Homework 1
Due Date: Wednesday, May 30, 2018 at 11:59pm PST.

SHome

In this assignment, we will practice building ER diagram for SHome, a service similar to Airbnb. There are two types of users in SHome: apartment owners and renters. A user can be either an apartment owner or a renter (or both). To register to SHome, a user must provide his/her full name, address, email address, profile photo, social security number, driver's license ID and payment options (at least one). Users may provide multiple payment options if they so choose (some payment options are bank account, debit/credit card information, Paypal).

Once registered, a user may act as an apartment owner by making posts to advertise his/her properties for sublease. Before making a post, a user must create items to describe his/her properties. Each item provides details specific to a property: address, pictures (at least 5), videos (optional), description, and various property options such as number of bedrooms, bathrooms, Wi-fi available, kitchen, pets allowed, etc. The purpose of having items is to prevent describing the property every time the post for it is made.

Each post is for an item. It must provide the title, the available date to sublease, and the price for rent per day. A property should be categorized based on its size: small (fits well for 2-3 persons), medium (4-6 persons), large (7-10 persons) or extra-large (more than 10). A post also has an expiry date, which is set by default to 7 days. The user must pay a small fee to make a post and the fee depends on how long the post will be shown (active) in the system.

When a post expires because no one is interested, it becomes inactive. The user has the option to re-post it. When someone is interested in the post and makes a payment (see below), the available date of the property on the post is adjusted to reflect the remaining available date.

A user may act as a renter by making a payment to a post. He/she must pay the rent immediately using one of his payment options. After staying at the apartment, he/she may leave a comment and rate the property. Only the ones who ever rented the property may make a comment on it. On the other hand, a property owner can also make comments on a user who ever rented his properties.

There is no restrictions of how many posts or payments a user may make. The only requirement is a user cannot make a payment for a post he/she creates, and at a specific moment, there is at most one post for a property.

Please create the ER Diagram for SHome based on the above description.

Feel free to make additional assumptions if they are not stated in the description (for example, attributes of entities). You also should be able to analyze the trade-offs of your design decisions.

*The total points for this homework is 8. The submission **MUST** be a pdf file named [Student First Name]_[Student Last Name]_HW1.pdf (wrong file name will not be graded) that includes:*

- *The ER Diagram for sHome (5 points). This could be a picture of your drawing (in .pdf), or a generated figure from any ER tool (for example, LucidChart, Visio or Enterprise Architect). You will be deducted 1 point if you do not use a drawing tool.*
- *You must use Crow's foot notation for this homework. Chen notation isn't allowed.*
- *A report where you describe and justify your design choices (3 points). Some suggestions are:*
  - *Why the relationships between A and B is 1:1, 1:N or M:N?*
  - *Is there any optional/multi-valued attributes in your design? If yes, why?*
  - *What are the attributes of the defined entities that you may have, and why do/don't you include that in the ERD?*
  - *Could some design choices be different, and what are the trade-offs between your designs with others?*

If you have any general questions about the homework, please post your questions on HW1 discussion on USC DEN course forum. Before asking, you should have a look to see whether similar questions were asked and answered. Thank you!

Students can submit the assignment to USC DEN. Just go to the course → MY TOOLS → Assignments → Homework 1. The deadline is firm. **You will not be able to submit your homework after the deadline.**