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CS355

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Animal Shelter Database

This database is for an animal shelter to store and track information about the animals and staff. It must track different attributes for the animals like their breed, name, vaccination status, health history and other information. The database also tracks the staff and the relationship the staff and animals have together. The database needs to track when animals are scheduled for different activities and the staff members that are assigned to the activity. It also keeps track of the staff’s hours in a log and records the amounts of hours worked each day for each staff member. The staff members can also be volunteered which is a derived attribute based on the salary of the staff member, which is 0 for volunteers. Animals and Staff are represented by strong attributes whereas the animal history, animal features, and staff log are weak attributes with the staff and animal id’s acting as the respective foreign keys.

Entity Relational Diagram

Relational Schema



**Table Descriptions**

**Table 1: animals**

Purpose: Track animals through the database

Attributes: animal\_id, animal\_name, breed, adoption\_status, d\_o\_b

Keys: animal\_id(PK)

CREATE TABLE animals

(animal\_id smallint NOT NULL AUTO\_INCREMENT PRIMARY KEY,

animal\_name varchar(20),

breed varchar(50),

adoption\_status varchar(20),

d\_o\_b date

);

mysql> SELECT \* FROM animals;

+-----------+-------------+-----------------------------------+-----------------+------------+

| animal\_id | animal\_name | breed | adoption\_status | d\_o\_b |

+-----------+-------------+-----------------------------------+-----------------+------------+

| 1 | Kaya | black lab pit mix | adopted | 2017-09-18 |

| 2 | Wyatt | rhodesian ridgeback| adopted | 2010-05-23 |

| 3 | Jake | golden rtriever | in-shelter | 2014-12-03 |

| 4 | Sam | presa canario | adopted | 2020-05-03 |

| 5 | Spot | border collie german shepherd mix | in-trial | 2021-10-22 |

+-----------+-------------+-----------------------------------+-----------------+------------+

**Table 2: animal\_history**

Purpose: Track the animal vaccination history

Attributes: animal\_id, vaccination\_status

Keys: animal\_id(FK) references animals

CREATE TABLE animal\_history

(animal\_id smallint,

vaccination\_status char(1),

FOREIGN KEY(animal\_id)

REFERENCES animals(animal\_id)

ON DELETE CASCADE

);

mysql> SELECT \* from animal\_history;

+-----------+--------------------+

| animal\_id | vaccination\_status |

+-----------+--------------------+

| 1 | y |

| 2 | n |

| 3 | y |

| 4 | y |

| 5 | n |

+-----------+--------------------+

**Table 3: animal\_health\_history**

Purpose: Track health problems the animal has had

Attributes: animal\_id, health\_problems

Keys: animal\_id(FK) references animals

CREATE TABLE animal\_health\_history

(animal\_id smallint,

FOREIGN KEY(animal\_id)

REFERENCES animals(animal\_id)

ON DELETE CASCADE,

health\_problems varchar(200)

);

+-----------+-------------------------------------------+

| animal\_id | health\_problems |

+-----------+-------------------------------------------+

| 1 | None |

| 2 | Suffers from stomach cramps. |

| 3 | Lethargic and has arthritis. |

| 4 | None |

| 5 | Propensity for rashes and irritated skin. |

+-----------+-------------------------------------------+

**Table 4: animal\_behavior\_history**

Purpose: Track behavior problems the animal has had

Attributes: animal\_id, behavior\_problems

Keys: animal\_id(FK) references animals

CREATE TABLE animal\_behavior\_history

(animal\_id smallint,

FOREIGN KEY(animal\_id)

REFERENCES animals(animal\_id)

ON DELETE CASCADE,

behavior\_problems varchar(200)

);

+-----------+--------------------------------------------+

| animal\_id | behavior\_problems |

+-----------+--------------------------------------------+

| 1 | Very energetic and propensity to jump. |

| 2 | Very mellow and well natured. |

| 3 | Barks often, but is friendly. |

| 4 | None |

| 5 | A bit hard to handle, needs space to roam. |

+-----------+--------------------------------------------+

**Table 5: animal\_features**

Purpose: Track different features about the animal

Attributes: animal\_id, fur\_color, eye\_color

Keys: animal\_id(FK) references animals

CREATE TABLE animal\_features

(animal\_id smallint,

FOREIGN KEY(animal\_id)

REFERENCES animals(animal\_id)

ON DELETE CASCADE,

fur\_color varchar(20),

eye\_color varchar(20)

);

mysql> SELECT \* FROM animal\_features;

+-----------+-----------+-----------+

| animal\_id | fur\_color | eye\_color |

+-----------+-----------+-----------+

| 1 | black | brown |

| 2 | brown | brown |

| 3 | gold | blue |

| 4 | tan | brown |

| 5 | marbled | black |

+-----------+-----------+-----------+

**Table 6: staff**

Purpose: Track the staff throughout the database

Attributes: staff\_id, first\_name, last\_name, email, job\_title, salary, volunteer(derived)

