Database Foundations GR-82
Workshop #1 - Database Design

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COMPLEX APARTMENT APPLICATION DATABASE DESIGN:

A. Users Feedback:

1. **Diego** said: "As a **resident**, I want to **be able to see the co-working spaces schedules**, so **I can know when to make a reservation for one**."
2. **Carlos** said: "As a **resident**, I want to **be able to see the opening schedule for the gym**, so **I can organize my time to go to the gym according to the schedule.**"
3. **Stefany** said: "As a **resident**, I want **to use a social room for my guitar lessons for kids, so I want to be able to see the list of the enrolled kids to my lessons**, so **anyone else who wants to organize a course within the complex can make a list as well**"
4. **Juan** said: "As a **resident**, I want **a dashboard with the info of myself, with the function of editing your own personal info**, so **we can all check our information within the complex for reunions or possible emergencies.**"
5. **Laura** said: "As a **resident**, I want **to be able to submit a maintenance request,** so **anyone can schedule an urgent maintenance of something related to their apartment.**"
6. **David** said: "As the **cleaning staff**, I want **to be able to make announcements in the app,** so **all the residents get informed about upcoming cleaning schedules around the complex.**"
7. **Kevin** said: "As a **Security Guard**, I want **to be able to send alarm pings to all residents,** so **any possible emergency or burglar alert can be noticed to every resident.**"
8. **Sara** said: "As a **resident**, I want **to be able to see cleaning schedules,** so **I can carefully walk by without soiling the recently cleaned floors.**"
9. **Juan 2** said: "As a **Security Guard,** I want **to be able to check the complex cameras anytime through the phone,** so **I can freely roam around the complex and also be able to check the cameras while I do it.**"
10. **Bryan** said: "As a **resident,** I want **to be able to see if there's any parking lot for guests,** so **I can coordinate with my guest to see if he can park in the complex.**"
11. **Santiago** said: "As a **resident,** I want **to be able to see the trash collection schedules,** so **anyone can know when to take out the trash.**"
12. **Fabio** said: "As a **resident**, I want **to be able to get a general schedule of every event in the complex, like cleaning sessions, parties in the social rooms or even outage dates,** so **anyone can be informed of what's happening on the apartment complex.**"
13. **David 2** said: "As an **administrator,** I want **to be able to make announcements on the app,** so **every resident gets informed about the news of the complex.**"

14. **Harold** said: “As a **resident**, I want **to be able to see possible news about the complex, and be able to see if I have any upcoming bills,** so **I don’t get any late payment fee.**”
15. **Laura 2** said: “As the **Security Guard,** I want **to be able to check the parking lot list for guests,** so **I can tell the visitors if there’s any available parking lot.**”

Role	Action	Impact
Resident	Be able to see the co-working spaces schedules.	so I can know when to make a reservation for one
Resident	Be able to see the opening schedule for the gym.	so I can organize my time to go to the gym according to the schedule.
Resident	Use a social room for my guitar lessons for kids, so I want to be able to see the list of the enrolled kids in my lessons.	so anyone else who wants to organize a course within the complex can make a list as well
Resident	A dashboard with the info of myself, with the function of editing your own personal info.	so we can all check our information within the complex for reunions or possible emergencies.
Resident	Be able to submit a maintenance request.	so anyone can schedule an urgent maintenance of something related to their apartment.
Cleaning Staff	Be able to make announcements in the app.	so all the residents get informed about upcoming cleaning schedules around the complex.
Security Guard	Be able to send alarm pings to all residents.	so any possible emergency or burglar alert can be noticed to every resident.
Resident	Be able to see cleaning schedules.	so I can carefully walk by without soiling the recently cleaned floors.
Security Guard	Be able to check the complex cameras anytime through the phone.	so I can freely roam around the complex and also be able to check the cameras while I do it.

