CSC 315 - Database Systems

Group 13: Brielle Damiani, Elizabeth Burns, Noverah Adeen

# Final Project Report - Progeny Report

Stake Holder Topic: Progeny Report

Additional Research Topic: Optimal Birthdate

**Introduction:**

Silvies Valley Ranch is dedicated to the widespread of American Range Goats across farms, recognizing their superior sustainability as food sources compared to cows, which contribute to environmental degradation. As pioneers in American Range Goat development, Silvies Valley Ranch has partnered with Professor John Degood's Databases class to create a comprehensive database facilitating the discovery of optimal goat breeding practices. This collaborative effort addresses two research objectives: the creation of a progeny report, as requested by Silvies Valley Ranch, and the investigation of the ideal birth date for goats. Both endeavors are aimed at empowering Silvies Valley Ranch to more effectively discern optimal breeding techniques for their American Range Goats initiative.

**Research Questions:**

Questions being addressed by our Progeny Report research

- How is the weight of the goat correlated to its bloodline?
- Is there a pattern in birth, sale, winter and weaning weight throughout each bloodline of goats? (Want to be able to easily view all information about a goat and its sire, dam, and weight data.)

Questions Being Answered by our Optimal Date of Birth research

- What is the best month/week for a goat to be born?

- Are there more multiple births in specific months/days?
- Are there more stillbirths in specific months/days?

**Relevant Data:**

For Topic 1: Progeny Report

- EID Tag #
- Visual Tag #
- Date of Birth
- Dam
- Sire
- How Many Kids Did Each Female Have
- Birth Weight
- Weaning Weight
- Winter Weight
- Sale Weight

Additional Research Topic: Optimal Date of Birth

- Birth weight, (average litter weight)
- Date of birth
- Number of stillborns (DWOT, DOA)
- Any data on multiple births (twins, triplets, etc)

**Real-World Application**

The progeny report by dam, without having to look up one goat at a time, would allow for easier lineage tracking and organization. This would be important to optimize data searches and allow stakeholders to keep track of any ancestrally inherited traits or defects that may occur. Since the health, wellbeing, and development of the goats are key factors in the success of the goats, an ancestral perspective provides information and insight on improving and maintaining the quality of the farm goats. Thus many questions can be investigated and answered. For example, finding the optimal time for kids to be born will help breeders know the best time to breed their goats for the healthiest kids, and finding out the optimal bloodline of goat will allow the breeders to more easily breed the optimal goat that will perform most successfully, quantified by the weight at different milestones of the goats life.

**Impacts on Sustainability:**

Implementation of the above would increase the efficiency of goat-related resource management. Identification of the most ideal birth data would aid in breeding goats that are healthy and undergo consistent and exceptional development. This would not only decrease the need for resources and health accommodations for weaker goats, but increase the sale number of goats. Over all, a greater sale-standard population will popularize the American Range Goat and increase the scale of business and customer scope.

**Methodology:**

Use Case: Filter by Date of Birth

1. User selects Filter by DOB.
2. System prompts the user for a date.
3. User inputs a valid date.

4. System displays all entities with a DOB matching the user input in step 3.

3.a. The date is invalid.

1. System tells the user the date is invalid.
2. The use case continues at step 2.

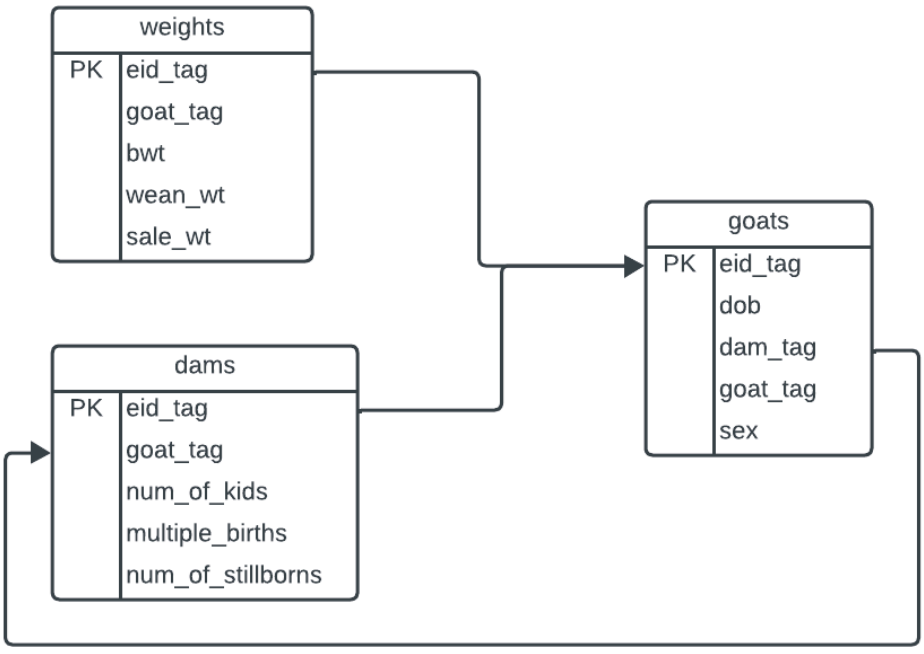
4.a. There are no entities with a DOB matching the user input in step 3.

1. The system tells the user there are no entities with the input DOB.
2. The use case continues at step 2.

Formulas and Rules

Valid Date: A date is valid if the month input is an integer between 1 and 12, the day is an integer between 1 and 31, and the year is a 4 digit whole number, in the format year-month-day.

Database Model



**Database Design Reasoning**

- The eid_tag values of both weights and dams reference the eid_tag of goats to keep track of individual goats.
- To represent a Progeny Report of the goat population, the entities goats and dams are connected through the goats dam_tag value referencing a dams goat_tag value, which serves as a representation of a goat's lineage. This allows for all of a dam's kids to be found at once by looking for goats with the same dam_tag value.
- In order to determine the optimal birth period of the dam, the entities goats, dams, and weight, were represented to organize the data in an efficient manner. For example, weights was made an entity to allow different operations to be executed on the different weight categories.

**Benefits of Completed Project**

- Contains queries used to generate a Progeny Report for each dam, as well as additional filters regarding sires and number of kids:
    - Find all the kids belonging to a specific Dam
    - Find all the kids belonging to a specific Sire
    - See Dam Information based on Number of Kids
- Contains queries used to generate information regarding Optimal Birthdate:
    - See goat information for goats born on a specific day
    - See Goats born between Specified Dates
    - See Goat Stats for Specific Days of the Year

These queries can be used to investigate the previously proposed research questions, as weight data is included in the results of the Progeny Report queries, and statistics regarding birthdates and weights can be found as results of the Optimal Birthdate queries.

**User Interface**

Group 13 utilized the Flask template provided and added additional HTML / CSS code to make the experience more appealing to the user. There are several queries with several input boxes so the user can interact with the database. There is also a checkbox feature on multiple queries so the user can chose certain aspects of the data they will see.