

Assumptions and Explanation:

**Weak relations:**

Favorite cannot exist without User

Manager cannot Exist without manager (Exception is CEO who reports to his own manager\_id)

Review cannot exist without User.

Villa cannot exist without Owner. If an Owner leaves - his Villas are no longer up for reservation or he may have sold them to another Owner, in which case those become new Villas for those Owners. If it is desired that the Villas remain after their Owners leave - we can achieve that with a strong relation (I understand the concept - I've just implemented my own version).

Reservation cannot exist without User, Villa, and Price.

Feature cannot exist without Villa. But Feature can continue to exist even if an Owner has sold all his property and left the system.

Price cannot exist without a Villa.

Pricing is dependent on an Owner and cannot exist without an Owner setting it.

Phone cannot exist without a person.

Description cannot exist without a Person.

Coupon cannot exist without a Villa.

Coupons\_applied cannot exist without a reservation or a coupon.

Phone cannot exist without a Person.

Description cannot Exist without a Person.

Favorites cannot exist without a Villa or a User.

**Strong Relations:**

Log can exist in history even without an Owner (eg: Owner has sold property and left )

Features can exist even after an Owner has left the Database or in the even that he has transferred his property to another owner and become a manager or a regular user.

Reservation can exist in history even after a Villa has been removed from the system.

A User can exist without a Reservation.

Inspection report can exist even after a Manager quits

**Super Class & Sub Classes:**

Every user of the system is a Person.

Person sub classes include User , Owner , Manager - with Partial Completeness for future assignments like Butler or Cleaner.

A manager can be an Owner AND/OR a User

An Owner can be a User AND/OR Manager

A User can be an Owner AND/OR Manager

## **Derived Attributes**

Reservation Table:

Total rental price is a derived attribute that comprises the sum of prices for the rental period and stored for history purposes as price\_history. While deposit and balance are derived from the price\_history at the time of rental as the total rental price can vary from time to time

Review Table:

top\_review attribute is derived from the COUNT OF of likes for a review.

Villa Table:

age and price\_today is derived from the con\_year and the Price Table respectively.

## **Composite Attributes:**

Person Table:

cellphone comprises of country code , area code and phone\_number from the Phone Table.

User Table:

DoB is a DATE field comprising of the day , month and year of the user

Reservation Table:

start\_date and end\_date are TIMESTAMPS which comprise day , month , year, hour , minute and second of day .This allows for CHECKS to figure out if the user leaves before 12pm.

Inspection Table:

inspection\_date is a DATE field comprising of day, month and year

Log Table:

date\_added and date\_deleted are TIMESTAMPS which comprise day , month , year, hour , minute and second of day .

## **Misc.**

I would have implemented the Log table differently using Triggers since this is a better approach and allows more flexibility - but right now only the owner can generate a log. There is no way to show Triggers in an EERD so I have just designed it for the owner to generate it.

Triggers may be applied towards the pricing calculations and coupon expiry as well - but once again there is no way to show this in the ERD.