Resident	Be able to see if there's any parking lot for guests.	so I can coordinate with my guest to see if he can park in the complex.
Resident	Be able to see the trash collection schedules	so anyone can know when to take out the trash.
Resident	Be able to get a general schedule of every event in the complex, like cleaning sessions, parties in the social rooms or even outage dates.	so anyone can be informed of what's happening at the apartment complex.
Administrator	Be able to make announcements on the app.	so every resident gets informed about the news of the complex.
Resident	Be able to see possible news about the complex, and be able to see if I have any upcoming bills.	so I don't get any late payment fee.
Security Guard	Be able to check the parking lot list for guests.	so I can tell the visitors if there's any available parking lot.

B. Software functionalities (- Required, * Suggested) :

- Show a list of all blocks and apartments
- Receive payments for administration
- Make reservations for common spaces
- Schedules dashboard.
- Announcements menu to see all messages sent from the complex staff.
- Visitor's parking lot menu to reserve a spot or check availability
- Maintenance submissions menu.

C. Database design

- **Step 1:** Define Components
  - Announcements
  - Payments and Bills
  - Maintenance submissions
  - Schedules
  - Parking lot
  - Security Staff
  - Cleaning Staff

- **Step 2:** Define entities

Name	Index
User	1
Administrator	2
Staff	3
Bill	4
ParkingSpot	5
Schedule	6
Submission/Request	7
Announcement	8
Common Space	9
Block	10
Apartment	11
Visitor	12

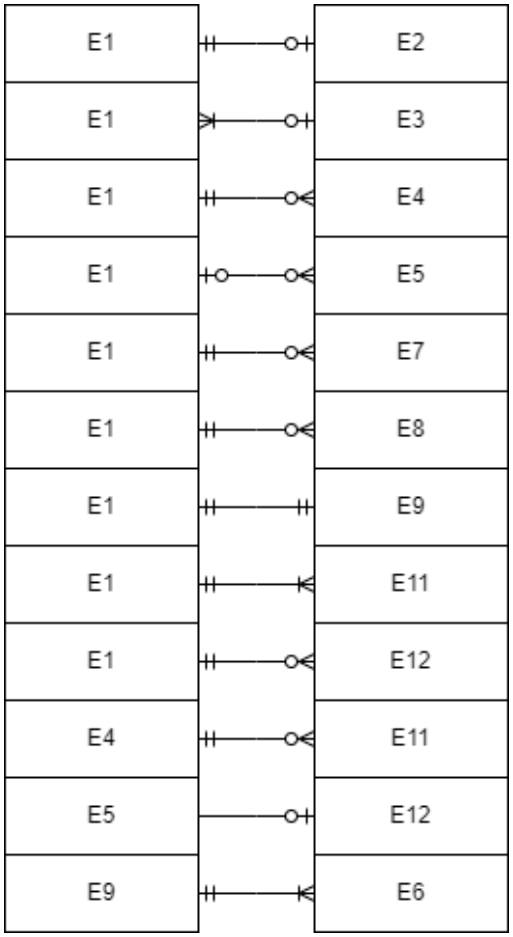
- **Step 3:** Define Attributes per Entity
    1. **User**:
        - Name
        - Phone
        - Id_PK
        - Role_PK
    2. **Administrator:**
        - User_Id_FK
    3. **Staff:**
        - User_Id_FK
        - User_Role_FK
        - Name
    4. **Bill:**
        - Type
        - Cost
        - Apartment_FK
        - User_Id_FK
        - Due Date

5. **ParkingSpot:**
    - Id_PK
    - VisitorsOnly
    - Floor
6. **Schedule:**
    - CommonSpace_FK
    - Weekday
    - HourInterval
7. **Submission/Request**
    - User_Id_FK
    - Title
    - Description
    - Date
    - Solved
8. **Announcement:**
    - Title
    - User_Id_FK
    - Description
    - Date
9. **Common Space:**
    - Id_PK
    - Name
    - Capacity
    - Rules
    - Reserved_FK
10. **Block:**
    - Id_PK
11. **Apartment:**
    - Id_PK
    - Block_FK
    - User_Id_FK
12. **Visitor:**
    - User_Id_FK
    - ParkingSpot_FK
    - Name
    - Phone
    - EntryDate

