7C1022/UM1 Database System and Security
School of Mathematics and Computer Science
Faculty of Science and Engineering

Group 8 Assignment
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Business Scenario: Real Estate Management Database System Report

Introduction:

This report presents a comprehensive database system for a real estate management company in West Midlands. This system is visualised to streamline operations, enhance the client's database, and manage properties effectively. To facilitate a thorough examination of the entities involved, such as owners, properties, contracts, locations, clients, their attributes, and the relationship between them, this report outlines a structured approach, beginning with identifying the purpose and scope of the database. Furthermore, we emphasised the importance of data integrity and security, recognizing the sensitivity of personal and financial information handled by the real estate company.

Finally, the report addresses the critical areas of testing, deployment, and future.

Scalability of the database system. It also ensures not just meeting with current technological requirements but is also designed for future advancement.

Entities involved in the database and their attributes.

Owners: this refers to an individual or entity that holds legal right to a piece of real estate such as land, building or natural resource in a particular location. The attributes associated to a property owner is defined as follows:

- Owner ID: This attribute refers to a unique identifier that is assigned to the owner of the property by the system.
- Owner Name: In this attribute the database stores the owner’s information according to their documents.

- Contact No: The system stores the Owner's contact details such as primary phone number, alternative phone, and number of a close relative or next of kin.
- Owner Address: The owner's address details both previous and current are stored in this attribute to facilitate proper verifications.

Properties: this can be assets, lands, buildings, warehouse owned by individual or companies for the sole purpose of making profit. The related attributes to this entity are explained below:

- Property ID: This attribute stores a unique number or identifier that is attached to each property for easy identification.
- Property Name: This is an attribute used to store a descriptive name of a property, which helps users of the database to easily identify properties in the database.
- Owner ID: This attribute stores owner's unique identifier with references to the property they owned, this makes the system very easy to understand.
- Location ID: This is a unique identifier assigned to a property with reference to where the property is located.
- Property Type: Every property has its own type and specifications; this information is stored in this attribute to help users easily identify property with respect to the type of the property.
- Status: The property status such as available, sold or rented details are stored in this attribute to easily identify property with reference to the status

Clients: These are individuals that are currently buying, selling, or renting, including prospective clients. Attributes related to this entity are stated and explained below:

- ClientID: This is a unique number assigned to each client according to their stage or status, such as buying, selling, or renting and it's been stored in this attribute for effective database management.
- Client Name: This attribute stores the name of the client according to the client's document for easy identification.
- Contact No: The client contact information is stored in this attribute to facilitate communication between client and the management.
- Client's Address: This information is saved in this attribute to easily identify the clients with their address.

Locations: This information contain the geographical details of properties; it also gives insight of the progression of development. Attributes related to this entity are listed and explained below:

- Location ID: This is a unique identifier assigned to a specific location, this attribute stores this information for database effectiveness.
- Location Address: Well detailed description about the location such as the basic amenities, local rules and regulation are stored in this attribute.
- State: A State is a sub region of a country. Every property belongs to a state, this information is saved in this attribute.

Contracts: this is a legal agreement between the real estate management company and a prospective client. This includes a descriptive detail of the property in compliance with real estate policies. Related attribute to this entity is stated and explained below**:**

- Client ID: This is a unique identifier assigned to a client.
- Owner ID: A unique identifier assigned to the owner of the property. This attribute stores the information for proper database management.
- Status: This information is saved in this attribute to know if the property is for rental, sales, or lease.
- Contract ID: This is a unique identifier for contracts, and it's been saved in this attribute.

Information Needs

This refers to the specific data requirements that the database must have to effectively support and manage the business operations. Understanding the purpose and need of information is vital for creating both functional and efficient database system. In our scenario, the information needs can be stated as follows:

- **Property Details:** The database needs to store a detailed information about each property, such as property size, type of property (residential, commercial), location, price, and status (Available, Sold, Rented).

- **Owners Information:** This entity perhaps has the most important Information needs. The database should include a detailed information about property owners, such as owner's name, contact details, ownership history and any specific preference or requirement, they have regarding the sales or management of their properties. This information is very important in maintaining owner relationships and for keeping records both for future preference and for business purposes.

- **Locations:** In the real estate industry location information needs is the most important information the database should store. Such information includes details about the geographical location of each property, such as address, neighbourhood, and proximity to basic amenities (like schools, hospitals, transportation). This information helps in property valuation, marketing, and sales.

