DELIVERABLE 1
Group 7

Summary

1. Overview of the Business Scenario......1
1.1 Screenshots of business functionalities......1
2. Mission Statement......3
3. Mission Objectives......4
3.3 Data Storage, Retrieval, and Management......4
3.4 Integration......4
3.5 User-Friendly Forms......4
3.6 Reports......5
4. Entity Relationship Diagram & Explanation......5
4.1 Client Management & Subtyping......5
4.2 Case Management with Maximum Flexibility......6
4.3 Legal Documents & Archival......6
4.4 Transactions & Financial Services......6
4.5. Corporate Services & Compliance......7
4.6. Marriage Management......7
4.7. Appointments & Communication Tracking......7
4.8. External Parties & Legal Witnesses......8
5. Entity Relationship Diagram......9
6. DATA DICTIONARY: Description of the Entities......10
7. Description of the Attributes......14
8. Relational Schema......19

1. Overview of the Business Scenario

Our team is part of a consulting firm specialized in data management and databases. We were given the task to serve “Lessard et Ahiba Notaires”, an all-women notarial firm with offices in Saint-Eustache and Montreal, offering more than 10 specialized legal services. Our help will consist in formulating a database model that would satisfy all the needs of the notarial firm. Subsequently, we will share with Lessard et Ahiba Notaires a total of twenty SQL queries; some that will streamline operational processes and others that will generate reports on a variety of insights.

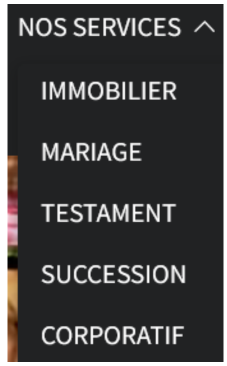
1.1 Screenshots of business functionalities

<u>Screenshot 1</u>

Business functionality shown that are within the scope of the project :

- Record communications between the firm and external stakeholders
- Record appointments data
- Record transactions data

<u>Screenshot 2</u>



Business functionality shown that are within the scope of the project :

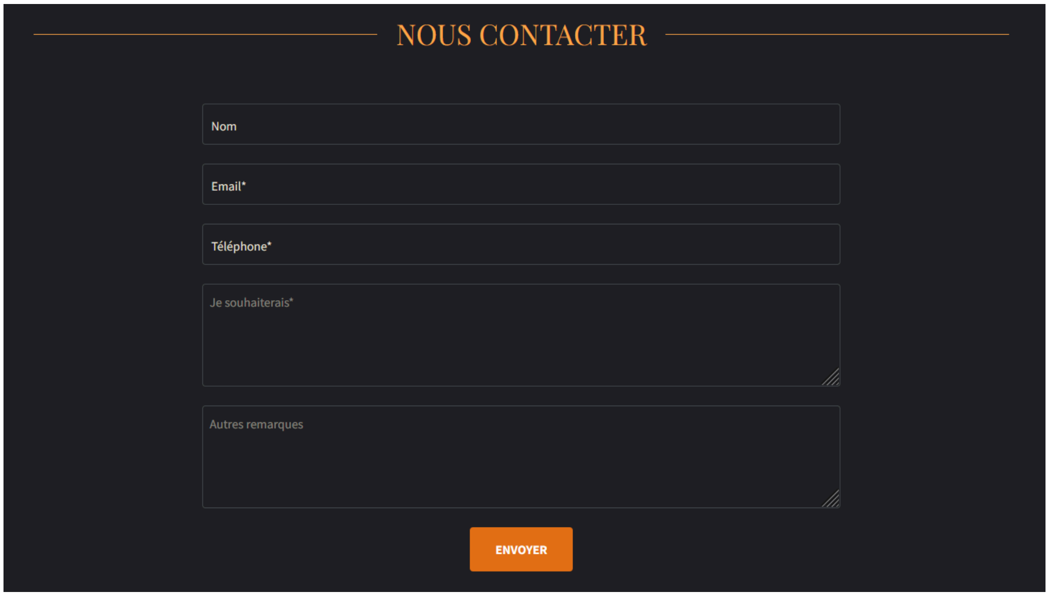
- Record case-related marriage data
- Record case-related will data
- Record case-related testament data
- Record case-related corporate data
- Record case-related real estate data

