Workshop 1

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DATABASE FOUNDATIONS

Survey of 15 students Question: What features would you like to see in an app for an apartment complex?

1. **Student responses:**
- Access to the list of blocks and apartments.
- Possibility of making online payments for management services.
- Reserve common areas such as the gym, pool and event room.
- Receive notifications about events or maintenance in the building.
- System for reporting problems or maintenance requests.
- View payment history and outstanding debts.
- Controlled access to security cameras in common areas.
- View announcements from the administrator or the board of directors.
- Visitor management and access request.
- Access to mail or package delivery services.
- Calendar of complex activities, such as yoga classes or meetings.
- A chat to communicate with management or between neighbors.
- Utility consumption report.
- Information on recycling and rules of coexistence.
- Option to rent common areas to other neighbors.

2. **User Histories:**
- As a <resident>, I want to <see a list of all blocks and apartments>, so <I can identify my home and the surrounding areas>.

- As a <resident>, I want to <make payments online for administration services>, so <I can stay up to date with my fees in a convenient way>.
- As a <resident>, I want to <reserve common areas like the gym or the pool>, so <I can ensure their availability when I need them>.
- As a <resident>, I want to <receive notifications about events and maintenance>, so <I can stay informed about what's happening in the apartment complex>.
- As a <resident>, I want to <report maintenance issues>, so <the administration can address them promptly>.
- As a <resident>, I want to <view my payment history and outstanding debts>, so <I can keep track of my financial obligations>.
- As a <resident>, I want to <access security camera footage in common areas>, so <I can monitor the surroundings and feel more secure>.
- As a <resident>, I want to <manage visitor access and receive notifications when they arrive>, so <I can ensure safe and easy entry for my guests>.
- As a <resident>, I want to <chat with other neighbors or the administration through the app>, so <I can communicate more easily with the community>.
- As a <resident>, I want to <receive and manage my mail and packages>, so <I can be notified when they arrive and pick them up on time>. By

3. Technical and Design Considerations

- Scalability: The database must be able to handle large volumes of data from residents, payments, and reservations.
- Security: Implement encryption for personal data and financial transactions. Access to certain functionalities should be restricted by roles.
- Availability: The application should be accessible from any device, ensuring a seamless experience for residents.
- Integration: Integrate with external services to process payments and send notifications in real time.
- Performance: Optimize database queries, especially for handling long lists of apartments, transactions, and reservations.

4. Database Design

Main Entities

Resident: ID, first name, last name, apartment number, block, email, phone.

Apartment: ID, number, block, size, current occupancy.

Block: ID, block name or number, number of apartments.

Payment: ID, amount, date, resident, payment method (card/credit).

Reservation: ID, common area, date, time, resident.

Common Area: ID, name (gym, pool, event hall), maximum capacity.

Maintenance: ID, problem description, status (pending, in process, resolved), report date, resident.

Notification: ID, message, date, type (event, maintenance), resident.

Visitor: ID, name, associated resident, visit date.

Correspondence: ID, package type, arrival date, resident.