Keys: staff\_id(PK)

CREATE TABLE staff

(staff\_id smallint NOT NULL AUTO\_INCREMENT PRIMARY KEY,

first\_name varchar(20),

last\_name varchar(20),

email varchar(30) UNIQUE,

job\_title varchar(50),

salary mediumint,

volunteer varchar(1)

GENERATED ALWAYS AS

(CASE WHEN salary = 0 THEN

'y'

WHEN salary != 0 THEN

'n'

END )

);

mysql> SELECT \* FROM staff;

+----------+------------+-----------+----------------------+------------------------+--------+-----------+

| staff\_id | first\_name | last\_name | email | job\_title | salary | volunteer |

+----------+------------+-----------+----------------------+------------------------+--------+-----------+

| 1 | Robert | Smith | rsmith@gmail.com | Head Veterinarian | 75000 | n |

| 2 | Tim | Lee | tlvet@vets.com | Assistant Veterinarian | 50000 | n |

| 3 | Rachael | Jones | rachael123@yahoo.com | None | 0 | y |

| 4 | Sarah | Davis | sdavis@gmail.com | Secretary | 45000 | n |

| 5 | Sam | Brown | sambrown@yahoo.com | None | 0 | y |

+----------+------------+-----------+----------------------+------------------------+--------+-----------+

**Table 7: staff\_log**

Purpose: Tracks the staff’s hours

Attributes: staff\_id, hours\_worked, scheduled\_date

Keys: staff\_id(FK) references staff

CREATE TABLE staff\_log

(staff\_id smallint,

hours\_worked tinyint,

scheduled\_date date,

FOREIGN KEY(staff\_id)

REFERENCES staff(staff\_id)

ON DELETE CASCADE

);

mysql> SELECT \* FROM staff\_log;

+----------+--------------+----------------+

| staff\_id | hours\_worked | scheduled\_date |

+----------+--------------+----------------+

| 1 | 6 | 2021-10-10 |

| 2 | 8 | 2021-10-17 |

| 3 | 4 | 2021-10-12 |

| 4 | 7 | 2021-10-07 |

| 5 | 6 | 2021-11-22 |

| 5 | 10 | 2021-10-22 |

+----------+--------------+----------------+

**Table 8: staff\_animal\_care\_schedule**

Purpose: Tracks the animal’s activity schedule and the staff who administer the activites.

Attributes: staff\_id, animal\_id, activity, date\_time, duration

Keys: staff\_id(FK) references staff, animal\_id(FK) references animals

CREATE TABLE staff\_animal\_care\_schedule

(staff\_id smallint,

animal\_id smallint,

activity varchar(100),

date\_time datetime,

duration tinyint,

FOREIGN KEY(staff\_id)

REFERENCES staff(staff\_id)

ON DELETE CASCADE,

FOREIGN KEY(animal\_id)

REFERENCES animals(animal\_id)

ON DELETE CASCADE

);

mysql> SELECT \* FROM staff\_animal\_care\_schedule;

+----------+-----------+--------------------------------------+---------------------+----------+

| staff\_id | animal\_id | activity | date\_time | duration |

+----------+-----------+--------------------------------------+---------------------+----------+

| 1 | 2 | checkup | 2021-10-29 10:30:00 | 1 |

| 2 | 2 | nail trimming, cleaning, and checkup | 2021-10-12 13:00:00 | 2 |

| 3 | 1 | walk | 2021-10-29 16:00:00 | 2 |

| 2 | 4 | tooth cleaning | 2021-11-12 15:15:00 | 1 |

| 5 | 5 | walk | 2021-11-18 09:00:00 | 1 |

+----------+-----------+--------------------------------------+---------------------+----------+

**Queries, Views, Functions, Procedures**

**Function**

Purpose: Return the full name of an employee by combining their first and last name based on the given employee\_id.

DROP FUNCTION IF EXISTS find\_name;

DELIMITER $$

CREATE FUNCTION find\_name(staff\_id smallint)

RETURNS varchar(200)

DETERMINISTIC

BEGIN

return

(SELECT

CONCAT(first\_name," ",last\_name)

FROM

staff where staff\_id = staff\_id

LIMIT 1);

END $$

DELIMITER ;

mysql> SELECT find\_name(3) FROM staff LIMIT 1;

+--------------+

| find\_name(3) |

+--------------+

| Robert Smith |

+--------------+

**Procedure**

Purpose: Find animals with a specific fur color.

DROP PROCEDURE IF EXISTS find\_color;

DELIMITER $$

CREATE PROCEDURE find\_color

(fur\_color varchar(20))

BEGIN

SELECT

features.animal\_id AS "Animal ID",

animal.animal\_name AS "Name"

FROM

animal\_features features

JOIN animals animal

ON features.animal\_id = animal.animal\_id

WHERE features.fur\_color = fur\_color;

END $$

DELIMITER ;

mysql> CALL find\_color('brown');

+-----------+-------+

| Animal ID | Name |

+-----------+-------+

| 2 | Wyatt |

+-----------+-------+

1 row in set (0.00 sec)

**View**

Purpose: Returns a view with animals name and the number of appointments they have currently scheduled.