<u>Screenshot 3</u>

Business functionality shown that are within the scope of the project :

- Record staff data

<u>Screenshot 4</u>



Business functionality shown that are within the scope of the project :

- Record client data

2. Mission Statement

The purpose of the Lessard et Ahiba Notaires database is to create a comprehensive system that records and manages information about every aspect of the business, from its internal processes to case-related data and payments

3. Mission Objectives

3.3 Data Storage, Retrieval, and Management

To store, retrieve, and manage data on Individual Clients.
To store, retrieve, and manage data on Corporate Clients.
To store, retrieve, and manage data on Corporate Shareholders.
To store, retrieve, and manage data on Shareholders.
To store, retrieve, and manage data on Marriages.
To store, retrieve, and manage data on Appointments.
To store, retrieve, and manage data on Appointment Participation.
To store, retrieve, and manage data on Clients.
To store, retrieve, and manage data on Identification Documents.
To store, retrieve, and manage data on Payments.
To store, retrieve, and manage data on Case Participation.

To store, retrieve, and manage data on Communications.
To store, retrieve, and manage data on Staff.
To store, retrieve, and manage data on Case Assignments.
To store, retrieve, and manage data on Cases.
To store, retrieve, and manage data on Document Libraries.
To store, retrieve, and manage data on Documents.
To store, retrieve, and manage data on Properties.
To store, retrieve, and manage data on Transactions.
To store, retrieve, and manage data on Real Estate Transactions.
To store, retrieve, and manage data on Estate Transactions.
To store, retrieve, and manage data on Financial Institutions.
To store, retrieve, and manage data on Land Registry Offices.
To store, retrieve, and manage data on Corporate Minutes.
To store, retrieve, and manage data on Participating Parties.
To store, retrieve, and manage data on Party Participation.

3.4 Integration

To integrate diverse data sources into a unified repository, making data universally accessible and useful for informed decision-making

3.5 User-Friendly Forms

To create a user-friendly form to capture and manage Client Intake data.
To create a user-friendly form to capture and manage Case Details data.
To create a user-friendly form to capture and manage Real Estate Transaction data.
To create a user-friendly form to capture and manage Estate Planning data.
To create a user-friendly form to capture and manage Corporate Service data.
To create a user-friendly form to capture and manage Appointment Scheduling data.
To create a user-friendly form to capture and manage Real Estate Services data.
To create a user-friendly form to capture and manage Wills and Mandates data.
To create a user-friendly form to capture and manage Succession data.
To create a user-friendly form to capture and manage Marriage Services data.
To create a user-friendly form to capture and manage detailed Succession data.
To create a user-friendly form to capture and manage detailed Real Estate Transaction data.

3.6 Reports

To generate a report with key insights and summaries on Case Status.
To generate a report with key insights and summaries on Financials.
To generate a report with key insights and summaries on Client Activity.
To generate a report with key insights and summaries on Document Inventory.
To generate a report with key insights and summaries on Real Estate Transactions.

To generate a report with key insights and summaries on Compliance.

4. Entity Relationship Diagram & Explanation

Our database design for Lessard et Ahiba Notaires was developed to capture the complexity and flexibility required for a notarial firm's core activities. It is structured around central concepts of clients, cases, documents, transactions, and legal interactions, while ensuring scalability, data normalization, and compliance tracking.

4.1 Client Management & Subtyping

Entities: Client, IndividualClient, CorporateClient, IdentificationDocuments, Payment

We implemented a generalization hierarchy with Client as a supertype and IndividualClient and CorporateClient as subtypes. This allows for clean separation of attributes unique to each client type (e.g., date of birth vs. Business Number).

- The ClientType attribute in the Client table provides clarity on which subtype applies, enabling simpler query logic.

