SQLite queries. This coursework will be marked using the current SQLite version 3.40.1.

### B. Preparation

**Please follow the following instructions:**

1. Download the zip file `cwk1-files.zip` from Minerva. The file `cwk1-files.zip` contains the chinook database file (`chinook.db`), a database diagram on the relationships between tables in the database for your reference (`chinook_database_diagram.pdf`), and template sql file (`sqlcwk.sql`) in which you write the SQLite queries.
2. Unzip `cwk1-files.zip` and put these files in a folder/directory.
3. Write your SQLite queries in the template sql file `sqlcwk.sql`. You can edit `sqlcwk.sql` with any document editing software such as Notepad or Notepad++. Write your name or username at the top of the file indicated by `@author`.
4. To test your written SQLite queries:
   i. Launch a terminal or navigate to the same directory containing both `chinook.db` and `sqlcwk.sql`, and then open the database with the command `sqlite3 chinook.db`.
   ii. Run the sql file by typing `.read sqlcwk.sql` on the terminal.
   iii. Check to make sure views were created, which can be done with a basic `SELECT *` statement.

## 2. Assessment tasks

1. Write a SQLite query to create a view called `vCustomerPerEmployee` for each employee's `LastName`, `FirstName`, `EmployeeID`, and the total number of customers served by them (named as `TotalCustomer`) as shown below. [5 marks]

| LastName | FirstName | EmployeeID | TotalCustomer |
|---|---|---|---|

Example output is shown in Figure 1. You can check the created view by selecting all data from the view.

```
LastName  FirstName  EmployeeID  TotalCustomer
--------  ---------  ----------  -------------
Adams     Andrew     1           0
Edwards   Nancy      2           0
Peacock   Jane       3           21
Park      Margaret   4           20
Johnson   Steve      5           18
Mitchell  Michael    6           0
King      Robert     7           0
Callahan  Laura      8           0
```

Figure 1: Sample output for `vCustomerPerEmployee`

2. Write a SQLite query to create a view called `v10WorstSellingGenres` for the 10 worst-selling genres (named as `Genre`) based on the quantity of tracks sold (named as `Sales`), order by `Sales` in ascending order as shown by sample output in Figure 2. [6 marks]

| Genre | Sales |
|---|---|
| Opera | 0 |
| Rock And Roll | 6 |
| Science Fiction | 6 |
| Comedy | 9 |
| Easy Listening | 10 |
| Heavy Metal | 12 |
| Electronica/Dance | 12 |
| World | 13 |
| Alternative | 14 |
| Bossa Nova | 15 |

Figure 2: Sample output for `v10WorstSellingGenres`

3. Write a SQLite query to create a view called `vBestSellingGenreAlbum` for the best-selling album in each genre with sales (based on the quantity of tracks sold, named as `Sales`) with the following named columns. [6 marks]

| Genre | Album | Artist | Sales |
|---|---|---|---|

Sample output is shown in Figure 3*. You can check the created view by selecting all data from the view.

| Genre | Album | Artist | Sales |
|---|---|---|---|
| Rock | Greatest Kiss | Kiss | 20 |
| Jazz | Up An' Atom | Gene Krupa | 17 |
| Metal | Chemical Wedding | Bruce Dickinson | 12 |
| Alternative & Punk | Acústico | Titãs | 22 |
| Rock And Roll | BackBeat Soundtrack | BackBeat | 6 |
| Blues | The Cream Of Clapton | Eric Clapton | 15 |
| Latin | Minha Historia | Chico Buarque | 27 |
| Reggae | Acústico MTV [Live] | Cidade Negra | 9 |
| Pop | Instant Karma: The Amnesty International Campaign to Save Darfur | U2 | 16 |
| Soundtrack | Original Soundtracks 1 | Passengers | 9 |
| Bossa Nova | Vinicius De Moraes - Sem Limite | Toquinho & Vinicius | 15 |
| Easy Listening | My Way: The Best Of Frank Sinatra [Disc 1] | Frank Sinatra | 10 |
| Heavy Metal | Dance Of Death | Iron Maiden | 5 |
| R&B/Soul | Sex Machine | James Brown | 12 |
| Electronica/Dance | Radio Brasil (O Som da Jovem Vanguarda) - Seleccao de Henrique Amaro | O Rappa | 7 |
| World | Cafezinho | João Suplicy | 6 |
| Hip Hop/Rap | Os Cães Ladram Mas A Caravana Não Pára | Planet Hemp | 9 |
| Science Fiction | Battlestar Galactica, Season 3 | Battlestar Galactica | 6 |
| TV Shows | Lost, Season 1 | Lost | 10 |
| Sci Fi & Fantasy | Battlestar Galactica (Classic), Season 1 | Battlestar Galactica (Classic) | 18 |
| Drama | Heroes, Season 1 | Heroes | 11 |
| Comedy | The Office, Season 3 | The Office | 9 |
| Alternative | Revelations | Audioslave | 5 |
| Classical | Scheherazade | Chicago Symphony Orchestra & Fritz Reiner | 2 |

Figure 3: Sample output for `vBestSellingGenreAlbum`

* Other album with same sales in the same genre also acceptable.