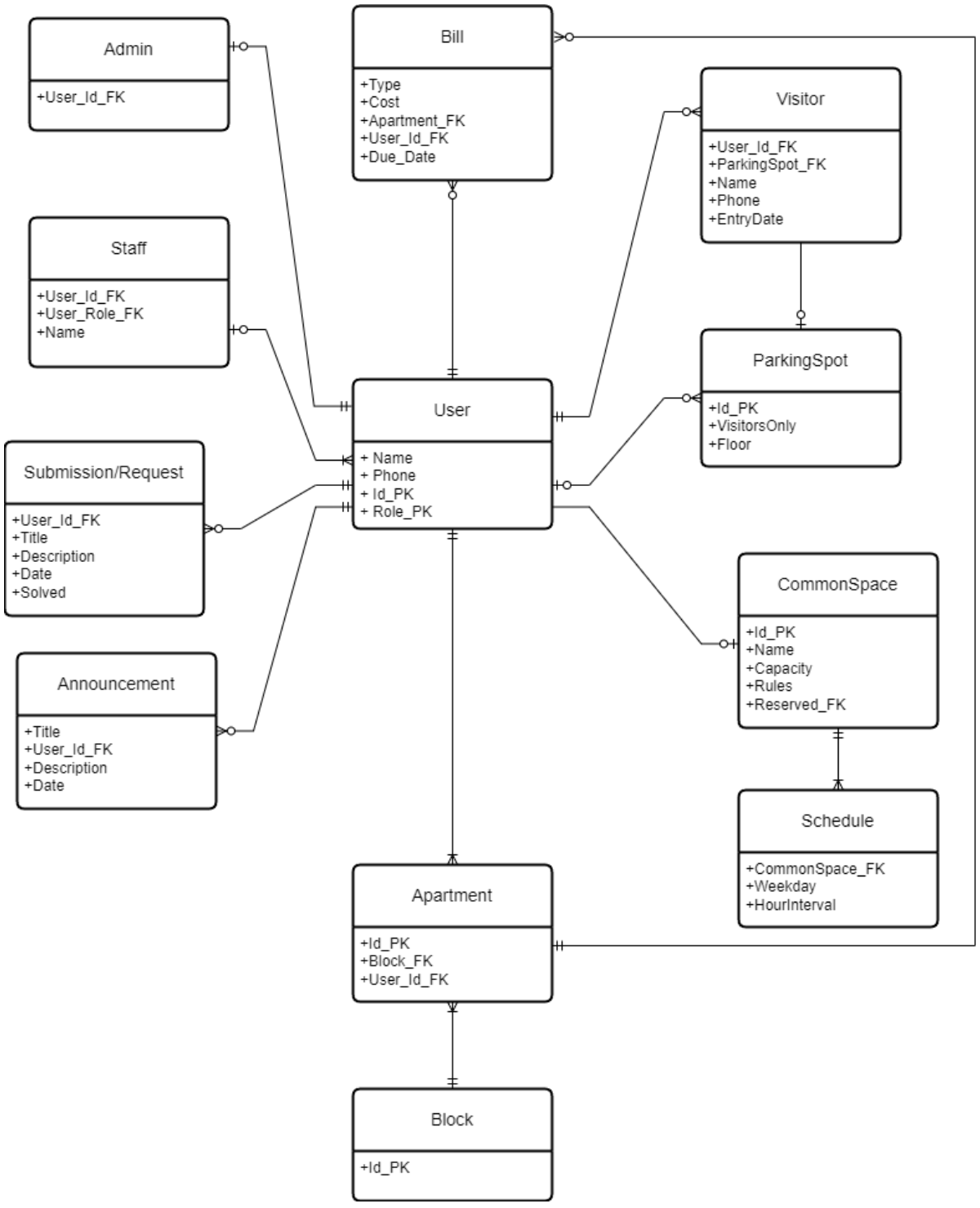
- **Step 4: Define Relationships**

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
E1		X	X	X	X		X	X	X		X	X
E2	X											
E3	X											
E4	X										X	
E5	X											X
E6									X			
E7	X											
E8	X											
E9	X					X						
E10											X	
E11										X		
E12	X				X							