- IdentificationDocuments is designed as a separate entity to centralize identity verification while remaining extensible.

- Payment is linked directly to clients, enabling individual financial reporting and summaries for auditing purposes.

Assumption: A client is considered active if they have at least one open case.

4.2 Case Management with Maximum Flexibility

Entities: Case, CaseParticipation, Property, AssignedTo

- The Case table uses a CaseType attribute (e.g., real estate, estate, marriage, corporate) to handle various legal services under one flexible structure.

- CaseParticipation enables a many-to-many relationship between clients and cases with detailed RoleInCase (e.g., buyer, seller, executor, deceased). This removes the need for redundant role-specific tables and allows a client to play different roles across different cases. For instance deceased parties are handled via the role deceased in CaseParticipation, rather than creating a specific deceased entity.

- Property is directly linked to Case (no junction table needed), as one property belongs to one case at a time, matching real-world usage.

Assumption: A client may have multiple roles across multiple cases over time.

4.3 Legal Documents & Archival

Entities: Documents, DocumentLibrary

- Documents hold core metadata, including verification status, path, and type (e.g., will, mandate).

- DocumentLibrary links documents to both the client and the relevant case, enabling flexible indexing and retrieval, especially for shared or reused legal documents.

Assumption: All documents are always associated with a client, and optionally with a case.

4.4 Transactions & Financial Services

Entities: Transaction, RealEstateTransaction, EstateTransaction, FinancialInstitution

- SImilarly to client, Transaction acts as a supertype with shared fields (Amount, TransactionDate, etc.). The subtypes enable more detail with RealEstateTransaction that includes mortgage details, institution, and service type (e.g., purchase, refinancing). And EstateTransaction focuses on estate value distribution (assets/liabilities).

- This structure enables advanced financial reporting and analytics (e.g., revenue by type).

Assumption: Different real estate services can exist without creating additional transaction types.

4.5. Corporate Services & Compliance

Entities: CorporateClient, CorporateShareholders, CorporateMinute, Shareholders

- CorporateShareholders maps many-to-many relationships between corporations and individuals, with ownership percentage and position tracking.

- CorporateMinute tracks all internal governance entries including meeting dates, topics, and regulatory updates.

- This design ensures regulatory readiness and facilitates compliance reporting, including shareholder transparency.

Assumption: A corporate case is simply a case where CaseType = 'Corporate'.

4.6. Marriage Management

Entities: Marriage, Case, Property

- Marriage links exactly two clients using Spouse1ClientID and Spouse2ClientID. All marriage contracts and marital regimes are stored here.

- If property is involved in the marriage, it is linked via the Case entity.

- This model allows prenuptial agreement tracking, and support for property regime changes.

Assumption: Marriage-related services are isolated by CaseType = 'Marriage'.

4.7. Appointments & Communication Tracking

Entities: Appointment, AppointmentParticipation, Communication

- AppointmentParticipation links appointments to clients, staff, and optionally a case, supporting flexible meeting configurations.

- Communication records client–staff interactions, summaries, and follow-up actions to maintain legal audit trails and service consistency.

Assumption: Appointments may be scheduled even without a case (e.g., for consultations).

4.8. External Parties & Legal Witnesses

Entities: ParticipatingParty, PartiesParticipating

- These tables extend the system to include non-clients like heirs, witnesses, or executors.

- Executors are captured as external entities and not stored as clients. This avoids confusion with paying clients while preserving their role in succession or will cases.

Assumption: Executors are not internal staff. They are stored as ParticipatingParty.

