**IS 3063 Term Project Deliverable 1 Template**

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My project was not chosen

**Yellow Highlight is changes made in project 2**

**Light Purple Highlight is changes made in project three**

1. **Description of the business context and related data management problem(s).**

Animal Farm is an animal adoption agency that helps dogs, cats, and reptiles find their perfect home. The company currently uses isolated databases to store each type of animal. On top of this, they keep paper record adoptions. This process makes it very difficult to be able to track what type of pet was adopted over the years and additionally, the types of species adopted on a macro level.

For the Term Project, we would like to create a database application to help Animal Farm integrate its various data management systems and provide more cohesive data management. We will complete this by merging the different systems into one database management system. This system will be able to track.

1. **Business rules that define all the relationships among entities, the constraints, and the attribute domains (if any). Note that each relationship (i.e. each line in your ERD) requires 2 business rules (bi-directional), and each business rules should specify both the minimum and maximum cardinalities.**

Entity: Pet Parent

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** captures pet parent information | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **PetParentID** | 6-digit Numeric ID of each pet parent | PK | CHAR(6) |
| Parent Location | Parent Location (address, city, state, zipcode) |  | CHAR(500) |
| Date of Birth | Date of birth of pet parnet |  | DATE |
| Telephone | Phone number of pet parent | Unique, Not Null | INTEGER(10) |
| Pet Parent Name | Name of Pet Parent | Not null | CHAR(500) |

Entity: Adoption

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records an adoption transaction (weak entity) | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Adoption Transaction Number** | 5-digit Numeric ID of the adoption transaction | PK | CHAR(5) |
| **Pet Parent ID** | 6-digit Numeric ID of each pet parent | FK1 | CHAR(6) |
| **Pet ID** | 3-digit Numeric ID of the pet | FK 2 | CHAR(4) |
| Adoption Status | Filing of current stats |  | VARCAR |
| Adoption Date(month,date,year) | Date the adoption is finalized |  | DATE |

Entity: Pet – Superclass

Total specialization: a pet must be a dog, cat, or reptile

Disjoint Rule: A pet must be a dog. Cat, or reptile but cannot be both at the same time

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records pet in system | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Pet ID** | 3-digit Numeric ID of the pet | PK 1 | CHAR(4) |
| **Animal Branch Number** | 1-digit Numeric ID of animal branch location | FK1 | CHAR(2) |
| Color | Number of units purchased | Unique, Not Null | INTEGER |
| Size | Small Medium or Large | Not Null, >0 | DECIMAL(4,2) |

Entity: Dog- Subclass

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records dog pet type in system | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Pet ID** | 3-digit Numeric ID of the pet | PK/FK | CHAR(4) |
| Breed | Description of dog breed |  | VARCHAR |
| Weight | Weight of dog | Not Null, >0 | INTEGER |
| ~~Color~~ | ~~Color of the dog~~ |  | ~~VARCHAR~~ |

Entity: Cat- Subclass

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records cat pet type in system | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Pet ID** | 3-digit Numeric ID of the pet | PK/FK | CHAR(4) |
| Breed | Description of cat breed |  | VARCHAR |
| Weight | Weight of cat | Not Null, >0 | INTEGER |
| ~~Color~~ | ~~Color of the cat~~ |  | ~~VARCHAR~~ |

Entity: Reptile- Subclass

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records reptile pet type in system | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Pet ID** | 3-digit Numeric ID of the pet | PK / FK | CHAR(4) |
| Species | Description of reptile |  | VARCHAR |
| ~~Color~~ | ~~Color of the reptile~~ |  | ~~VARCHAR~~ |

Entity: Animal Branch

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** has information on where pets live before adoption | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Animal Branch Number** | 1-digit Numeric ID of animal branch location | PK | CHAR(2) |
| Branch Phone Number | Phone number of branch | Unique, Not Null | INTEGER(10) |
| Animal Branch Location | Location of branch (address, city, state, zip) | Not Null, >0 | CHAR(500) |

Entity: Volunteer

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records information on volunteer | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Animal Branch Number** | 1-digit Numeric ID of animal branch location | FK1 | CHAR(2) |
| **Volunteer ID Number** | 3-digit ID of volunteer | PK1, FK1 | CHAR(4) |
| Active | Whether this volunteer is active | Default value: Yes | BOOLEAN |
| Telephone | Phone number of volunteer | Unique, Not Null | INTEGER(10) |
| Start Date | First day to volunteer |  | DATE |
| Volunteer Name | Name of Pet Volunteer | Not null | CHAR(500) |
| **SupervisorID** | 3-digit ID of volunteer | FK2 |

Entity: Skills

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** records information on animal skills | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Skills ID** | 3-digit Numeric ID of the skill | PK2, FK2 | CHAR(4) |
| Skills name | Name defining the skill |  | VARCHAR2(40) |
| Skills description | Description defining the skill |  | VARCHAR2(40) |
| Skills type | Type of skill |  | VARCHAR2(40) |

Entity: Animals skills certification (weak entity)

|  |  |  |  |
| --- | --- | --- | --- |
| **Description:** rewards the animal skill to the pet | | | |
| **Attribute** | **Description** | **Constraints** | **Data Type** |
| **Pet ID** | 3-digit Numeric ID of the pet | PK1, FK1 | CHAR(4) |
| **Skills ID** | 3-digit Numeric ID of the skill | PK2, FK2 | CHAR(4) |
| Certification Date | Date pet is awarded skills certificate |  | DATE |