Business Rules

Business rules are directives that defines an organization business's activities. These rules are important because they clarify the objectives or purpose of an organization and detail how processes will be performed. Here is an overview of potential informal business rules for our scenario:

- **Owner Information Management:** Owner's profile must be up to date to effectively manage the property. Detailed ownership history, including purchase dates and transfer details should be maintained for each property.

- **Property Management:** Property details for each property must be accurately recorded with their unique identifier to efficiently market the property and manage maintenance. Regular database update and checks to property should be conducted to ensure data accuracy.

- **Contract Agreement:** The database should store information about contracts such as leases, rental agreements, and service contract. Renewal dates, terms and conditions of contract must be watched closely to ensure quick response and compliance.

- **Location Management:** The database should group or arrange properties by their accurate location to facilitate efficient data management. This information should be up to date with respect with to any change in local regulations, local infrastructure, and ammines.

- **Client Data Integrity:** Clients details should be registered in a database before any transaction. This database should also store clients' preferences such as type of investment and type of property. A client can have multiple properties but can only engage in one contract per property at a time.

- **Data Security and Privacy:** Restrict access to sensitive information to unauthorized users to prevent data infringement. Regular data backups and security measures should be implemented to protect against system malfunction or data loss.

- **Compliance:** All operations, activities and data handling must comply with the relevant local laws and regulations, including the regulations in the real estate transactions and data protection

