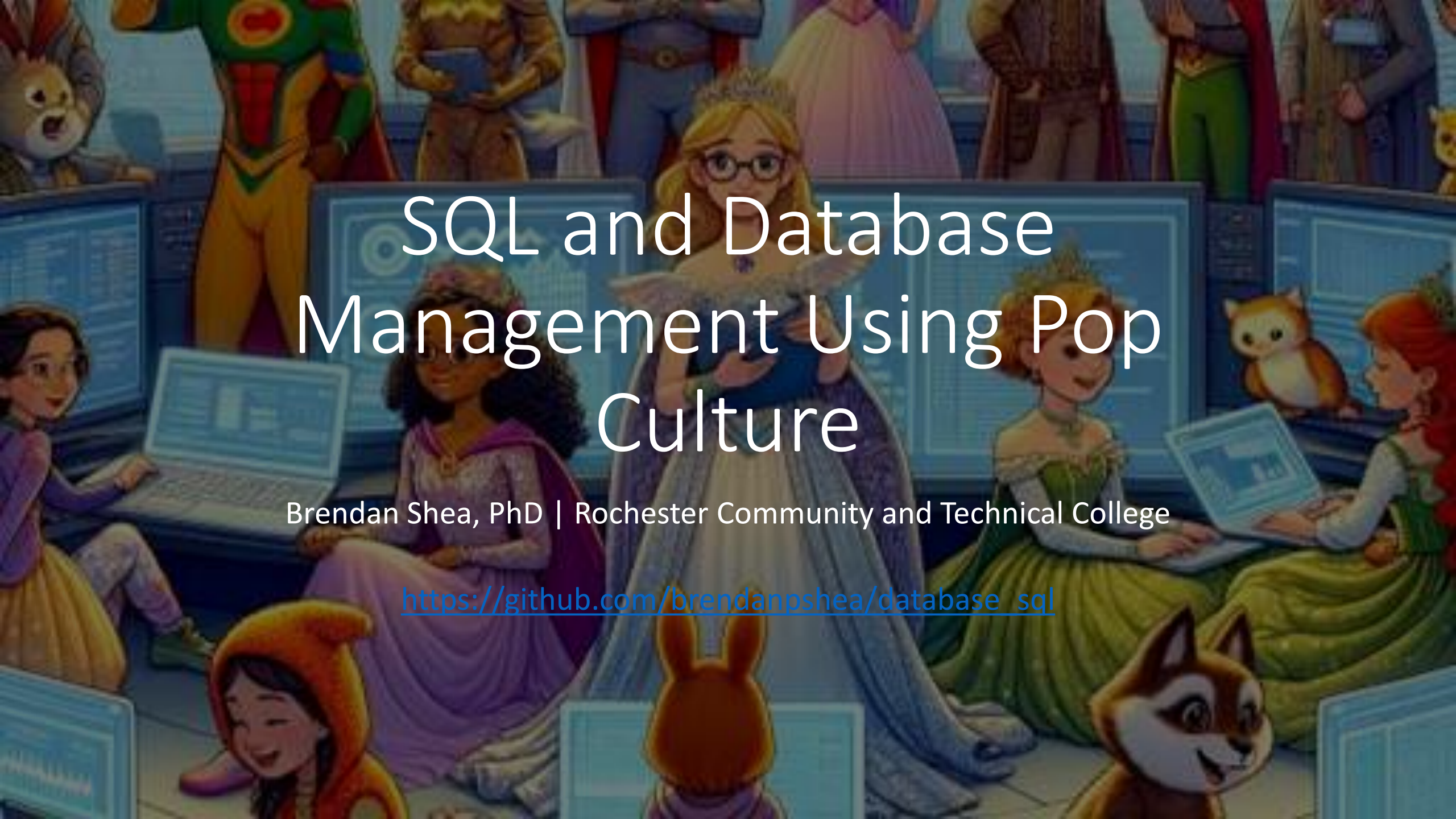


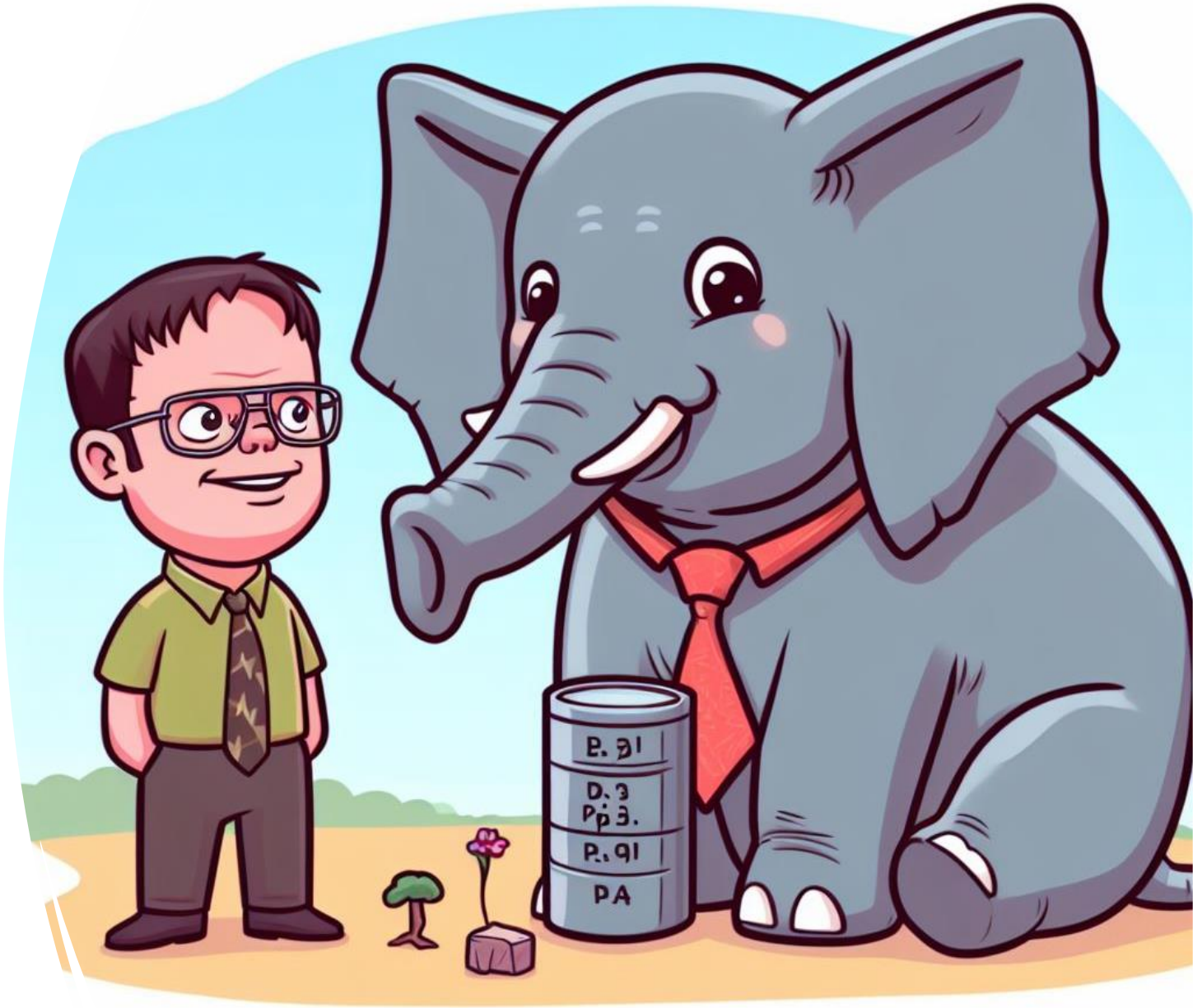
SQL and Database Management Using Pop Culture

Brendan Shea, PhD | Rochester Community and Technical College

https://github.com/brendanpshea/database_sql

Why This Book?

