CS2102 Database Systems

Project Preliminary Report

Group 21 - Team Members

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Our Project Idea

Company and Mission	Singapore Pet Caring Association (SPCA) Our mission is to provide reliable, trustworthy, professional, peace of mind and ultimate tender loving care for your pet. At SPCA, we pride ourselves in providing loving, safe, high-quality, peace of mind and most of reliable pet care for your precious pets
Application Name	Pet Caring Service (PCS)
Users	1. Pet Owner 2. Caretaker 3. PCS Administrator
Key Functionalities of Application	• Rating System • Recording of Transactions • Tracking the performances of SPCA Employees • Computing SPCA salaries

PCS Preliminary Constraints

(a) Accounts

1. There are two types of Accounts: User accounts and PCS Administrator accounts. An account must be either a user or an admin account (covering constraint), but not both (no overlap constraint).
2. An Account is identified by its email. Each account must have a password digest and name. If the account is deleted, it will also store the date and time of deletion (for soft deletion; the account is not deleted in the database). We restrict that once an account is deleted, the same email cannot be used to register again.
3. A User account stores the user's profile which comprises of a bio, contact number, address, and postal code.
4. There are two types of Users: Pet Owner and Caretakers. A user must be either a Pet Owner or a Caretaker (covering constraint), or both (overlap constraint).

(b) Pet Owners & Pet Ownership

5. Each Pet Owner can register at most one Credit Card. A Credit Card belongs to one or more Pet Owners. Each Credit Card is identified by its number, it must also have name, expiry date, CVV code.
6. A Pet is identified by its name and owner. Each Pet has a year of birth, gender and breed.
7. A Pet Owner can own zero or more Pets. A Pet must be owned by exactly one Pet Owner. If the Pet Owner is deleted, his/her associated Pet needs to be deleted too (soft deletion; the pet is not actually deleted in the database). We restrict that once a pet is deleted, the same pet name cannot be registered again by the same pet owner.
8. Each Pet must belong to exactly one Pet Category such as small dog, big dog, small cat, big cat. The Pet Category is predetermined by the PCS administrator as each category will attract different rates for different services.
9. A Pet can have many requirements, such as its dietary requirements and regular walk timings. Each Pet Requirement must belong to exactly one Pet. A Pet Requirement is identified by its predetermined requirement type and its pet, and has a description. The requirement type is selected from a predetermined list, such as "dietary requirements" (not reflected in ER Diagram).

(c) Pet Categories & Services

10. Each Pet Category can have zero or more Pets and is identified by its category name. Examples of category names are "Small dogs" and "Fish".
11. A Pet Category can be paired with zero or more Service Types (e.g. "House sitting", "Walks", "Vacation visits", "Overnight stays") to form different Services. A Service Type is identified by its name and has a description.
12. Each Service is identified by its associated Pet Category and Service Type. It also must have a daily price which entails the daily cost of that particular service and pet category. This daily price is set by the PCS Administrator (not reflected in ER diagram).

(d) Caretakers

13. A Caretaker must provide at least one type of Service (e.g. walking dogs, offering boarding for cats), which will be indicated during account registration.
14. Each Caretaker has a total average rating, which is updated based on his/her reviews (not reflected in ER diagram).
15. A Caretaker can also have zero or more Monthly Summaries recorded, which provides an overview of his/her work for the month. Each Monthly Summary is identified by its month and year and the Caretaker it belongs to. A Monthly Summary records the Caretaker's total number of jobs taken up, total number of pet days worked, average rating, and salary for the month. A Monthly Summary should be deleted if its associated Caretaker is deleted.

(e) Full time and Part time Caretakers

16. There are two types of Caretakers: Part Time Employees and Full Time Employees. A Caretaker must be either a part-time or full-time employee (covering constraint), but not both (no overlap constraint).
17. A Part Time Employee can indicate one or more Availability Periods. Each Availability Period is identified by its start date, end date, and the associated employee. The start and end dates of different Availability Periods of a employee cannot overlap (not reflected in ER diagram). An Availability Period should be deleted if its associated employee is deleted.
18. A Full Time Employee can apply for one or more Leave Periods. Each Leave Period is identified by its start date, end date, approval status, and the associated

employee. A Leave Period also indicates whether it is an emergency leave or not. A Leave Period should be deleted if its associated employee is deleted.

19. (Not reflected in ER diagram) A Leave Period can only be added if it fulfils one of the following two constraints:
    - It is an emergency leave.
    - There will be at least two 150-day gaps between all Leave Periods (including the one to be added) from 1 January to 31 December in the relevant year(s). These gaps represent the Full Time Employees working periods and can be consecutive. For example, for a Full Time Employee to apply for leave from 1 December 2019 to 31 January 2020, the leave application must allow for at least two 150-day working periods in 2019 (e.g. 1 Jan – 31 May, 3 Jul – 30 Nov) and two 150-day working periods in 2020 (e.g. 1 Feb – 27 Nov). The start and end dates of different Leave Periods of a employee cannot overlap (not reflected in ER diagram).

20. (Not reflected in ER diagram) A Full Time Employee cannot have more than 5 jobs at the same time. A Part Time Employee cannot have more than 2 jobs unless they have an average rating of at least 4 out of 5.

(f) Bidding

21. A Pet Owner can place a bid for his/her Pet to receive a Service (not reflected in ER diagram). When bidding, the Pet Owner specifies the selected Pet as well as the Service that he/she wants the Caretaker to carry out. Each bid must also include the daily price, a status and a submission date and time. The five possible bid statuses are: Pending, Approved, Withdrawn, Rejected, Expired. Bid status is set as Pending as default value.

22. Each Job is identified by the Caretaker who undertakes it, the Pet involved in it, the Service involved and its start and end date. Note: It is possible to bid for multiple jobs for the same combination of Pet and Caretaker, as long as the jobs are unique.)

23. A proposed Job can only be added if its start date and end date are within one of the Caretaker's availability periods for part-time employees, or if its start date and end date do not cross into any of the Caretaker's leave periods for full-time employees (not reflected in ER diagram).

24. A Caretaker can select or reject the bids/jobs that he/she wants to undertake by changing the bid status to Approved or Rejected respectively (not reflected in ER diagram). A Pet Owner can choose to withdraw a Pending bid by changing the status to Withdrawn (not reflected in ER diagram). A bid will expire three days after the submission date (not reflected in ER diagram).

(g). Job, Transaction and Review

25. A successful Job (based on its associated bid's status) must have a transfer type, a transfer datetime, and can have remarks.
26. Each Transaction finances 1 Job and is identified by the Job it finances and the date time of transaction. It also must have a status that checks whether its verified, a payment method (Pet owner can pay using cash or pre-registered credit card) and a total amount.
27. Each Job can be financed by at most one Transaction.
28. Each Review is identified by the Transaction it is tagged to and the datetime of review given.
29. Each Review must have a rating, the time the review was submitted by the Pet Owner and can have a text comment.
30. Each Review can be tagged to only 1 Transaction.
31. Each Transaction can have at most 1 Review tagged to it.