Section 6: Discussion

Problems Encountered + Solutions

One problem we encountered was that we had to re-write a lot of our queries in the final phase because we hadn't thought about user experience at the beginning. We modified a lot of our queries to return more useful information, or appear in a more useful way (ie sorted).

As well, we had troubles with the queries for the Admin page. We weren't really sure what sort of summary information would be useful, or the optimal query to get this information. We ended up doing separate queries for each field in our table for each user because that worked best with our object architecture (see next section).

Design and Implementation Decisions

Php Objects

A major decision made while implementing the business logic of our application to use an object-oriented approach. Tuples in the database are represented by corresponding objects in the application, encapsulating all database queries within the object and reducing the potential for issues with data vulnerability and integrity.

Objects allow for writing multiple different constructors and factory methods (eg. get a user record by ID or email address, or retrieve all the reviews on a single property) as well as encapsulation of getters, setters, and database access methods. Objects are either retrieved from the database or constructed; an insert method allows insertion of a newly-constructed object, an update method applies the new values of the object passed to the setters, and a delete method deletes the corresponding tuple from the database.

This change in organization of our application layer allows for better data protection and greater flexibility in the future, but involved changing a few of our original queries to make them more generic, allowing them to be used in multiple use cases. These changes are discussed in detail in **SQL Interaction in Each State + Output**.

SELECT 1

We have queries that check the database to see if something exists, such as if a user is already registered with a given email. The SELECT 1 statement will return 1 if the data exists in the database and nothing if it doesn't. It requires less processing from the databases and transfers only the necessary information.

Static Tables Loaded into PHP

In our database, we have four 'static tables' that act kind of like enums: booking_status_types, city_districts, degree_types, and rental_property_types. These tables map a string value to an int id number. This structure allows us to easily edit the strings values of these properties, as well as add new ones. The change is contained within one table so it has minimal impact on our system. We decided to load our static tables into PHP to reduce extra complex queries. The first time we need data from one of these static tables, we load the table in and set a variable. Future requests for this data will see that the variable is set and not call the database again.

Technologies

For our frontend web application, we used HTML, CSS, JavaScript, and the Bootstrap framework. We also used Adobe Illustrator to pre-conceptualize our designs. We really wanted to ensure our layout was simple and intuitive for users.

Our backend is coded in PHP. We used Sequel Pro for SQL administration. It's a native app for SQL administration on Macs. You can access all the databases located on the local host and the web and manually edit the tables and their contents. It's simpler, faster, easier than PhpMyAdmin.

For our version control, we used Git and hosted our project on GitHub.

We chose these technologies because we all have experience with them, so they were easy to set up and work in. Overall we had a good experience with them and would choose them again for future projects.

What We Would Do Differently

Next time we have a similar task, we should think about the users earlier. In the beginning, we forgot some pretty major features for users, such as including a password field in our database. In general, we often thought about the technical details, such as how to store and query the data, but not about how users will interact with the system. Even when designing user flow, our main focus was just displaying our data and not really what the user would want in our system. This oversight led to a sub-optimal user interface. It's usable, but there are some missing features that would be useful for users.

Possible Improvements and Extensions

- Admin
  - Ability for user to request admin privileges, an admin to see these requests and grant or remove them, or to remove admin privileges.
  - Search for user by name or email and see a summary of their information.
  - Search for a property by name and see a summary of its information.
  - Interface for adding/updating/removing data from our static tables: districts, etc (static tables)
- General
  - Allow users to undo deletes or retrieve deleted data by adding a "deleted" column to our bookings, rental_properties, reviews, and users tables, rather than permanently removing rows from our database

- Allowing users to search by multiple districts, types, and features at a time.
- Search for property by name
- Search for property by suppliers
- Member profile pages where you can see their properties and some basic personal info.
- Listing check-in and check-out times on a property

Section 7: User Guide

System Setup

To setup our QBNB system, the administrator should clone our git repository located at https://github.com/shannonklett/qbnb. From there, they can add the code to their server. To set up the database, we have included a .sql file that can be imported through phpmyadmin. This file includes the DDL for the database schema, as well as the static content, such as degree types and booking status types. We have also included city districts, but the administrator can change those if they would like to use our system outside of LA. The user should register through the site (to ensure their password is properly hashed), and then go into the database and change their is_admin field to 1 (true). They can repeat this process for any other administrators.

