A. Co-op Work Assignment

I worked as part of the Engineering team at Sentrana on a research and development project regarding database sharding. My job was to research existing database sharding models and implement an application to distribute MySQL queries to database shards, aggregate and return the results. The goal of this project was not to develop a production-ready application or to set up a permanent sharding scheme, but to research the feasibility and performance of such a scheme so that it might be implemented fully in the future.

Database sharding is essentially a strategy for scalability that is utilized by many “big data” companies. Large databases, rather than (or in addition to) being housed on one huge server, are split amongst multiple smaller shards to allow for parallelization of query execution. Sharding can provide advantages in performance, maintainability, and cost-effectiveness, as parallelization speeds up query execution, and smaller databases are easier and cheaper to acquire and maintain.

Although I received direction and advice from my supervisors and met with the Engineering team every day to discuss progress, this project was entirely my own to complete. This presented some challenges, but also some advantages; although the work was entirely on my shoulders, I had control over the structure and specific content of the project and could set my own pace. Additionally, I gained valuable experience in teaching myself the basics of relational database management, MySQL, and C# and the .NET framework in which the project was implemented.

Upon arriving at Sentrana, I did go through a brief introductory period of about a week during which I met the leaders of the various departments and discussed the company’s history, its mission, and its general operation. I was given a crash-course in the company’s software products and the underlying data analytics, along with a brief introduction to SQL and relational database concepts. For reference, I was provided with multiple books on programming, the .NET framework, and MySQL.

B. Assessment of Learning and Development

The only direct relation of my work to my educational background so far is the programming and software design aspect. This project gave me valuable insight into how I might better design and implement future software projects, which will certainly come in handy in any upper-level CS courses, not to mention any future software engineering positions. Although I am still unsure of which particular field I would prefer to work in, good programming and software engineering practices will be beneficial in any field. Given the preponderance of data in the tech industry, the experience I gained in working with databases and SQL will no doubt be equally useful.
Probably the most significant thing I learned about working in a professional setting, particularly in engineering, is the importance of working with an interdisciplinary team. Although my particular project was more insular, everyone else on the Engineering team was constantly working or communicating with members of other teams, such as solutions architects and financial analysts. Being able to communicate clearly and effectively with non-engineers about engineering problems is an absolutely essential skill in almost any professional engineering environment, and Sentrana provided me with many opportunities to improve this skill.

Overall, working at Sentrana has made me a better software engineer and strengthened my affection for the (admittedly broad) field. Having interacted with my coworkers every day in an environment that was absolutely friendly and welcoming, I am confident that I will have no problems with the social aspect of working in a professional environment.

C. Life Outside of Co-op

Sentrana was generous enough to provide a fully furnished apartment near Dupont Circle, an exceedingly pleasant, vibrant, and safe area in downtown DC with plenty of restaurants and entertainment. The metro was very accessible from my apartment, only a five-minute walk, and the company headquarters were only one metro stop away.

Restaurants abound for any price range, and there are several places nearby for grocery shopping (Safeway, Whole Foods, CVS). There are also plenty of pastry and coffee shops around, and bars and clubs for those who are of age.

The Cornell in Washington Wolpe Center is also near Dupont Circle, about a ten-minute walk from the provided apartment. This was a godsend for me, as several friends of mine were doing CIW the same time as I did my co-op. Having friends nearby in a new city was awesome.

There are also, of course, all the monuments and museums to see, which you can probably knock out in a few Saturdays’ worth of exploration, and admission is free, which is great.

Sentrana also holds social events every so often, such as movie nights, happy hours, an annual holiday party, and in my experience, a brunch cruise. The company is full of young professionals, so these events are always a good time.

D. Evaluation

Overall, I am very happy about my choice to do my co-op with Sentrana. I gained a ton of software engineering experience, including learning two programming languages and several software platforms that were entirely new to me, and I had the privilege to work with and learn from a brilliant and friendly team of engineers.
The experience I have gained at Sentrana will be invaluable in my future engineering endeavors, and I can't wait to return in the summer. That said, I do wish that my work had been a bit more collaborative, as I would love to gain more experience working as part of a team on an engineering project. I discussed this with my supervisor, and we agreed that my next co-op term will have me working on production-level projects with the engineering team, and I can't wait.

E. Additional Info
   a. For athletes or workout buffs, Sentrana provides access to a gym at the concourse level of the building. I never used it, but I hear it's reasonably well equipped.
   b. Sentrana's kitchens are stocked with plenty of snacks and drinks, along with Keurig single-cup machines for coffee and tea.
   c. The rec center has a pool table and a ping pong table, and many in the staff make use of these daily. Expect to be challenged to a game!
   d. I was the only intern during the fall term, but there will likely be more over the summer.