ERM DIAGRAM/MODEL RULES

x

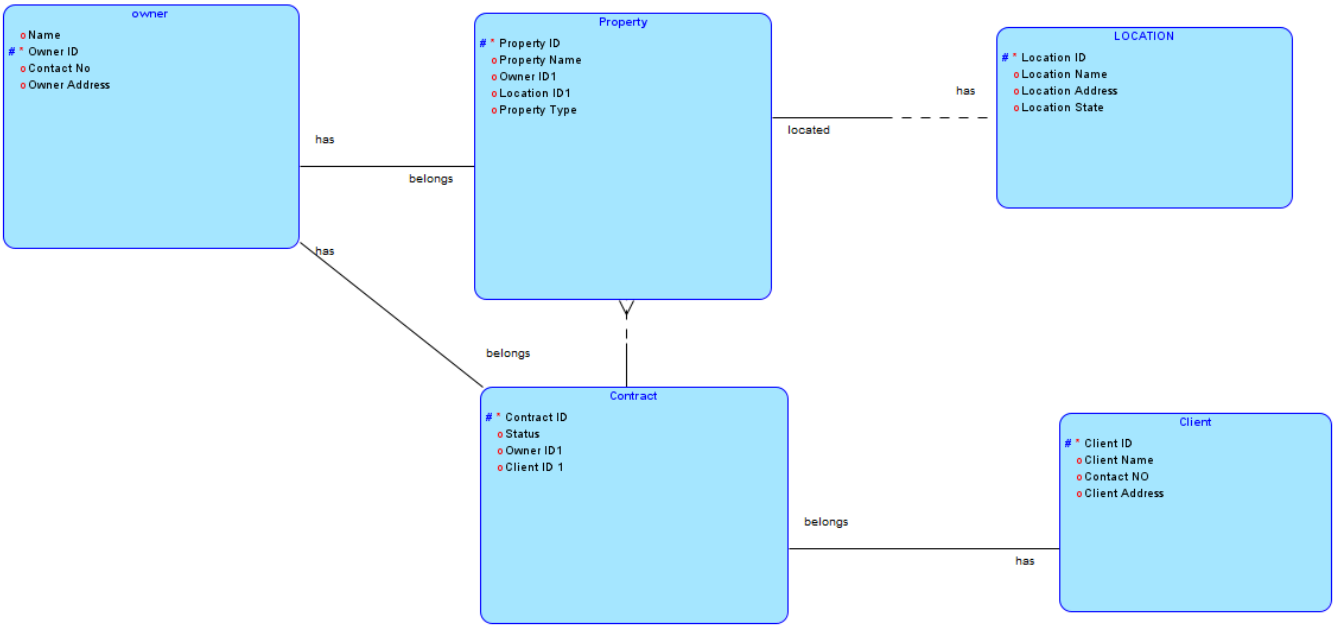

Figure 1: Logical ERM Diagram

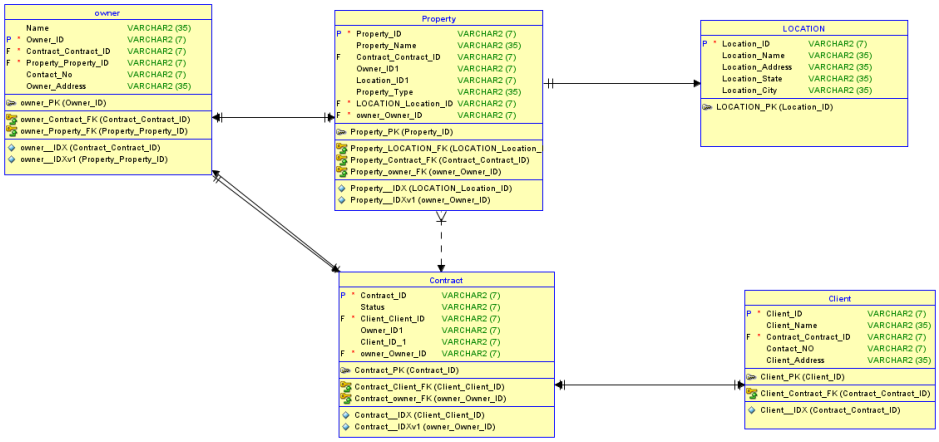

Figure 2: Relational ERM Diagram

Model Rules:

- **Owners and Properties: A one to many** relationships exist between owners and properties because an owner can own more than one property, but each property is owned by only one owner.

- **Locations and Properties: A one to many** relationships between locations and properties, this means that a location can have multiple properties, but a property cannot have more than one exact location.

- **Contracts and Properties: A one to one** relationship exist between contracts and properties, meaning that each property is linked to a particular contract and every contract is also linked to a property.

- **Clients and Contracts: Many to One** relationship between clients and contracts, meaning that a client can have more than one contracts.

Insights on Entity Relationships:

- **Owner And Property Relationships:** The relationship is one-to-many, indicated by the connecting line in the figure 2 above, showing that one owner can own multiple properties.
- **Contract And Property Relationship:** The diagram shows a one-to-one relationship between contract and property, meaning that one property can only be associated with one contract at a particular time.
- **Clients and Contracts:** This diagram above shows a foreign key (client_client_ID) in the contract table points to the client table indicating that a contract is associated with a single client. This shows a many to one relationship, as a client can have multiple contracts.
- **Location And Property Relationship:** The dashed lines as seen in the table above shows a non-identifying relationship, where property_property_ID in the location table is a foreign key that references property ID in the property table. This means that while properties have locations, the location is not solely defined by the property it's associated with.

Normalization

Normalization in a database is the process of organizing data to reduce redundancy and improve data integrity. This is process is very important in helping the system perform effectively. Here are some other advantages of normalization:

- **Minimize Data Redundancy.**
- **Prevent and update Anomalies.**
- **Maintain Data Integrity.**
- **Improve Query Performance**
- **Facilitate Efficient Database Designs.**

Un-normalise Data:

In this scenario when a client buys or rent a property, the system will have a lot of data redundancy, anomalies, and repetition, this can cause system malfunction and lack of efficiency.
Figure 3 below shows some examples of un-normalise data. Notice that Joe Doe own's multiple properties with same property ID. Then on the client table same occurred where Carol Black that was the same client had 2 different client ID.

Un-normalised	Owner ID	Owner Name	Property ID	Property Type	Location ID	Location name	Contract ID	Sale/Rental Price	Client ID	Client Name
	O001	John Doe	P001	Flat Apartment	L001	Birmingham	C001	250000	CL001	Alice Brown
			P001	Cottage	L001	Birmingham	C002	300000	CL002	Bob White
			P001	Condo	L003	Wolverhampton	C003	350000	CL003	Carol Black
	O002	Jane Smith	P004	Bungalow	L004	Cardiff	C004	450000	CL004	Daniel Ryan
			P001	Flat Apartment	L003	Wolverhampton	C005	20000	CL005	Daniel Ryan
	O003	Michael Johnson	P006	Condo	L005	Dudley	C006	25000	CL006	Carol Black
			P007	Studio	L002	Telford	C007	50000	CL007	Alex Ridwan

Figure 3 Un-normalised table

First Normal Form (1NF)

- Eliminate duplicate data from the same table.
- Create separate tables for each group related data.
- Identify the primary keys in our database (property ID, contract ID and client ID)

