Database Design Document

Team members: Andrea Joyce Sequeira, Anuja Ajit Surana, Bhagyashri Chavan, Suraj Visveswaraya, Vaidehi Sandeep Tawde.

1. Introduction:

This document outlines the database design for a system that manages various aspects of a residential complex, including building management, apartment rentals, monthly billing, recreational center, activities, services, contractors, parking and resident information. The purpose of this database is to address the business problems associated with the efficient management of the residential complex.

2. Business Problems Addressed:

The primary business problems addressed by this database are:

- Building Management: Efficient management of multiple residential buildings, including keeping track of building details and associated apartments.
- Apartment Rentals: Managing apartment rentals, including the number of tenants in each apartment.
- Monthly Billing: Handling monthly billing for various services provided within the complex, including tracking the total amount, billing frequency, and the relationship with services, apartments, and buildings.
- Recreational Center: Keeping track of recreational center rooms, their schedules, occupancy, and activities.
- Services and Contractors: Managing services offered within the complex, the cost of these services, and the contractors providing them.
- Person Information: Storing information about residents and staff, including their personal details and associations with apartments, buildings, and events.
- Events and Guests: Managing events hosted in the complex, including event details and guest information.

3. Entity Descriptions:

3.1. Building:

Attributes:

BName: Building Name

BNum(Primary Key): Building Number

3.2 Apartment:

Attributes:

ApartNo (Primary Key): Apartment Number

NoOfTenants: Number of tenants in the apartment

BNum (Foreign Key): Reference to the associated building

3.3 MonthlyBill:

Attributes:

BillReceiptNo (Primary Key): Bill receipt number

TotalAmt: Total bill amount

Date: Bill date

SrID (Foreign Key): Reference to the associated service.

ApartNo (Foreign Key): Reference to the associated apartment.

3.4 Recreational Center:

Attributes:

RoomNum (Primary Key): Room number

Schedule: Room schedule

Occupancy: Room occupancy

ActivityID(Foreign Key): Room activity.

BNum(Foreign Key): Building Number

3.5 Services:

Attributes:

SrID (Primary Key): Service ID

SrName: Service name

Cost: Service cost

CID (Foreign Key): Reference to the associated contractor

3.6 Contractors:

Attributes:

CID (Primary Key): Contractor ID

Duration: Duration of the contract

3.7 Person:

Attributes:

SSN (Primary Key): Social Security Number

PID(Primary Key): Person ID

PhNumber: Phone number

PName: Person Name
ApartNo (Foreign Key): Reference to the associated apartment.

3.8 Staff:

Attributes:
SID (Primary Key): Staff ID
Designation: Staff designation
SName: Staff name
BNum (Foreign Key): Reference to the associated building

3.9 Events:

Attributes:
EID (Primary Key): Event ID
EName: Event name
Date: Event date
Time: Event time
Location: Event location
PID (Foreign Key): Reference to the associated person

3.10 Guest:

Attributes:
GID (Primary Key): Guest ID
VisitingHour: Visiting hours
PID (Foreign Key): Reference to the associated person

3.11 Parking:

Attributes:
ParkingLotID(Primary Key): Parking lot number
TypeOfParking: Type of parking
ApartNo (Foreign Key): Reference to the associated apartment

3.12 Activity:

Attributes:
ActivityID (Primary Key): Activity ID
ActivityName : Type of activity

4. Relationship Descriptions:

Building (1) -- (*) Apartment
Building (1) -- (*) Staff
Building (1) -- (1) Recreational Centre
Apartment (1) -- (1) Monthly Bill
Apartment (1) -- (*) Person
Apartment (1) -- (*) Guest
Apartment (1) -- (*) Parking
Recreational Center (1) -- (*) Activity
Services (*) -- (1) Contractors
Services (1) -- (1) Monthly Bill

Person (1) -- (*) Events
Events (*) -- (1) Person
These relationships reflect how different entities in the database are connected and interact with each other.

5. Key Database Design Decisions:

Inclusion of Entities: The decision to include each entity in the database is based on their relevance to the management of the residential complex.

Building, Apartment, and Monthly Bill: These entities are fundamental to managing apartment rentals and monthly billing, which are core functions of the complex.

Recreational Center, Services, and Contractors: These entities help manage and track services provided within the complex, along with the contractors responsible for these services.

Person and Staff: These entities capture important information about residents and staff members, allowing for efficient management of personnel.

Events and Guest: These entities facilitate the management of events hosted in the complex and the guests attending these events.

Each entity plays a critical role in addressing the business problems identified, ensuring that the database serves as a comprehensive and integrated solution for the residential complex.

6. Conclusion:

This design document provides an overview of the entities, their attributes, relationships, and the key design decisions for the database. By implementing this database, the residential complex will be equipped to efficiently manage its buildings, apartments, services, events, parking and personnel, thereby addressing the identified business problems effectively.