- This book simplifies the complexities of databases by relating them to popular culture.
- It covers basic SQLite queries and introduces PostgreSQL and MySQL.
- It's perfect for both students and professionals seeking a comprehensive yet accessible understanding of databases.
- The content aligns with the CompTia Data Sys+ and Oracle Database Foundations exams.



Chapters 1 to 3

1.Data and Databases: A Star Trek Adventure -- Database_01_Intro.ipynb: Navigate the vastness of space and data with the Star Trek Enterprise. Learn the foundational concepts of databases, distinguishing them from flat files, and explore how databases organize and store data for efficient retrieval and analysis.

2.Relational Databases at Unseen University -- Database_02_RelationalModel_SQL.ipynb: Dive into the fundamentals of relational databases and SQL at Terry Pratchett's Unseen University. Master key SQL commands like SELECT, FROM, and WHERE to query and manipulate data effectively.

3.Mastering SQL with Tony Stark -- Database_03_Stark's_SQL_Secrets.ipynb: Join Tony Stark to uncover advanced SQL functions for mathematics, string manipulations, and data operations. Delve into essential aspects of database security and data governance, crucial for protecting sensitive information.

Chapters 4 to 6

4. Aggregates and Subqueries in the World of Goodreads --
Database_04_Aggregates_Subqueries_SQL.ipynb: Analyze Goodreads data using SQL's aggregate functions and subqueries. Learn to group and summarize data, creating powerful data insights through intricate querying techniques.

5. JOIN Operations and Set Theory in SQL with IMDB --
Database_05_Joins_Sets_SQL.ipynb: Explore the Internet Movie Database with JOIN operations and set theory concepts in SQL. Understand how to combine data from different tables effectively, enhancing the power and flexibility of your data queries.

6. Data Modeling and ER Diagrams with Wednesday Addams --
Database_06_Data_Modeling_and_ER_Diagrams.ipynb: Join Wednesday Addams in creating data models and Entity Relationship (ER) Diagrams for her "Web Shop." Learn the art of structuring and visualizing database schemas, a crucial skill in database design.

Chapters 7 to 9

7. Advanced Modeling: Lessons from Hogwarts –
Database_07_Advanced_Modeling.ipynb: Advance your data modeling skills with lessons from Hogwarts. Delve into complex topics such as data normalization and understanding subtype relationships to ensure data integrity and efficiency.

8. Database Management: Insights from The Office –
Database_08_Database_Managment.ipynb: Gain practical insights into database management with scenarios inspired by The Office. Topics include generating test data, implementing views and indexes, performing query analytics, and managing user accounts.