1NF			Pk				Pk		PK	
	Owner ID	Owner Name	Property ID	Property Type	Location ID	Location name	Contract ID	Sale/Rental Price	Client ID	Client Name
	O001	John Doe	P001	Flat Apartment	L001	Birmingham	C001	250000	CL001	Alice Brown
	O001	John Doe	P002	Cottage	L001	Birmingham	C002	300000	CL002	Bob White
	O001	John Doe	P003	Condo	L003	Wolverhampton	C003	350000	CL003	Carol Black
	O002	Jane Smith	P004	Bungalow	L004	Cardiff	C004	450000	CL004	Daniel Ryan
	O002	Jane Smith	P001	Flat Apartment	L003	Wolverhampton	C005	20000	CL005	Daniel Ryan
	O003	Michael Johnson	P006	Condo	L005	Dudley	C006	25000	CL006	Carol Black
	O005	Michael Johnson	P007	Studio	L002	Telford	C007	50000	CL007	Alex Ridwan

Figure 4 The First Norm form (1NF)

Second Normal Form (2NF)

For the second normal form we:

- Delete the partial dependencies in the database.
- Identifying the partial dependencies
- Property ID----- property type, location ID, location name, owner ID, owner name, contract ID
- Client ID---- client name, contact ID, property ID, property type.
- Contract ID------ sale/rental price, ClientID, owner ID, owner name, property ID.

The second normal form comprises of these three tables Client Table, Property Table and Contract Table.

2NF	Pk		FK				FK
Property Table	Property ID	Property Type	Location ID	Location name	Owner ID	Owner Name	Contract ID
	P001	Flat Apartment	L001	Birmingham	O001	John Doe	C001
	P002	Cottage	L001	Birmingham	O001	John Doe	C002
	P003	Condo	L003	Wolverhampton	O001	John Doe	C003
	P004	Bungalow	L004	Cardiff	O002	Jane Smith	C004
	P001	Flat Apartment	L003	Wolverhampton	O002	Jane Smith	C005
	P006	Condo	L005	Dudley	O003	Michael Johnson	C006
	P007	Studio	L002	Telford	O003	Michael Johnson	C007

Figure 5 Property Table

Contract

Pk

Contract ID	Sale/Rental Price	Client ID	Owner ID	Owner Name	Property ID	Property Type
C001	250000	CL001	O001	John Doe	P001	Flat Apartment
C002	300000	CL002	O001	John Doe	P002	Cottage
C003	350000	CL003	O001	John Doe	P003	Condo
C004	450000	CL004	O002	Jane Smith	P004	Bungalow
C005	20000	CL004	O002	Jane Smith	P001	Flat Apartment
C006	25000	CL003	O003	Michael Johnson	P006	Condo
C007	50000	CL005	O003	Michael Johnson	P007	Studio

Figure 6 Contract Table

FK

Client

Client ID	Client Name	Contract ID	Property ID	Property Type
CL001	Alice Brown	C001	P001	Flat Apartment
CL002	Bob White	C002	P002	Cottage
CL003	Carol Black	C003	P003	Condo
CL004	Daniel Ryan	C004	P004	Bungalow
CL005	Daniel Ryan	C005	P001	Flat Apartment
CL006	Carol Black	C006	P006	Condo
CL007	Alex Ridwan	C007	P007	Studio

Figure 7 Client Table

Third Normal Form (3NF)

For the third normal form we:

- Resolve transitive dependency.
- Identify the transitive dependency in our database.
- Contract ID---- sale/rental price, client ID, owner ID.
- Owner ID------ owner name
- Client ID------- client name and contract ID
- Location ID-----location name and property ID
- Property ID---------property type

Five tables are formed: Contract Table, Owner Table, Client Table, Location Table and Property Table respectively.