All Members

1) Register as a new member.

On the homescreen, select the "Register" button. Enter your information on the Registration page and click the "Register" button.

2) Login to system

On the homescreen, enter email and password you used to sign up for our system then click the "Login" button.

3) Update member profile.

Select the "SETTINGS" Page from the menu in the top right. Modify any information you would like and click the "Save Changes" button.

4) Cancel their membership.

Select the "SETTINGS" Page from the menu in the top right. Click the "Cancel Membership" button.

As a supplier

1) View all accommodations.

Select the “MY PROPERTIES” Page from the menu in the top right. You will see your properties listed on this page.

2) Add a new accommodation.

Select the “MY PROPERTIES” Page from the menu in the top right. Click the “Add Property” button. Fill in the information and click the “Submit” button.

3) Remove an existing accommodation.

Select the “MY PROPERTIES” Page from the menu in the top right. Click the “X” button in the bottom right corner of a property.

4) Update an existing accommodation.

Select the “MY PROPERTIES” Page from the menu in the top right. Click the pencil icon in the bottom right corner of a property. Fill in the information and click the “Submit” button.

5) Respond to booking request.

Navigate to the home page by clicking the logo in the top left corner of the page. Select either check mark or the “X” on the booking request depending on your preferred response.

6) Reply to a comment on one of their accommodations.

Navigate to the property details page for the accommodation, either through the “MY PROPERTIES” page or through the “SEARCH” page. Find the comment you wish to reply to. Click the “Reply” button, type your reply, and click the “Submit” button.

As a consumer

1) Search accommodations by district, type, features, price.

Select the “SEARCH” Page from the menu in the top right. Enter your search terms using the drop down menus. You may search by any combination of the fields (district, type, features, price), leaving the other fields empty. Click the “Search” button to see matching properties.

2) List all the ratings and comments for an accommodation.

Navigate to the property details page for the accommodation, either through the home page or through the “SEARCH” page. Scroll down until you see the ratings and comments.

3) List availability for an accommodation.

Navigate to the property details page for the accommodation, either through the home page or through the “SEARCH” page. Scroll down until you see the list of current bookings.

4) Request a booking.

Navigate to the property details page for the accommodation, either through the home page or through the “SEARCH” page. Enter your desired arrival and departure dates then click the “Book” button.

5) List all a consumer’s bookings.

Navigate to the home page by clicking the logo in the top left corner of the page. You will see a list of all your current bookings.

6) Add a comment/rating for one of their booked accommodations.

Navigate to the property details page for the accommodation, either through the home page or through the “SEARCH” page. Write a review (optional) and select a rating (required) then click the “Submit” button.

7) Cancel a booking.

Navigate to the home page by clicking the logo in the top left corner of the page. Click the “X” next to the booking.

Administrators

1) Delete a member and all their accommodations.

Select the “ADMIN” Page from the menu in the top right. Select the “Users” tab. Click the “X” button beside the desired user.

2) Delete an accommodation.

Navigate to the property details page for the accommodation, either through the “MY PROPERTIES” page, the “SEARCH” page, or the “ADMIN” page. Click the red “X” button below the photo of the property.

3) Summarize bookings and ratings per accommodation.

Select the “ADMIN” Page from the menu in the top right. Select the “Property Summary” tab.

4) Summarize bookings and ratings per supplier.

Select the “ADMIN” Page from the menu in the top right. Select the “Supplier Summary” tab.

5) Summarize booking activity per consumer.

Select the “ADMIN” Page from the menu in the top right. Select the “Consumer Summary” tab.