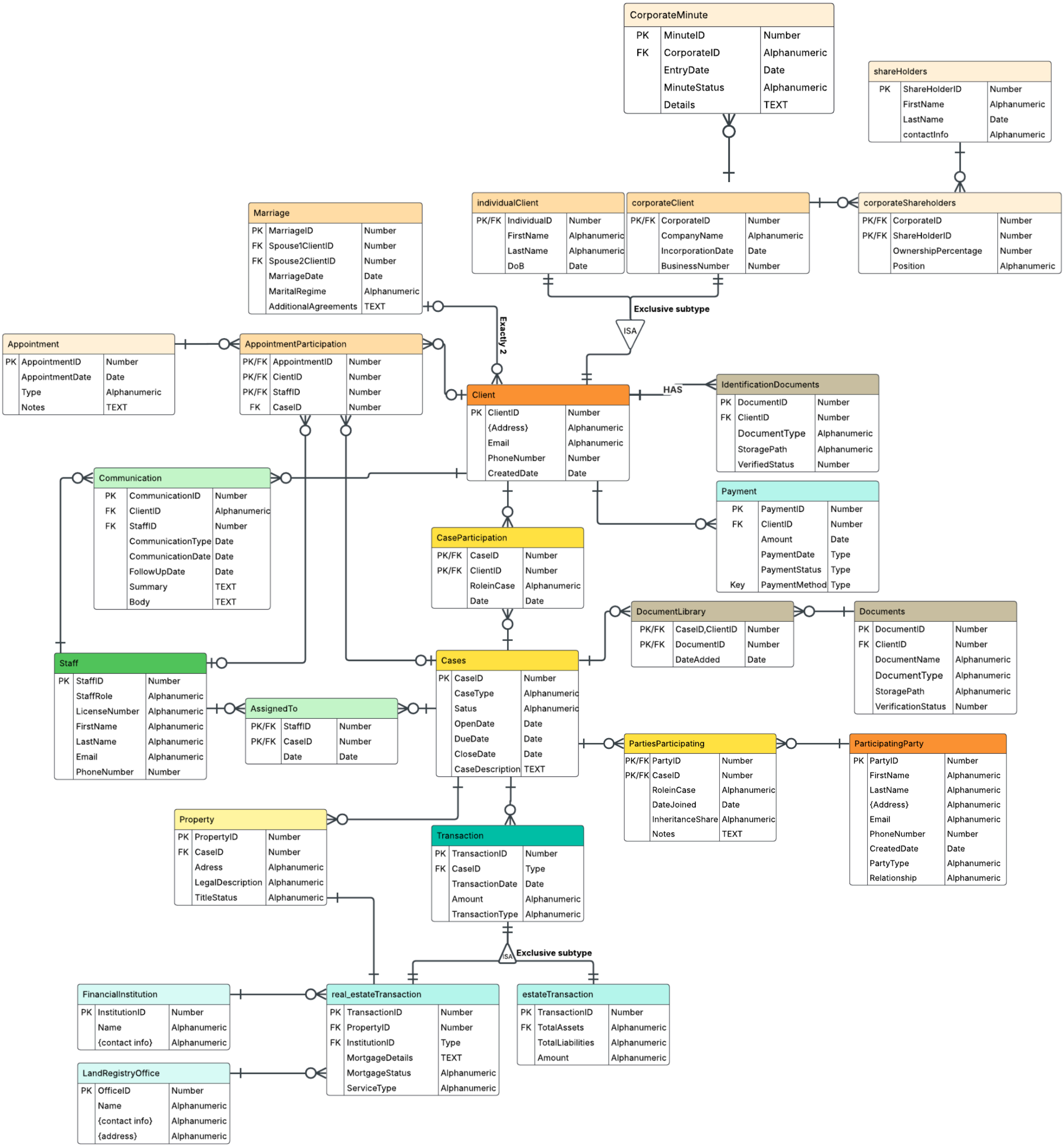
- The design avoids unnecessary subtypes (e.g., separate tables for buyer/seller) in favor of role-based participation models.

- Use of junction tables (like CaseParticipation, DocumentLibrary, CorporateShareholders) allows flexible relationships that match real-world complexity.

- Each core activity of the notary firm is cleanly isolated in the schema, making the system modular, maintainable, and scalable to support future services like immigration, name changes, or commercial leasing.