Contract

PK		FK	FK
Contract ID	Sale/Rental Price	Client ID	Owner ID
C001	250000	CL001	O001
C002	300000	CL002	O001
C003	350000	CL003	O001
C004	450000	CL004	O002
C005	20000	CL004	O002
C006	25000	CL003	O003
C007	50000	CL005	O003

Figure 8: Contract Table

Owner

PK	
Owner ID	Owner Name
O001	John Doe
O001	John Doe
O001	John Doe
O002	Jane Smith
O002	Jane Smith
O003	Michael Johnson
O003	Michael Johnson

Figure 9: Owner Table

Client

PK		FK
Client ID	Client Name	Contract ID
CL001	Alice Brown	C001
CL002	Bob White	C002
CL003	Carol Black	C003
CL004	Daniel Ryan	C004
CL004	Daniel Ryan	C005
CL003	Carol Black	C006
CL005	Alex Ridwan	C007

Figure 10: Client Table

Location

PK		FK
Location ID	Location name	Property ID
L001	Birmingham	P001
L001	Birmingham	P002
L003	Wolverhampton	P003
L004	Cardiff	P004
L003	Wolverhampton	P001
L005	Dudley	P006
L002	Telford	P007

Figure 11: Location Table

Property

Property ID	Property Type
P001	Flat Apartment
P002	Cottage
P003	Condo
P004	Bungalow
P001	Flat Apartment
P006	Condo
P007	Studio

Figure 12: Property Table

Implementation

These Tables were created in the SQL Oracle

```
CREATE TABLE client (
    client_id           VARCHAR2(7 CHAR) NOT NULL PRIMARY KEY,
    client_name         VARCHAR2(35),
    contract_id         VARCHAR2(7 CHAR) NOT NULL,
    contact_no          VARCHAR2(15),
    client_address      VARCHAR2(35)
)
```

```
Table created.
```

Client Table Created

```
CREATE TABLE contract (
    contract_id      VARCHAR2(7 CHAR) NOT NULL PRIMARY KEY,
    contract_status  VARCHAR2(35),
    client_id        VARCHAR2(7 CHAR) NOT NULL,
    owner_id         VARCHAR2(7 CHAR)
)
```

```
Table created.
```

Contract Table Created

```
CREATE TABLE location (
    location_id      VARCHAR2(7 CHAR) NOT NULL PRIMARY KEY,
    location_name    VARCHAR2(35),
    location_address VARCHAR2(35)
   )
```

```
Table created.
```

Location Table Created

```
CREATE TABLE owner (
    Owner_name                VARCHAR2(35),
    owner_id            VARCHAR2(7 CHAR) NOT NULL PRIMARY KEY,
    contract_id VARCHAR2(7 CHAR) NOT NULL,
    property_id VARCHAR2(7 CHAR) NOT NULL,
    contact_no          VARCHAR2(15),
    owner_address       VARCHAR2(35)
)
```

```
Table created.
```

Owner Table Created

```
CREATE TABLE property (
    property_id         VARCHAR2(7 CHAR) NOT NULL PRIMARY KEY,
    contract_id         VARCHAR2(7 CHAR),
    owner_id            VARCHAR2(7 CHAR),
    location_id         VARCHAR2(7 CHAR),
    property_type       VARCHAR2(35)

)
```

```
Table created.
```

Property Table Created

The tables were each inserted with 4 rows data.

```
INSERT ALL
INTO client (client_id, client_name, contract_id, contact_no, client_address) VALUES ('c1001', 'Alice Brown',
INTO client (client_id, client_name, contract_id, contact_no, client_address) VALUES ('c1002', 'Alice Smith',
INTO client (client_id, client_name, contract_id, contact_no, client_address) VALUES ('c1003', 'Jacob Brown',
INTO client (client_id, client_name, contract_id, contact_no, client_address) VALUES ('c1004', 'Mandy White',

SELECT 1 FROM DUAL
```

```
4 row(s) inserted.
```

Client Table Inserted

```
INSERT ALL
INTO contract (contract_id, contract_status, client_id, owner_id) VALUES ('c001', 'rental', 'c1001','on001' )
INTO contract (contract_id, contract_status, client_id, owner_id) VALUES ('c002', 'sale', 'c1002','on002' )
INTO contract (contract_id, contract_status, client_id, owner_id) VALUES ('c003', 'rental', 'c1003','on003' )
INTO contract (contract_id, contract_status, client_id, owner_id) VALUES ('c004', 'sale', 'c1004','on004' )

SELECT 1 FROM DUAL
```

```
4 row(s) inserted.
```

Contract Table Inserted

```
INSERT ALL
INTO location (location_id, location_name, location_address) VALUES ('1001', 'Birmingham', '9 Vox living')
INTO location (location_id, location_name, location_address) VALUES ('1002', 'Wolverhamton', '8 Fling road')
INTO location (location_id, location_name, location_address) VALUES ('1003', 'Dudley', '10 Thornley street')
INTO location (location_id, location_name, location_address) VALUES ('1004', 'Birmingham', '11 Vox road')

SELECT 1 FROM DUAL
```

```
4 row(s) inserted.
```

