Bryan Cortes

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For my database project, I chose to create a database system for the pet adoption center located within PetSmart Flatiron on 23rd Street owned by Muddy Paws Rescue NYC. To ensure the system effectively addressed the real-world needs of such an organization, I conducted an informative interview with Heather, who handles adoptions at this center. Heather provided invaluable insights into the daily operational needs, which significantly shaped the structure and functionality of my database. Through our conversation, Heather emphasized the importance of tracking detailed information about the pets available for adoption, including specifics such as species, breed, size, color, and medical records like vaccination and sterilization status. Accurate and accessible pet records are critical to match pets with suitable adopters effectively. Heather also stressed the importance of maintaining organized adopter information, including contact details, to facilitate smooth communication throughout the adoption process. With this feedback in mind, I structured my database around key entities: Pets, Species/Breed, Vaccinations, Sterilization, Adopters, Employees, and Adoptions. Each entity was clearly defined to capture comprehensive details:

- The **Pets** table tracks each animal's personal details and current availability status.
- The **Species/Breed** table serves as a reference to standardize pet categorization.
- The **Vaccinations** table records each pet's immunization history and future vaccination schedules.

- The **Sterilization** table maintains essential sterilization records, crucial for adoption processes.
- The **Adopters** table captures all relevant personal and contact information for adopters.
- The **Employees** table contains details of staff responsible for facilitating adoptions.
- The **Adoptions** table integrates the information from the other tables, recording each successful pet placement transaction.

One significant challenge in creating the database was accurately defining relationships and ensuring the integrity of foreign key constraints. Initially, mapping the connections between tables, especially ensuring each pet's unique ID linked correctly across multiple tables (Vaccinations, Sterilization, and Adoptions), proved complex. Another challenge was gathering realistic data to populate the database. Heather could not disclose specific adopter information due to privacy constraints. Therefore, I generated realistic, fictional data to simulate actual database usage effectively. This allowed me to test thoroughly the functionality and relationships within the database without compromising confidentiality.

Overall, creating this database provided practical experience in database design and implementation using Microsoft Access and MySQL. Through detailed discussions with Heather, careful consideration of operational needs, and thorough attention to data relationships and constraints, I successfully designed a functional and realistic pet adoption database system. This project not only refined my technical skills but also demonstrated the importance of understanding real-world requirements and user feedback in developing effective database solutions.