4. Write a SQLite query to create a view called `v10BestSellingArtists` for the 10 best-selling artists based on the total quantity of tracks sold (named as `TotalTrackSales`) order by `TotalTrackSales` in descending order as shown in the sample output in Figure 4. `TotalAlbum` is the number of albums with tracks sold for each artist. [6 marks]

| Artist | TotalAlbum | TotalTrackSales |
|---|---|---|

You can check the created view by selecting all data from the view.

| Artist | TotalAlbum | TotalTrackSales |
|---|---|---|
| Iron Maiden | 21 | 140 |
| U2 | 10 | 107 |
| Metallica | 10 | 91 |
| Led Zeppelin | 14 | 87 |
| Os Paralamas Do Sucesso | 3 | 45 |
| Deep Purple | 11 | 44 |
| Faith No More | 4 | 42 |
| Lost | 4 | 41 |
| Eric Clapton | 2 | 40 |
| R.E.M. | 3 | 39 |

Figure 4: Sample output for `v10BestSellingArtists`

5. Write a SQLite query to create a view called `vTopCustomerEachGenre` for the customer (named as `TopSpender`) that spent the most (based on `quantity` x `unitprice`, named as `TotalSpending`) on each genre of music as shown in sample output in Figure 5*. [7 marks]

| Genre | TopSpender | TotalSpending |
|---|---|---|

| Genre | TopSpender | TotalSpending |
|---|---|---|
| Alternative | Frank Ralston | 4.95 |
| Alternative & Punk | Daan Peeters | 13.86 |
| Blues | Leonie Köhler | 8.91 |
| Bossa Nova | François Tremblay | 3.96 |
| Classical | Isabelle Mercier | 5.94 |
| Comedy | Frank Ralston | 9.95 |
| Drama | Richard Cunningham | 11.94 |
| Easy Listening | Jack Smith | 2.97 |
| Electronica/Dance | Jennifer Peterson | 2.97 |
| Heavy Metal | Frank Harris | 2.97 |
| Hip Hop/Rap | Jennifer Peterson | 2.97 |
| Jazz | Dominique Lefebvre | 5.94 |
| Latin | Alexandre Rocha | 15.84 |
| Metal | Hannah Schneider | 17.82 |
| Pop | Frantisek Wichterlová | 3.96 |
| R&B/Soul | Ladislav Kovács | 4.95 |
| Reggae | Emma Jones | 4.95 |
| Rock | Eduardo Martins | 28.71 |
| Rock And Roll | François Tremblay | 1.98 |
| Sci Fi & Fantasy | Julia Barnett | 7.96 |
| Science Fiction | Fynn Zimmermann | 3.98 |
| Soundtrack | Marc Dubois | 4.95 |
| TV Shows | Hugh O'Reilly | 13.93 |
| World | Roberto Almeida | 1.98 |

Figure 5: sample output for `vTopCustomerEachGenre`

* Other customer with same TotalSpending in the same genre also acceptable.

### 3. General guidance and study support

Developing your academic skills will enable you to become a more effective learner. Online resources on critical thinking, reading, academic writing and more can be found at Skills@Library website at https://library.leeds.ac.uk/info/1401/academic_skills#minerva.

### 4. Assessment criteria and marking process

When you submit work for assessment it is expected that it will meet the University's academic integrity standards. Standard university penalty of 5% of available marks per day, or part of a day, will apply to late work. Late submissions are acceptable up to 7 days late. Feedback on late submissions may not be provided within 3 weeks of submission deadline.

### 5. Presentation and referencing

All SQLite queries **must** be **written in** the file **`sqlcwk.sql`**, do not change the filename.

### 6. Submission requirements

You only need to submit the SQL file **`sqlcwk.sql`** containing all your SQL queries to Gradescope. Please **do not submit any other files** and **do not change the filename**. Make sure you have tested `sqlcwk.sql` with no errors and check the views created with `SELECT *` statements.

## 7. Academic misconduct and plagiarism

Academic integrity means engaging in good academic practice. This involves essential academic skills, such as keeping track of where you find ideas and information and referencing these accurately in your work.

By submitting this assignment you are confirming that the work is a true expression of your own work and ideas and that you have given credit to others where their work has contributed to yours.

## 8. Assessment/ marking criteria grid

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|---|---|---|
| **All question** | All values correct for all columns and rows<br>Some missing/incorrect values for columns/rows | 3 marks<br>1 mark |
| | The spelling of all columns is correct | 1 mark |
| **Question specific** | Correct use of GROUP BY + COUNT/MAX/DISTINCT/SUM | 1 mark |
| | Correct use of ORDER BY + DESC + LIMIT | 1 mark |
| | Correct use of \|\| to concatenate strings | 1 mark |