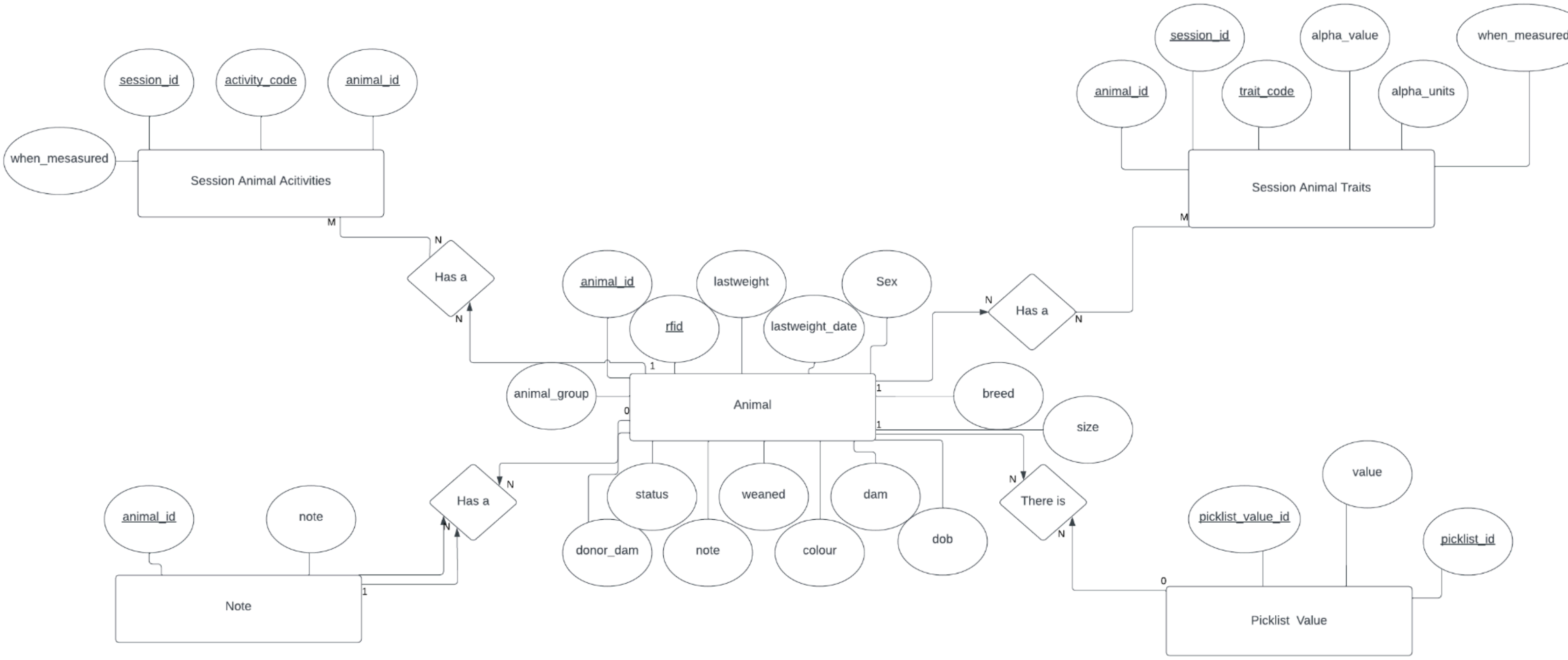
ER Diagram Goat Database



Relational Schema

Animal

animal_id	rfid	last_weight	last_weight_date	sex	status	donor_dam	note	weaned	colour	breed	sire	DOB	dam	animal_group

Session Animal Acitivities

session_id	animal_id	activity_code	when_measured

Session Animal Traits

session_id	animal_id	trait_code	alpha_value	alpha_unit	when_measured

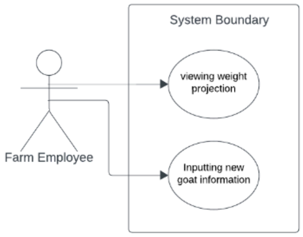
Picklist Value

picklist_id	picklistvalue_id	value

Note

animal_id	note

UML Use case diagram



Use Case: Viewing weight Projection:

1. System prompts users to enter the KEY of the specific baby goat.
2. User enters the specific KEY of the baby goat.
3. System validates to check if the goat is in the database.
   3.a. Baby goat was not found.
   1. *The use case jumps back to step 1.*

   3.b. Invalid KEY for baby goat.
   1. *The use case jumps back to step 1.*
4. User confirms baby goat selection.
5. Baby goat weight projections are displayed.
6. Actor is prompted back to step 1 of use case.

Use case: Inputting new Goat Information

1. Actor is prompted to input OR reinput goat information.
2. The Actor input the new goat information.
3. The system validates input selection.
   3.a. User input doesn't match up with inputted data type
   1. *Error message prompted to Actor.*
   2. *Invalid section cleared from input selection.*
   3. *The use case repeats at step 1.*

   3.b. Invalid bounds entered in input selection.
   1. *Error message prompted to Actor.*
   2. *Invalid section cleared from input selection.*
   3. *The use case repeats at step 1.*

4. Actor confirms input and confirms selection.
   4.a System displayed incorrect selection.
   1. *Actor is prompted to edit selection(s).*
   2. *The use case repeats at step 1.*

5. Goat is successfully updated in the database.
6. Use case jumps back to step 1.

Estimates:

The intial size of our database according to the formula provided will be around 2.5 million records

We expect to have an estimate of 5 types of searches:

1) Give all the weight records for a goat
2) Give a specific weight for a goat
3) Find the average weight for a specific sex/age/breed of goat
4)Give specific traits for a goat (including whom it's dam and sire were)
5) Give traits and specific traits for a specific goat

We expect these searches to take from 1-5 queries

Our database is designed to center the ‘Animal’ entity. There are 4 other entities that relate to ‘Animal’. The ‘Note’ entity stores information that is noted about an animal. They are liked with the foreign key of ‘animal_id’. The ‘Session Animal Activity’ and ‘Session Animal Trait’ entities function very similarly. They store either an activity session or trait session. An activity can be many things: breeding, death, sale, farm movement, etc. A trait can also be many things: color, breed, vigor score, weight, etc. They are also both linked to the ‘Animal’ entity using the foreign key ‘animal_id’. Animals can have trait or activity sessions when things about them become known/are changed. PickList Value is an entity that assigns every trait to a specific number, that way we may perform alterations such as “Change animal_id: 8009’s trait# 353 to be 11”. This alteration required the Picklist be referenced as the database must see what trait value is associated with 353 (it is birth weight), and then change the birth weight of the animal to be 11. In our database, certain attributes were not included. The reason why we did not include these attributes is because they are not relevant to our project proposals: Mapping and predicting goat weight overtime and studying goat family trees to find desired traits. If the attributes did not aid this in any way, we did not include them in our database. From our database, we will be able to get the data we need to predict goat weights overtime, and this can be used as a control group for the farmer to compare underperforming goats against. By strengthening the herd, the farmers can further contribute to the climate benefits that goats.