**ERD.**

Graphical user interface

Description automatically generated

Relationships:

1. Pet Parent – Adoption: 1:M, a pet parent can adopt 0 pets or multiple pets, and pets can be adopted by one and only one parent.
2. Adoption – Pet: 1:1, each adoption must consist with one pet, and each pet must belong to one and only one adoption.
3. Pet – Animal skills certification: 1:M, a pet can have 0 certification or multiple certifications, and certification must award by one and only one pet.
4. Skills - Animal skills certification: 1:M, each skill may appear in multiple certification date in the certification table, each certifications contain one and only one skill. ***Constraint***: a skill cannot appear in in multiple certifications date of the same certification.
5. Animal Branch – Volunteer:1:M, each branch may consist of multiple volunteers, and each volunteer must belong to one and only one branch.
6. Animal Branch – Pet: 1:M, each branch may consist of multiple pets, and each pet must belong to one and only one branch.
7. Pet – Dog: Supertype: subtype, Generalization, each dog has different ID, breed, weight, and color.
8. Pet – Cat: Supertype: subtype, Generalization, each cat has different ID, breed, weight, and color.
9. Pet – Reptile: Supertype: subtype, Generalization, each reptile has different ID, color, and species.
10. Volunteer- Unary, Volunteer (Supervisor)

**A summary of the functionality of the application (i.e. what the users can do with this application, future extension/integration with other systems etc.).**

This new DBMS will allow organization to keep track of the details of different kinds of pets within the facility, as well as their availability. It will also update the branch information and adoption process. It will also allow users to search the database to derive useful business information. For example, a user can search the DBMS to find out which pet type contribute the most adoption, which branch has the greatest number of volunteers, what are the preferences of customers from different branch, as well as what skills do pet parents like for a pet to know? This table will also be able to reflect to distinguish managing volunteers. For pets, there is a constraint In the future, we can also connect this DBMS with a process monitoring system to provide customers timelier update of the adoption status of the pet they like. The DSMS can also allow users to visualize the graphical relationship between two different entities, given an easier time for user to understand how geo-location diverse different types can of animal be adopted most, which can lead to an improvement on organization’s data access and decision making. Also creating an easier data sharing and security environment.

CHANGES: (I am tracking changes for each of these once I make so grader can see)

1. The PK of the subtypes should also serve as FK.
   1. Added FK
2. The two constraints for subtypes should be labeled on ERD and described in the business rules section.
   1. Complete

3) The Unary relationship in Volunteer is missing the FK

1. Added FK

4) The subtypes should not contain common attributes (i.e. attributes that have already been included in supertype - e.g. "color").

1. Removed

NEW SECTION: Functionality Requirements

Requirements for reference:

1) The 10 functionalities should cover all entities in your ERD (with the exception that only one of the subtypes needs to be covered). In other words, there should be no entities that are not involved in any proposed functionality.

Skills, Animal Skills certificate, Pet

2) At least 5 functionalities should involve more than one entity (Example: show the total number of the products supplied by customer X) - this functionality involves at least the Product and Customer entities).

+2

3)At least 2 functionalities should involve more than two entities (Example: Show the most profitable product purchased by customers from Florida - this functionality involves at least the Orderline, Order, and Customer entities).

+2

4)At least 5 functionalities should involve the use of mathematical functions such as Sum, AVG, Min, Max.

5) At least 2 functionalities should involve the "Group By" feature (Example: Display the average prices of the products supplied by each vendor).

6) At least 1 functionality should involve the use of the Count feature (Example: Count the number of vendors who have supplied more than one product).

7) At least 1 functionality should involve the entity that exhibits the unary relationship (i.e. a self-join is needed).

8) At least 1 functionality should involve both the supertype and one of the subtypes.

1) Group Pet Parents by Adoption status

(references requirements 2&5)

2) Display the average weight of cat

(references requirement 3&4)

3) Display all animal breeds/species pending adoption

4) Display the average weight of dog

(references requirement 4)

5) Display the different breeds of dogs

(References requirement 5&8)

6) Count the number of pet parents that live in Sacramento

(references requirements 2 & 6)

7) Count the number of pet parents that live in Austin

(references requirements 2 & 6)

8) Display the species of adopted reptiles

(References requirement 2&4)

9) What Volunteer Manager (volunteer ID number) has a start date in 2020

(References requirement 7)

10) What is the sum of all of the telephone numbers of the volunteers?

(references requirement 4)

11) What is the sum of all of the telephone numbers of the volunteers that have a start date of 7/7/2020? (references requirement 2&4)

Project 2 Feeback:

The volunteer table should have 2 FKs, one should be supervisorID (currently missing). This unary relationships should also be reflected in the Acces file by having anothe copy of the table connect to itself (similar to how it was done in HW3).

Actually complete 😊

The two constraints for subtypes should be labeled on ERD and described in the business rules section.

Complete

The subtypes were not connected to the supertype in the Access file.

Actually complete 😊

Also, after utilizing access and researching the capabilities there were some changes made to our questions. Any questions that were changed were highlighted in purple. This is to successfully complete queries via Microsoft Access capabilities + still meet the requirements defined above.