Our ERD is built with a client-and-case-centric mindset, focused on real-world notarial practices, role flexibility, and efficient compliance tracking. It ensures data integrity, minimizes redundancy, and remains extensible for future legal service expansion. This model supports rich queries, dynamic reporting, and seamless integration with front-end or analytics tools and making it a robust foundation for the firm's digital transformation.

5. Entity Relationship Diagram



6. DATA DICTIONARY: Description of the Entities

Entity Name	**Description**	**Aliases (if any)**	**Occurrence**
Client	This is the parent entity that contains the information needed to identify a particular client, whether a corporate client or an individual client.		A client entry is always linked to either one individual client or (exclusively) one corporate client.
individualClient	A subtype of the client entity. It records the specific information that are unique to an individual client.		If it exists, it has a parent Client entry.
corporateClient	The other subtype of the Client entity. It records information specific to corporate clients such as business numbers. This structure is the most optimized to capture everything on both types of client a notary company can have, without redundancy.		If it exists, it has a parent Client entry.
CorporateShareholders	This entity serves to record the many to many relationship between Shareholders and corporations. It can also record the ownership percentage of the shareholder in a particular company and its position.		A shareholder can be in multiple corporations and a corporation can have multiple shareholders
Shareholder	Contains information about shareholders, including contact details.		Each shareholder can appear in multiple corporateShareholders entries
CorporateMinute	This entity linked to corporateClient is recording minute entries with their status date and details. This entity is instrumental in creating a compliance report for a specific corporation if needed		One company can optionally have multiple corporate minutes.

Marriage	This entity records a marriage relationship for a marriage case. It links the two spouses together. It also includes the Date, any additional agreements, and if a property is linked to a marriage it can be found through the case entity.		One marriage entity for exactly two individual clients.
Appointment	Records an appointment instance with the date, the appointment type and notes.		One appointment entity can be linked to many appointments participation
Appointment participation	Represents the participation of a client and a staff member in an appointment, optionally linked to a case.		Each record links one appointment with one client and one staff member; many AppointmentParticipation records can be linked to one Appointment.
IdentificationDocuments	Stores documents that identify a client; includes document type, storage path, and verification status.		Each document is linked to exactly one Client, but a client may have multiple identification documents.
Payment	Records payment details made by a client, including amount, date, status, and method.		Each Payment is made by one Client; a client can make many payments over time.
CaseParticipation	Captures the role a client plays in a case, including the specific role and the date of participation.		Each CaseParticipation record links one Client to one Case; a case can involve many clients, and a client can participate in many cases.

Communication	Contains records of communications between clients and staff, including type, date, follow-up, and message content.		Each Communication record involves one Client and one Staff member; a client or staff may be involved in multiple communications.
Staff	Stores information about staff members, including role, license, and contact details.		Each staff member can be linked to multiple communications, appointment participations, and case assignments.
AssignedTo	Records the assignment of staff to a case, indicating the staff member's role and the date of assignment.		Each record links one Staff member to one Case; a case may have multiple staff assigned, and a staff member can be assigned to many cases.
Case	Contains overall case information including type, status, dates (open, due, close), and description.		Each Case is independent; many related records (communications, payments, appointments, case participations, property, transactions, etc.) reference a case.
DocumentLibrary	Links documents to cases and clients, along with the date the document was added, acting as a join table for documents that are part of a case.		Each record associates one Document with one Case and one Client; a case may have many documents and a client may be involved in multiple document library entries.

Documents	Stores general document details for a client, including document name, type, storage path, and verification status.		Each Document is associated with one Client; a client may have many documents.
Property	Represents property details related to a case, including address, legal description, and title status.		Each Property is linked to one Case; a case may involve one or more properties (for instance, in a real estate transaction).
Transaction	Captures general financial transactions related to a case, including transaction date, amount, and type.		Each Transaction is linked to one Case; a case can have many transactions (for real estate or estate planning).
real_estateTransaction	A specialization of Transaction for real estate dealings, adding details like mortgage information, service type, and linking to a specific property and financial institution.		Each real_estateTransaction record corresponds to one Transaction and involves one Property and one FinancialInstitution.
estateTransaction	A specialization of Transaction for estate planning cases, including details like total assets, total liabilities, and transaction amount.		Each estateTransaction corresponds to one Transaction; it is used when the transaction is part of estate settlement cases.
FinancialInstitution	Stores details about financial institutions such as banks that may be involved in real estate transactions, including contact information.		Each FinancialInstitution may be referenced in many real_estateTransaction records.