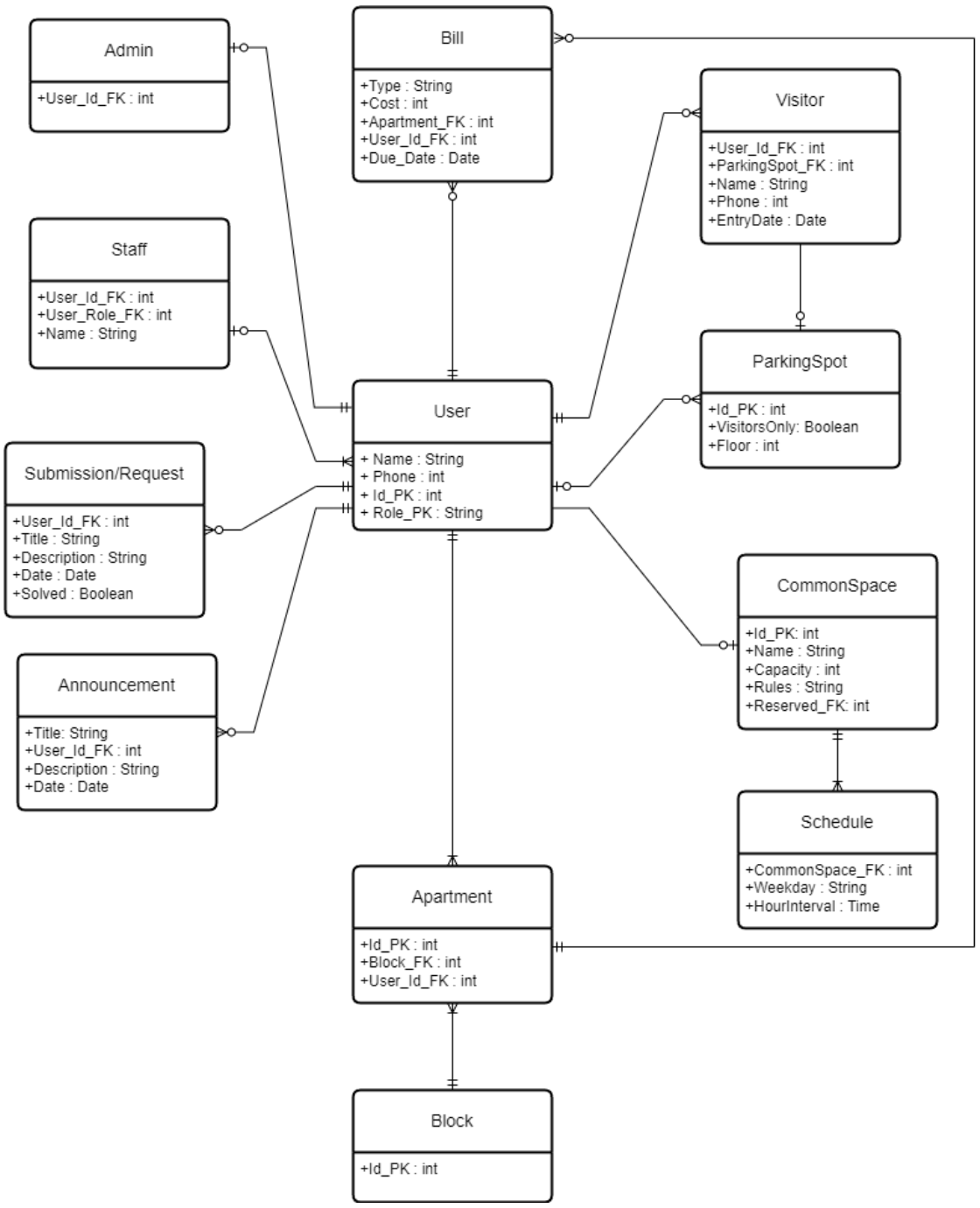
- **Step 5: Define Relationship Types**



- **Step 6: First Entity-Relationship Draw**



- **Step 7: Get Data-Structure E-R-M**



- **Step 8: Define Constraints and properties of data**