Location Table Inserted

```
INSERT ALL
INTO owner (Owner_name, owner_id, contract_id, property_id, contact_no, owner_address) VALUES ('John Doe', 'on
INTO owner (Owner_name, owner_id, contract_id, property_id, contact_no, owner_address) VALUES ('John Wayne', '
INTO owner (Owner_name, owner_id, contract_id, property_id, contact_no, owner_address) VALUES ('Smith Light',
INTO owner (Owner_name, owner_id, contract_id, property_id, contact_no, owner_address) VALUES ('Hanna White',

SELECT 1 FROM DUAL
```

```
4 row(s) inserted.
```

Owner Table Inserted

```
INSERT ALL
INTO property (property_id, contract_id, owner_id, location_id, property_type) VALUES ('p001', 'c001', 'on001'
INTO property (property_id, contract_id, owner_id, location_id, property_type) VALUES ('p002', 'c002', 'on002'
INTO property (property_id, contract_id, owner_id, location_id, property_type) VALUES ('p003', 'c003', 'on003'
INTO property (property_id, contract_id, owner_id, location_id, property_type) VALUES ('p004', 'c004', 'on004'

SELECT 1 FROM DUAL
```

```
4 row(s) inserted.
```

Property Table Inserted

The tables were altered to introduce the foreign keys.

```
ALTER TABLE client
    ADD CONSTRAINT client_contract_fk FOREIGN KEY (contract_id)
        REFERENCES contract (contract_id)
```

```
Table altered.
```

Client Table Altered

```
ALTER TABLE contract
    ADD CONSTRAINT contract_client_fk FOREIGN KEY (client_id
        REFERENCES client (client_id )
```

```
Table altered.
```

```
ALTER TABLE contract
    ADD CONSTRAINT contract_owner_fk FOREIGN KEY (owner_id )
        REFERENCES owner (owner_id )
```

```
Table altered.
```

Contract Table Altered

```
ALTER TABLE property
    ADD CONSTRAINT property_contract_fk FOREIGN KEY (contract_id)
        REFERENCES contract (contract_id)
```

```
Table altered.
```

```
ALTER TABLE property
    ADD CONSTRAINT property_location_fk FOREIGN KEY (location_id)
        REFERENCES location (location_id)
```

```
Table altered.
```

```
ALTER TABLE property
    ADD CONSTRAINT property_owner_fk FOREIGN KEY (owner_id)
        REFERENCES owner (owner_id)
```

```
Table altered.
```

Property Table Altered

The SQL Queries Implemented

1. Retrieve all properties with their locations.

This query selects properties along with their respective location details. It shows a relationship between the property and location entitle.

```
SELECT
    p.property_id,
    p.contract_id,
    p.owner_id,
    l.location_id,
p.property_type
FROM
    property p
JOIN
    location l ON p.location_id = l.location_id
```

PROPERTY_ID	CONTRACT_ID	OWNER_ID	LOCATION_ID	PROPERTY_TYPE
p001	c001	on001	1001	flat apartment
p002	c002	on002	1002	condo
p003	c003	on003	1003	house
p004	c004	on004	1004	house

4 rows selected.

2. List all contracts for a specific client.

This query fetches each contract linked to a property and a client. It shows the relationship between both entities.

```
SELECT c.contract_id, c.contract_status, c.client_id, c.owner_id
FROM contract c
JOIN client cl ON c.client_id = cl.client_id
WHERE c.client_id = 'cl001'
```

CONTRACT_ID	CONTRACT_STATUS	CLIENT_ID	OWNER_ID
c001	rental	cl001	on001

3. Find property owners.

This query is used to identify house owners and the number of properties they own. It shows a significant relationship between the owner entity and property entity.

```
SELECT o.owner_id, o.owner_name, COUNT(p.property_id) AS property_count
FROM owner o
JOIN property p ON o.owner_id = p.owner_id
GROUP BY o.owner_id, o.owner_name
HAVING COUNT(p.property_id) = 1
```

OWNER_ID	OWNER_NAME	PROPERTY_COUNT
on002	John Wayne	1
on003	Smith Light	1
on001	John Doe	1
on004	Hanna White	1

4 rows selected.

