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CS 499 Milestone Four

### **Briefly describe the artifact. What is it? When was it created?**

The artifact is a script that creates a Jupyter Dashboard; the logic includes a set of database queries designed to retrieve records of rescued animals from a .csv spreadsheet. Each animal’s record is displayed in a table on the dashboard, including latitude and longitude data that is rendered on a geolocation map. Available animals are visualized in a pie chart. This artifact was created last term during the 340 Client Server course.

### **Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?**

I selected this artifact for my ePortfolio because it demonstrates my ability to design and optimize databases to meet complex data requirements. The artifact showcases my skills in advanced database design, optimization techniques, and efficient database query writing. The enhancement improved the artifact by adding a filter for animal age, which is crucial for focusing analysis on specific age groups. This improvement aligns with real-world needs where a rescue animal will be adopted based upon their age or development.

### **Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?**

Yes, I met the course objectives planned for Module One, specifically CO3: Design and optimize databases to support complex data requirements. The enhancement of adding age-based filtering options directly aligns with this objective. Currently, I have no updates to my outcome-coverage plans as the enhancement successfully met the intended goals.

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### **Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?**

Enhancing and modifying the artifact taught me the importance of considering geographic factors in database queries, especially for datasets with global operations. I learned how to implement efficient filtering techniques to focus on specific regions, which is crucial for targeted analysis. One of the challenges I faced was ensuring that the filtering enhancement for age did not impact the functionality or performance of the queries.

To overcome this, I used iterative development and incremental debugging to ensure the efficacy of the finished product, which involved:

-Using vectorized operations provided by pandas for filtering.

-Minimizing the number of times the DataFrame was modified within the function.

-Testing with different combinations of filter-type and age-group.

-Ensuring that the filtered data accurately reflected the selected criteria.

-Checking the performance to ensure that the dashboard remained responsive.

**Full** **detailed** **instructions** (**or a link to the running application**)

The .zip file submitted includes a .ipynb file containing the program, along with a .png file for the company logo and a .csv for the dataset; both external components are referenced within the program by their relative paths. All a user needs to do is run the .ipynb file to interact with the table’s radio buttons, and click the “Select” dropdown to utilize the filtering functionality.