

Preliminary Constraints & Serial Type Justification for PCS ER diagram. [Team #10]

TABLE TypeAndBreed

type VARCHAR(10)  
breed VARCHAR(30)  
PRIMARY KEY (type, breed)

Example type and breed can be 'Dog' and 'Western Highland Terrier', which can be represented by the VARCHAR domain.

TABLE Pet

petID VARCHAR(10) PRIMARY KEY  
type VARCHAR(10)  
breed VARCHAR(30)  
FOREIGN KEY (type, breed) REFERENCES TypeAndBreed(type, breed)

petID can be a unique identifier of 10 characters. Pet type and breed are referenced from TypeAndBreed table.

TABLE PetProfile

petProfileID VARCHAR(10) REFERENCES Pet(petID)  
name VARCHAR(20)  
weight NUMERIC(4,2)  
ageYear INTEGER  
ageMonths INTEGER  
sex CHAR(1)  
specialRequirements TEXT

As PetProfile should not exist without a pet, it is an identity dependency. Hence, petProfileID references the petID from the Pet table. The weight ranges from ones to a maximum of 99 and has two decimal points. This is to maintain a suitable level of accuracy when tracking the pet's weight across time. ageYear and ageMonths are Integers, and the sex of the pet is a 1 length char, either 'M' or 'F'. specialRequirements tend to be more in-depth information about the pet, hence a variable length string domain is used to accommodate lengthier descriptions.

#### TABLE User

emailAddr VARCHAR(20)

password VARCHAR(30)

userID VARCHAR(10)

PRIMARY KEY (emailAddr,password)

User is identified by (emailAddr, password), where the username is an appropriate length of 20 characters, and the password attribute is max 30 characters in length to allow for a stronger password combination. The userID attribute will help to distinguish the type of user. For example, values 'P0001' and 'C0001', if the userID starts with 'P' then he/she is a Pet owner and if it starts with 'C', then he/she is a caretaker

Constraint of User ISA hierarchy: covering and no overlap.

#### TABLE UserProfile

firstName VARCHAR(20)

lastName VARCHAR(20)

DOB DATE

homeAddr VARCHAR(50)

emailAddr VARCHAR(20) REFERENCES User(emailAddr)

As UserProfile should not exist without a user, it is an identity dependency. Hence, userProfileID references the userID. The attributes are all variable characters except for date of birth which should logically be represented as a date.

#### TABLE PetOwner

poID VARCHAR(10) REFERENCES user(userID) VARCHAR(10) PRIMARY KEY  
petID VARCHAR(10) REFERENCES Pet(petID)  
creditCardDetails VARCHAR(50)

A pet owner is a user identified by the pet owner id (poID) which references userID (in order to link his/her user profile). A pet owner may also have credit card details of length 50, which can record the card name, number, and other card specific information. The petID references the pet he/she owns in the Pet table

#### TABLE CareTaker

ctID VARCHAR(10) REFERENCES User(userID) VARCHAR(10) PRIMARY KEY  
avgRating NUMERIC(3,1)

A caretaker is a user identified by the caretaker id (ctID) which references userID (in order to link his/her user profile). The avgRating attribute is constrained between the range [0.0 - 10.0].

#### TABLE ProvidedService

serviceID VARCHAR(10) PRIMARY KEY  
poID VARCHAR(10) REFERENCES PetOwner (poID)  
ctID VARCHAR(10) REFERENCES CareTaker (ctID)  
serviceType INTEGER  
serviceDescription TEXT  
cost NUMERIC (3,1)

A providedService is identified by the serviceID. It is an aggregation with a ISA hierarchy. The constraint is covering and non-overlap. The specialised entities are constrained to the different PetTypes. For example, there can be DogSitting, CatSitting, and RabbitSitting service that are being provided.

Constraint of ProvidedService ISA hierarchy: covering and no overlap.

#### TABLE AcceptedService

transactionID VARCHAR(10) PRIMARY KEY  
serviceID VARCHAR(10) REFERENCES ProvidedService(serviceID)  
paymentID VARCHAR(10) REFERENCES Payment(paymentID)  
reviewID VARCHAR(10) REFERENCES Reviews(reviewID)  
petID VARCHAR(10) REFERENCES Pet(petID)  
transportMethod INTEGER

A transaction is identified by its transactionID. transportMethod is restricted to 3 INTEGER values: 1,2,3 where 1 is Pet Owner deliver, 2 is Caretaker pick up, and 3 is Transfer through the physical building of PCS.

#### TABLE Payment

paymentID VARCHAR(10) PRIMARY KEY  
paymentMethod INTEGER

A payment is identified by its paymentID. The paymentMethod is either 'Cash' or 'CreditCard', which translates to either 1 or 2 in the integer domain.

#### TABLE Reviews

reviewID VARCHAR(10) PRIMARY KEY  
poID VARCHAR(10) REFERENCES PetOwner(poID)  
transactionID VARCHAR(10) REFERENCES AcceptedService(transactionID)  
comment TEXT  
rating NUMERIC(3,1)

A review is identified by its reviewID. It also references poID and transactionID. The comment is of TEXT data type to accomodate more characters for the review. The rating attribute is constrained between the range [0.0 - 10.0].

#### TABLE EmploymentDetails

empID VARCHAR(10) references CareTaker(ctID) PRIMARY KEY

petDays INTEGER

availLeave INTEGER

employmentType INTEGER

EmploymentDetails is identified by the empID. All other attributes have the integer domain. employmentType is either “part-time” or “full-time”, which is 1 and 2 respectively for the integer domain.

#### TABLE PCSAdmin

username VARCHAR(20)

password VARCHAR(30)

PRIMARY KEY (username, password)

PCSAdmin is identified by (username, password) attribute, where the username is an appropriate length of 20 characters, and the password attribute is max 30 characters in length to allow for a stronger password combination.

#### TABLE BaseDailyPrice

ctID VARCHAR(10) REFERENCES CareTaker(ctID)

price INTEGER

priceType INTEGER

PRIMARY KEY (ctID, priceType)

The base daily price is an integer. PriceType is restricted to 3 INTEGER values: 1,2,3 where 1 is a dog daily price, 2 is cat daily price, and 3 is a rabbit daily price. The primary key for the BaseDailyPrice table consists of both the caretaker id and pricetype as a care taker can have different prices for different types of animals he takes care.

Constraint of BaseDailyPrice ISA hierarchy: covering and no overlap.

TABLE IndicatedAvailability (combine both indicates relationship set and Availability entity set)

petSlotsLeft INTEGER

startDate DATE

endDate DATE

ctID VARCHAR(10) REFERENCES CareTaker (ctID)

serviceID VARCHAR(10) REFERENCES ProvidedService (ctID)

PRIMARY KEY(ctID, startDate, endDate, serviceID)

Each Availability entry has start date and end date, petSlotsLeft to indicate how many pets the caretaker can still take on in that period, serviceID to relate to the ProvidedService table and state what service the caretaker is available and able to provide.

General Constraints:

1. Constraint maximum value of 'petSlotsLeft' based on avgRating of each CareTaker.
2. PetOwner can only bid for the service that their pet corresponds to, i.e. can only bid for DogSittingService only if PetOwner owns a dog.
3. For a pet that is involved in an accepted service, the pet owner cannot accept another service for the same pet in the same time period.
4. All ISA hierarchy, covering and no overlap.

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