4. Check contract status.

This query allows users to check the contract status of a particular client regarding the particular property. This query shows if the property is rented, sold or available.

```
SELECT
    p.property_id,
    p.property_type,
    o.owner_name,
    c.contract_id,
    c.contract_status
FROM
    property p
JOIN
    contract c ON p.contract_id = c.contract_id
JOIN
    owner o ON p.owner_id = o.owner_id
WHERE
    c.contract_status = 'rental'
```

PROPERTY_ID	PROPERTY_TYPE	OWNER_NAME	CONTRACT_ID	CONTRACT_STATUS
p001	flat apartment	John Doe	c001	rental
p003	house	Smith Light	c003	rental

2 rows selected.

Status for rental

```
SELECT
    p.property_id,
    p.property_type,
    o.owner_name,
    c.contract_id,
    c.contract_status
FROM
    property p
JOIN
    contract c ON p.contract_id = c.contract_id
JOIN
    owner o ON p.owner_id = o.owner_id
WHERE
    c.contract_status = 'sale'
```

PROPERTY_ID	PROPERTY_TYPE	OWNER_NAME	CONTRACT_ID	CONTRACT_STATUS
p002	condo	John Wayne	c002	sale
p004	house	Hanna White	c004	sale

2 rows selected.

Status for sales

Discussion

Scope And Purpose:

The purpose of the real estate database system is to streamline operations, support decision-making and enhance customer service, maintains data security, and ensure compliance.

The Scope refers to the property listings, client information, transactions, agent details, market analytics and ensuring data is accessible to the authorized users in an encrypted form.

Authentication:

Authorization is the first line of defence, verifying user identities through an encrypted process such as passwords, biometrics, two-factor authentication to ensure that only authorised individuals can access the system.

Authorization:

Authorization determines the level of permission the authenticated users have, based on their roles within the company. This controls what users can see and do within the database. It only gives access to data necessary for their tasks.

Backup and Recovery:

These procedures are essential for data preservation, enabling the restoration of the database in the event of system malfunction, data loss or a disaster. Regular update and tested recovery plans ensure less or no data loss.

Implementation of Logs:

Logs are vital for monitoring and troubleshooting the database as well as for compliance and security. This plays a very vital role in the database to ensure proper authentication such as who can access logs, change logs, or update logs.

Data Integrity:

Data integrity involves maintaining the accuracy and consistency of data throughout its life cycle. It's ensuring through validation rules, constraints, and database normalization in other to prevent duplicate entries, incorrect data formats and maintain correct relationships between data.

Database Administrators (DBAs):

DBAs play a very important role in managing and optimizing the database environment. They are responsible for the system performance, security, user management, implementation of logs, designing, and ensuring compliances with local policies and regulations.

Compliance:

Compliance with regulations (e.g. GDPR, CCPA, Fair Housing Act) involves adhering to legal requirements related to database protection, privacy, and fair practices. It necessitates implementing measures for data security, user consent and rights to data access and deletion.

Training And Awareness Programs:

These programs help educates users about the correct use of the database system, security practices, and their role in maintaining data integrity. Training can reduce human error, increase data quality, and enhance the effectiveness of security. Keeping these programs updated helps to adapt to threats and maintain compliance with company standards.

Conclusion

The development and implementation of the real estate management database system is pivotal in the organisation; it improves decision making, organises operation and efficiency.

Evidently, our objective is to streamline and automate the process involved in real estate management and we can say the benefits of adopting a real estate management database system includes:

1. **Efficiency and Organization:** The database system has effectively centralized data related to property, client, location, property type, contract. This makes it easy for information to be organized and efficient, less errors, reduced time, and effort for routine task.
2. **Enhanced Decision Making:** With access to comprehensive data, strategic and efficacious decisions regarding the properties can be made on the entities involved, such as, owners, properties, clients, location, and contracts.
3. **Improved Customer Service:** Customer Relationship Management would be improved because of a centralized database system as the managers would understand what the clients needs, preference and behaviour, thus, help to deliver personalized service, satisfaction, and retention.
4. **Centralized Data Management:** Stakeholders can easily access, review, and update critical data as all property related information is in a database, hence, leading to improved data accuracy and integrity.
5. **Data Accuracy and Integrity:** The data in the database is validated, the system has significantly enhanced data accuracy and integrity which means stakeholders can rely on the information in the database for making strategic and critical decisions.

In conclusion, the real estate management database system is an asset for real estate companies, and it is essential to keep up in a dynamic competitive environment.