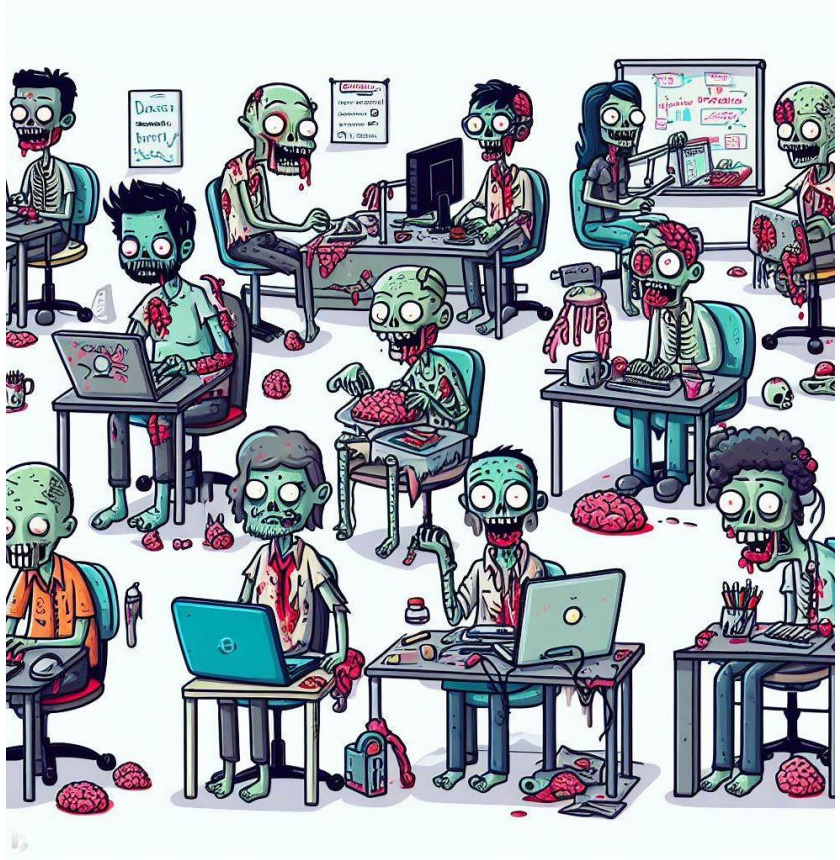
9. **Monsters of JSON and XML: A D&D Adventure –**
Database_09_Monsters_of_JSON.ipynb: Battle the beasts of JSON data format in a Dungeons and Dragons setting. Learn about the uses and pitfalls of SQL and NoSQL databases while dealing with Monster Stats.

Chapters 10 to 12

10. Database Lifecycle: A Journey with ELoise Query-Hopper – Database_10_DatabaseLifecycle.ipynb: Follow the database lifecycle through a narrative with ELoise Query-Hopper, a Junior DBA at Princeton Plainsborough Hospital. Review key learnings in line with the CompTia Data+ Certification.

11. **Data Warehouses and Zombies –** Database_11_Data_Warehouses.ipynb: Delve into data warehouses, ETL processes, Star Schema, and Pandas, all while managing a Zombie outbreak.

12. Comprehensive Review and Oracle Exam Prep – Database_12_Review.ipynb: A thorough review of all concepts covered in this series, serving as a study guide for the Oracle Database Foundations exam.



Google Colab in Open Education

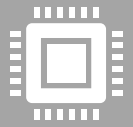
- Google Colab is a free, cloud-based platform that allows users to write, run, and share Python code via their browsers.
- Google Colab requires no setup, offers free access to powerful computing resources, and supports collaboration, making it ideal for teaching programming and data science.
- As a free tool, Google Colab is particularly valuable for educational institutions with limited resources, facilitating access to advanced computing environments.

SQLite for Educational Databases

- SQLite is a lightweight, disk-based database that doesn’t require a separate server process. It’s widely used for small to medium-sized database applications. It’s built into Python!
- Its simplicity and ease of use make SQLite an excellent tool for teaching basic database design and SQL querying skills.
- SQLite's open-source nature and easy integration into various applications make it a practical choice for developing and sharing educational database projects.
- It’s syntax closely mirrors the more powerful (and also open-source) PostgreSQL, which I also teach.

GitHub's Role in Collaborative Education

GitHub is a web-based platform for version control and collaborative coding, primarily used for storing and sharing code repositories.



It facilitates collaborative projects, code sharing, and version control, essential skills in computer science and data science education.

GitHub’s open-source platform encourages sharing and collaboration on educational projects and resources, aligning perfectly with the principles of OER.

Wrap-Up

One of the most significant advantages of this OER project over commercial textbooks is cost-effectiveness. This project is freely available, ensuring equitable access to educational resources for all learners, regardless of their financial situation.

Commercial textbooks often suffer from long update cycles, which can result in outdated material. In contrast, this OER project, leveraging tools like GitHub, allows for continuous updates and customization.

This project allows student to interact directly with the text—by writing SQL code, taking Quizlet quizzes, and writing short answer questions. They can collaborate with peers directly on documents.