LandRegistryOffice	Contains details about land registry offices, including name, contact information, and address, relevant for property title verification in real estate transactions.		Each LandRegistryOffice is independent and may be referenced indirectly by property-related operations (if modeled further).
PartiesParticipating	Represents the relationship between a participating party (from ParticipatingParty) and a case, capturing their role, date joined, inheritance share (if applicable), and any additional notes.		Each record links one ParticipatingParty to one Case; a case can have many participating parties, and a participating party may be involved in multiple cases.
ParticipatingParty	Contains detailed information about external parties that may participate in a case (such as heirs, witnesses, sellers, etc.), including contact details and a type indicator.		Each ParticipatingParty is independent and can participate in zero or more cases (via PartiesParticipating).

7. Description of the Attributes

[NOTE: to keep it simple, only show few important attributes in each entity; no need to show all attributes]

Entity Name	**Attribute**	**Description**	**Data Type**	**Nulls**	**Multivalued**	**Derived**	**Default**
Client	ClientID	Unique identifier for each client	INT	No	No	No	None
	Email	Contact email address	VARCHAR(100)	No	No	No	None

	CreatedDate	Date client was added	DATE	No	No	No	CURRENT_DATE
IndividualClient	IndividualID	Links to parent client entity	INT	No	No	No	None
	FirstName, LastName	Client’s full name	VARCHAR(50)	No	No	No	None
CorporateClient	CorporateID	Links to parent client entity	INT	No	No	No	None
	CompanyName	Legal name of corporation	VARCHAR(100)	No	No	No	None
CorporateShareholders	CorporateID, ShareHolderID	Relationship between shareholders and corporations	INT	No	No	No	None
	OwnershipPercentage	Ownership stake in corporation	DECIMAL(5,2)	No	No	No	0
ShareHolders	ShareHolderID	Unique ID for shareholders	INT	No	No	No	None

	contactInfo	Shareholder contact information	VARCHAR(100)	Yes	No	No	None
Marriage	MarriageID	Unique ID for marriage record	INT	No	No	No	None
	MarriageDate	Official date of marriage	DATE	No	No	No	None
Appointment	AppointmentID	Unique ID for each appointment	INT	No	No	No	None
	AppointmentDate	Scheduled date of appointment	DATE	No	No	No	CURRENT_DATE
AppointmentParticipation	Role	Participant's role in the appointment	VARCHAR(50)	Yes	No	No	None
IdentificationDocuments	DocumentID	Unique identifier for client documents	INT	No	No	No	None
	DocumentType	Type of identification document	VARCHAR(50)	No	No	No	None

Payment	PaymentID	Identifier for client payments	INT	No	No	No	None
	Amount	Amount paid	DECIMAL(10,2)	No	No	No	0
CaseParticipation	RoleInCase	Role of client in case	VARCHAR(50)	No	No	No	None
Communication	CommunicationID	Identifier for each communication	INT	No	No	No	None
	Summary	Brief summary of communication	TEXT	Yes	No	No	None
Staff	StaffID	Unique staff identifier	INT	No	No	No	None
	StaffRole	Position or role of the staff member	VARCHAR(50)	No	No	No	None
AssignedTo	Role	Role of staff assigned to a case	VARCHAR(50)	Yes	No	No	None
Cases	CaseID	Unique identifier for a legal case	INT	No	No	No	None

