Victoria Johnson

CS499 Computer Science Capstone

**Narrative for Artifact 3: Databases (CS 340 - animal\_shelter.py)**

**Brief Description:** This Python-based artifact was developed in CS 340 as part of an animal shelter web app. It used MongoDB to manage animal records and lacked advanced queries or data visualization capabilities.

**Justification for Inclusion:** This artifact showcases my database design skills and experience with NoSQL systems. I selected it because it allowed me to demonstrate analytical querying, dashboard visualization, and transactional logic. The enhancements made this app more practical for real-world data management scenarios.

**Reflection on Enhancement:** I improved the original project by implementing aggregation pipelines, filtering, and visualization via Jupyter Notebook integration. This gave me experience working with large datasets and presenting insights visually. One of the challenges was ensuring transactional safety across asynchronous operations. I used exception handling and MongoDB transactions to address this. Instructor feedback helped refine the dashboard and clarify query outputs. This artifact supported outcomes related to database integration, data analysis, and full-stack development.