Lessons Learned and Reflection

John Wensink

ITS410 Database Analysis and Design

Colorado State University-Global Campus

Dr. Dan Morrill

January 4th, 2019

Lessons Learned and Reflection

ITS410 was my second SQL focused class that further developed the database concepts I learned in MIS407. This class focused on developing skills with the language itself, and the capabilities for which it can be used. This class opened my eyes to the power SQL has to not only store data for future retrieval, but also the abstract way that queries can be used in order to gain insight into what the data can tell us about itself.

**MySQL Workbench**

Before starting this class, I did not know that a graphical interface could be used for almost every task that a database administrator might need. The most useful aspect for myself as a beginner was the real-time statement evaluator similar to IDLE for Python. The evaluator was instrumental in learning what types of query structures would be accepted as valid, and allowed me to experiment with commands I wouldn’t want to actually execute. A few weeks ago I made the mistake of force-closing the RDBMS in the middle of a long query. This action caused Workbench to fail to open and I had to re-install the tables which we had been using. Recovery wasn’t too terribly difficult, but in the future, I would want to make a better effort to automatically backup my tables in order to avoid making this mistake again. I found the level of functionality built into Workbench took to be absolutely astounding, and I am looking forward to digging deeper into the server optimization and logical data modeling tools that Workbench has to offer (Oracle, 2020).

**Datatypes**

This course introduced me to several new datatypes that we had not used previously, including JSON, CSV, and BLOB. Further, I developed a deeper understanding of the datatypes we had discussed in my previous course, in that an efficient database will use the least storage intensive datatype that will fit the needs of the data. Modifiers like TINY, SMALL, MEDIUM, and BIG can be exceedingly important when working with limited storage and computational resources. In the future, I am looking forward to learning more about the geographic and spatial datatypes such as GEOMETRY, POLYGON, and LINESTRING (MySQLTutorial, 2020). I am also interested in learning about non-relational distributed data structures such as NoSQL and MongoDB.

**MySQL Queries**

In ITS410 we learned how powerful and abstract SELECT statements can be for managing large amounts of information. Using SELECT FROM in combination with modifiers such as WHERE, ORDER, LIMIT, OR/AND, as well as the comparison operators can be tremendously valuable in filtering and organizing data in a way that is useful. It seems that there is not much that can’t be done with a schema full of data and sufficient creativity. ITS410 is a computer science class, but the artistic expression possible with SQL queries is what draws me to this topic and keeps me interested in what else the language has to offer. I learned that in MySQL there is usually a trade-off between precision, size, and speed. It seems that optimizing this balance is what would make somebody a good database/data analyst. Database efficiency seems like it is a topic that can be learned in just a few weeks but would take a lifetime to master. The depth of the subject would likely make anybody seriously interested in relational databases a perpetual student, as there is always something deeper to learn below the surface. Moving forward in my education I would like to take a deeper dive into what makes a query efficient and learn to find and enforce balance in the tables.

**Python API**

My favorite week of the course was learning how to use the MySQL connector plug-in in order to manipulate the tables from an outside instance. I would like to get to the point in my education where I can develop financial applications for trading stocks and other securities. The week we learned how to control a database from a Python shell was the first time I had ever worked behind the scenes with an API. I was delighted to be able to perform simple operations on a database from an external application, as there is so much that can be done by combining different language’s functionalities. Learning how to create and control a cursor from IDLE, I started to see everything coming together, and the class began to move beyond the academic knowledge requirements into something that could be practical. I would love to take a class in a compiled programming language such as the C family and apply those skills to database manipulation as it relates to securities trading. Interpreted languages are great for learning how to program, but the professional algorithmic traders tend to use languages that are faster in their execution when milliseconds matter (QuarkGluon, n.d.).

**Summary**

I could go on for pages about all the things I learned in this class, but the main takeaway for me is that I enjoy this kind of work, and I think that I would like to make a career out of it someday. It takes a certain type of personality to be successful in the field of information technology. A person should be creative, curious, patient, motivated, and determined in order to succeed in this kind of work. This class taught me that there is a vast gulf between somebody who is good at SQL versus somebody who is great. Learning SQL can be frustrating at times when trying something new, but in my experience, it was always outmatched by satisfaction when I would get something to work.

References

MySQLTutorial. (2020). MySQL Data Types Overview. Retrieved January 5, 2020, from <https://www.mysqltutorial.org/basic-mysql-tutorial-aspx/mysql-data-types-aspx/>.

Oracle. (2020, January 3). MySQL Workbench. Retrieved January 5, 2020, from <https://downloads.mysql.com/docs/workbench-en.pdf>.

QuarkGluon. (n.d.). Best Programming Language for Algorithmic Trading Systems? Retrieved January 5, 2020, from <https://www.quantstart.com/articles/Best-Programming-Language-for-Algorithmic-Trading-Systems/>.