Preliminary Constraints

1. An account can be a PCS administrator or a typical user, but not both (Overlapping not satisfied)
2. An account has to be a PCS administrator or a typical user (Covering satisfied)
3. A user can be a pet owner and caretaker at the same time
4. All accounts are uniquely identified by their account ID
5. For users, their name and credit card serial number should be recorded
6. A pet owner may own 0 or more pets, but each pet must have only 1 owner. If the owner's profile is deleted, there is no need to keep track of the pet owned by that owner anymore.
7. For each pet, it can be identified by its pet ID and the category should be recorded.
8. A pet can have multiple special requirements.
9. Each caretaker can advertise their availability and pricing for some pet type.
10. Each pricing specifies the daily price for a particular pet category. A pricing entry can be identified by the caretaker ID and the pet category.
11. Each availability should record the caretaker ID, date, the kind of pet and how many pets (of that kind) can be cared for on the date. Each entry can be identified by the caretaker ID, date as well as the kind of pet.
12. Each pet owner can place bids on what the caretaker has advertised.
13. Each bid can be identified by the listing ID, pet ID and pet owner ID and should record the bid price.
14. A bid can be either a successful bid or rejected bid, but not both at the same time.
15. The successful bid should record the pet transfer method, payment method, card serial number (if using credit card) and transacted amount.
16. The accepted bid can include a review (and rating) given by the pet owner who placed the bid, for the caretaker who accepted the bid.
17. Reviews are available to be read by all users.
18. Each review can be identified by the Listing ID, and has comments and a rating.
19. All reviews must belong to some caretaker. If the caretaker is deleted, then there is no need to keep track of the reviews for that caretaker anymore.
20. Each caretaker must be either full-time or part-time. They cannot be both at the same time.
21. Each full-time caretaker must have exactly one full-time work schedule.
22. The schedule can be identified by the full-time caretaker ID and should record the 2 start dates and 2 end dates (since each full timer must work 2 x 150 consecutive days.)
23. Each full-time caretaker can apply for leaves.
24. Each leave can be identified by the full-time caretaker ID and should record the start and end dates of that leave period.
25. Each full-time caretaker earns a (full-time) monthly salary.
26. A full-time salary entry can be identified by the full-time caretaker ID and the date (mm/yy), and should record the number of pet days accumulated by the caretaker and the amount payable to the caretaker for that month.

27. Each part-time caretaker can specify their availability for the next 2 years.
28. A part-time availability schedule entry can be identified by the part-time caretaker ID and the date on which the caretaker is available.
29. Each part-time caretaker salary is calculated on a per-day basis, and the amount payable for that day is determined by the sum of all stated prices of accepted bids for that day.
30. A part time salary entry is uniquely identified by the Listing ID.
31. Each PCS administrator may specify the guidelines that provide the daily base price for a pet type.
32. The guidelines can be identified by the pet type and should record the base daily price of the pet type.

Are there any constraints that our ER diagram cannot capture?
1. A part-timer cannot take care of more than 2 pets unless they have a good rating
2. Any caretaker can take care of at most 5 pets.
3. A full-time CareTaker will receive a salary of $3000 per month for up to 60 pet-days. For any excess pet-day, they will receive 80% of their price as bonus. For part-time CareTaker, the PCS will take 25% of their price as payment (i.e., the CareTaker receives 75% of their stated price).
4. A full time caretaker is treated as available until they apply for leave.
5. A full-time caretaker cannot apply for leave if there is at least 1 pet under their care.
6. A caretaker cannot bid for taking care of his/her own pet.

Justification for Serial type
1. Pet ID: It is possible that the same pet owner registers two pets that are of exactly the same type and have the same special requirements at the same time. Thus, the Pet ID is necessary to distinguish between the two.
2. Listing ID: It is used to simplify the primary keys referenced by the "advertised service" relationship.
3. Account ID: username as account ID. Caretaker ID = account ID and Pet Owner ID = account ID. When we use a caretaker ID or pet owner ID, it is to show that the ID comes from the caretaker or pet owner.