**Professional Self-Assessment**

Completing my coursework in the Computer Science program and developing this ePortfolio has given me the opportunity to reflect on my growth as a software developer and data-driven problem solver. Over the course of the program, I have strengthened my ability to design maintainable systems, implement efficient algorithms, and manage complex datasets. This ePortfolio serves as both a showcase of those skills and a record of my professional development.

**Strengths and Growth**

I entered the program with a basic understanding of programming and database concepts. Through progressively challenging coursework, I developed the ability to work across the full stack—designing interfaces, building robust backends, and optimizing database queries. One of my key strengths is my ability to break down complex problems into smaller, manageable components. I consistently apply structured problem-solving, from gathering requirements to designing architecture, implementing solutions, and validating results.

The **Animal Shelter** project demonstrates this growth clearly. Originally a functional CRUD dashboard, I enhanced it into a more maintainable, secure, and scalable application by refactoring the architecture, introducing new algorithms, and optimizing the database layer. These changes reduced query latency, improved code quality, and expanded the analytical capabilities of the application.

**Collaboration and Communication**

Throughout the program, I worked in both individual and team settings, often collaborating remotely. I learned to communicate technical ideas clearly through documentation, diagrams, and demonstrations. I practiced adjusting my communication style depending on the audience—explaining implementation details to peers while focusing on outcomes and benefits when speaking with non-technical stakeholders.

The code review video in this portfolio is an example of that communication skill. It presents the state of the original application, outlines targeted enhancements, and explains why each change matters, without overloading the viewer with unnecessary technical details.

**Technical Skills**

**Software Design & Engineering:**  
I applied SOLID principles, layered architectures, and separation of concerns to improve maintainability. I implemented role-based access control, centralized input validation, and containerized deployment with Docker. I used automated testing and continuous integration pipelines to ensure code quality.

**Algorithms & Data Structures:**  
I implemented an adoptability scoring algorithm, a kennel assignment heuristic using a priority queue, and an LRU cache for repeated queries. These enhancements reduced query times and ensured the system could scale with larger datasets.

**Databases:**  
I strengthened the MongoDB schema with JSON Schema validation, added compound, text, and geospatial indexes, and built aggregation pipelines for analytics. I used explain() plans to verify index utilization and created backup and restore scripts to support data reliability.

**Security**

Security has been a recurring theme in my coursework and in this artifact. From secure input handling to role-based permissions and validation at the database level, I applied a layered approach to protecting application data and functionality.

**How the Artifact Fits the Portfolio**

This ePortfolio centers on the **Animal Shelter** project because it demonstrates my skills in all three core categories: software design, algorithms, and databases. Each enhancement reflects a measurable improvement—whether it’s faster response times, better data integrity, or clearer code structure. Together, these changes illustrate my ability to take an existing project, identify opportunities for improvement, and deliver tangible results.

**Professional Outlook**

This capstone experience has prepared me to enter the software engineering field with a portfolio that demonstrates both technical depth and professional communication. My goal is to work in a role that allows me to design secure, efficient, and scalable applications—whether in software engineering, data engineering, or full-stack development. I am confident that the skills demonstrated in this portfolio will help me deliver value from day one in a professional environment.