DROP VIEW IF EXISTS number\_of\_appointments;

CREATE VIEW number\_of\_appointments

AS

SELECT

schedule.animal\_id AS "Animal ID",

COUNT(\*) AS Count,

animal.animal\_name AS "Name"

FROM

staff\_animal\_care\_schedule schedule

JOIN animals animal

ON

schedule.animal\_id = animal.animal\_id

GROUP BY

schedule.animal\_id;

mysql> SELECT \* FROM number\_of\_appointments;

+-----------+-------+-------+

| Animal ID | Count | Name |

+-----------+-------+-------+

| 1 | 1 | Kaya |

| 2 | 2 | Wyatt |

| 4 | 1 | Sam |

| 5 | 1 | Spot |

+-----------+-------+-------+

**Query 1.**

Purpose: Selects the ID’s of animals that have no behavioral or no mental health problems.

SELECT

animal\_id,

behavior\_problems

FROM animal\_behavior\_history

WHERE behavior\_problems = 'None'

UNION

SELECT animal\_id,

health\_problems

FROM animal\_health\_history

WHERE health\_problems = 'None';

+-----------+----------+

| animal\_id | Problems |

+-----------+----------+

| 4 | None |

| 1 | None |

+-----------+----------+

**Query 2.**

Purpose: Selects the ID, name, eye color, and fur color of any Rhodesian Ridgeback with brown eyes.

SELECT

animal.animal\_id,

animal.animal\_name as Name,

feature.eye\_color as "Eye Color",

feature.fur\_color as "Fur Color"

FROM animals animal

JOIN animal\_features feature

ON

animal.animal\_id = feature.animal\_id

WHERE

animal.breed = "rhodesian ridgeback"

AND

feature.eye\_color = "brown";

+-----------+-------+-----------+-----------+

| animal\_id | Name | Eye Color | Fur Color |

+-----------+-------+-----------+-----------+

| 2 | Wyatt | brown | brown |

+-----------+-------+-----------+-----------+

**Query 3.**

Purpose: Finds the number of unique fur colors in the database.

SELECT

COUNT(DISTINCT fur\_color) AS "Unique Fur Colors"

FROM animal\_features;

+-------------------+

| Unique Fur Colors |

+-------------------+

| 5 |

+-------------------+

**Query 4.**

Purpose: Find staff who are currently not scheduled.

SELECT

staff.staff\_id AS "ID’s of Unscheduled Staff"

FROM staff staff

LEFT JOIN staff\_animal\_care\_schedule schedule

ON

staff.staff\_id = schedule.staff\_id

WHERE

schedule.staff\_id IS null;

+-------------------+

| ID’s of Unscheduled Staff |

+-------------------+

| 4 |

+-------------------+

**Query 5.**

Purpose: Find the last name, salary, and hours worked for staff members.

SELECT

staff.staff\_id,

staff.last\_name,

staff.salary,

log.hours\_worked

FROM staff

LEFT JOIN

staff\_log log

ON

staff.staff\_id = log.staff\_id

WHERE staff.staff\_id IN (

SELECT staff\_id FROM staff\_animal\_care\_schedule

);

+----------+-----------+--------+--------------+

| staff\_id | last\_name | salary | hours\_worked |

+----------+-----------+--------+--------------+

| 1 | Smith | 75000 | 6 |

| 2 | Lee | 50000 | 8 |

| 3 | Jones | 0 | 4 |

| 5 | Brown | 0 | 6 |

| 5 | Brown | 0 | 10 |

+----------+-----------+--------+--------------+

**Query 6.**

Purpose: Find the names of volunteers.

SELECT

staff\_id,

last\_name,

salary

FROM staff

GROUP BY staff\_id

HAVING salary = 0;

+----------+-----------+--------+

| staff\_id | last\_name | salary |

+----------+-----------+--------+

| 3 | Jones | 0 |

| 5 | Brown | 0 |

+----------+-----------+--------+

**Query 7.**

Purpose: Find animals that have any cleaning activity two hours in length.

SELECT

animal\_id,

animal\_name

FROM animals

WHERE EXISTS

(SELECT

animal\_id,

duration

FROM staff\_animal\_care\_schedule

WHERE staff\_animal\_care\_schedule.animal\_id = animals.animal\_id

AND activity LIKE '%clean%'

AND duration = 2

);

+-----------+-------------+

| animal\_id | animal\_name |

+-----------+-------------+

| 2 | Wyatt |

+-----------+-------------+

**Update**

Purpose: Update an animal’s status to adopted.

UPDATE animals

SET adoption\_status = 'adopted'

WHERE animal\_id = 3;

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0