**COMP 189: Homework #6**

Assigned Feb 19, 2022

Due Mar 7, 2022

59 points total

***Instructions:*** *For each problem, show all your work (required for credit). For answers requiring written answers, while no more than five or six sentences are expected, sufficient justification must be given for any position, opinion, or perspective taken.*

***Submission Instructions:*** *submit your solutions in PDF format through MyCourses Assignments.*

## Technical Exercises

### 1. Database Schema (16 pts)

You’ve been hired to build the database for Indigo’s sales database. Write out the schema that supports the following:

* Books have a title, author, and publication year
* Credit cards have the name of the owner, credit card number, and expiration date
* Transactions have the transaction date, store where the transaction happened, the books purchased, price paid, and credit card used.

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| Diagram  Description automatically generated |

Your database schema should have five tables that apply the best practices we covered in class.

### 2. Film Database Structure (15 pts)

Write out the schema for the *film*, *actor*, *film\_actor*, *film\_category,* and *category* tables of the sakila database.

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| Film  film\_id: integer (Primary Key)  title: varchar  description: varchar  release\_year: integer  language\_id: integer  original\_language\_id: integer  rental\_duration: float  rental\_rate: integer  length: integer  replacement\_cost: float  rating: integer  special\_features: varchar  Last\_updated: datetime |
| Actor:  Actor\_id: integer (Primary Key)  First\_name: varchar  Last\_name: varchar  Last\_updated: datetime |
| Film\_actor  Actor\_id: varchar (Foreign Key to Actor)  Film\_id: integer  Last\_updated: datetime |
| Film\_category  Film\_id: integer (Foreign Key to film)  Category\_id: varchar (Foreign Key to Category)  Last\_updated: datetime |
| Category  Category\_id: integer (Primary Key)  Name: varchar  Last\_updated: datetime |

### 3. Film Queries (18 pts)

Write SQL queries that answer the following needs using the sakila database. For these queries show a partial screen capture of the results you get when running this on the database (i.e., you don’t need to show ALL transactions, just up to the first 5).

1. Fetch all fields for actors whose first name is ‘Kirsten’.

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| SELECT \* FROM actor WHERE first\_name='Kirsten'  Graphical user interface  Description automatically generated with medium confidence |

1. Fetch the name and rental rate for all films that are longer than 1.5 hours.

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| SELECT title, rental\_rate FROM film WHERE length>90  Graphical user interface, text, application, email  Description automatically generated |

1. Fetch the name and description of all films that can be rented for more than 3 days.

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| SELECT title, description FROM film WHERE rental\_duration > 3  Graphical user interface, text, application, email  Description automatically generated |

1. Fetch all the name of all Italian-language films.

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| SELECT \* FROM film WHERE language\_id=(SELECT language\_id FROM language WHERE name=’Italian’)  Graphical user interface, text, application, email  Description automatically generated |

1. Fetch the name and rental price of all comedies.

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| SELECT title, rental\_rate from film where film\_id IN(SELECT film\_id FROM film\_category WHERE category\_id = (SELECT category\_id FROM category where name='Comedy'))  Graphical user interface, text, application, email  Description automatically generated |

1. Fetch the names of all customers who spent more than $5 in a single rental transaction.

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| SELECT first\_name FROM customer WHERE customer\_id IN(SELECT DISTINCT customer\_id FROM payment where amount>5.00)  Graphical user interface, text, application, email  Description automatically generated |

### 4. Indigo Queries (10 pts)

Give the SQL queries for that answer the following needs using the database you designed in Question #1. No need to “show work” on this – though you’re welcome to add a sentence explaining your query which could be used for partial credit.

1. Fetch all books published in 2016.

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| SELECT \* FROM book WHERE publication\_year=2016;  This will select all information from the Book table where the Publication year is equal to 2016 |

1. Fetch all transactions associated with credit card number “1159 9936 0909 4454”

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| SELECT \* FROM transaction WHERE transaction\_id IN (  SELECT transaction\_id FROM transaction\_credit WHERE creditcard\_id IN (  SELECT creditcard\_id FROM creditcard WHERE number=1159993609094454  )  ) |

1. Fetch all transactions that happened at stores located in Quebec.

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| SELECT \* FROM transaction WHERE location=”Quebec” |