	Status	Current status of the case	VARCHAR(50)	No	No	No	'Open'
DocumentLibrary	DateAdded	Date document was added to library	DATE	No	No	No	CURRENT_DATE
Documents	DocumentName	Descriptive name of document	VARCHAR(100)	No	No	No	None
Property	PropertyID	Unique property identifier	INT	No	No	No	None
	TitleStatus	Status of property title	VARCHAR(50)	No	No	No	None
Transaction	TransactionID	Identifier for transactions	INT	No	No	No	None
	TransactionDate	Date transaction occurred	DATE	No	No	No	CURRENT_DATE
real_estateTransaction	MortgageStatus	Status of the mortgage	VARCHAR(50)	No	No	No	'Pending'
estateTransaction	TotalAssets	Total value of estate assets	DECIMAL(12,2)	Yes	No	Yes	None

FinancialInstitution	InstitutionID	Financial institution ID	INT	No	No	No	None
LandRegistryOffice	OfficeID	Land registry office identifier	INT	No	No	No	None
CorporateMinute	MinuteStatus	Status of corporate minute entry	VARCHAR(50)	No	No	No	None
PartiesParticipating	RoleInCase	Role of party in case	VARCHAR(50)	No	No	No	None
ParticipatingParty	PartyID	Unique ID for each participating party	INT	No	No	No	None
	PartyType	Type of party (e.g., witness, heir)	VARCHAR(50)	No	No	No	None

8. Relational Schema

individualClient:
- IndividualID (Number) – **PK/FK** (references Client.ClientID)
- FirstName (Alphanumeric)
- LastName (Alphanumeric)
- DoB (Date)

corporateClient:
- CorporateID (Number) – **PK/FK** (references Client.ClientID)
- CompanyName (Alphanumeric)

• IncorporationDate (Date)
• BusinessNumber (Number)

corporateShareholders:
• CorporateID (Number) – **PK/FK** (references corporateClient.CorporateID)
• ShareHolderID (Number) – **PK/FK** (references shareHolders.ShareHolderID)
• OwnershipPercentage (Number)
• Position (Alphanumeric)

shareHolders:
• ShareHolderID (Number) – **PK**
• FirstName (Alphanumeric)
• LastName (Alphanumeric)
• contactInfo (Alphanumeric)

Marriage:
• MarriageID (Number) – **PK**
• Spouse1ClientID (Number) – **FK** (references Client.ClientID)
• Spouse2ClientID (Number) – **FK** (references Client.ClientID)
• MarriageDate (Date)
• MaritalRegime (Alphanumeric)
• AdditionalAgreements (TEXT)

Appointment:
• AppointmentID (Number) – **PK**
• AppointmentDate (Date)
• Type (Alphanumeric)
• Notes (TEXT)

AppointmentParticipation:
• AppointmentID (Number) – **PK/FK** (references Appointment.AppointmentID)
• ClientID (Number) – **PK/FK** (references Client.ClientID)
• StaffID (Number) – **PK/FK** (references Staff.StaffID)
• CaseID (Number) – **FK** (references Case.CaseID) – *optional link*

Client:
• ClientID (Number) – **PK**
• Address (Alphanumeric)
• Email (Alphanumeric)
• PhoneNumber (Number)
• CreatedDate (Date)

IdentificationDocuments:
• DocumentID (Number) – **PK**

• ClientID (Number) – **FK** (references Client.ClientID)
• DocumentType (Alphanumeric)
• StoragePath (Alphanumeric)
• VerifiedStatus (Number)

Payment:
• PaymentID (Number) – **PK**
• ClientID (Number) – **FK** (references Client.ClientID)
• Amount (DECIMAL)
• PaymentDate (Date)
• PaymentStatus (Alphanumeric)
• PaymentMethod (Alphanumeric)

CaseParticipation:
• CaseID (Number) – **PK/FK** (references Case.CaseID)
• ClientID (Number) – **PK/FK** (references Client.ClientID)
• RoleinCase (Alphanumeric)
• Date (Date)

Communication:
• CommunicationID (Number) – **PK**
• ClientID (Number) – **FK** (references Client.ClientID)
• StaffID (Number) – **FK** (references Staff.StaffID)
• CommunicationType (Alphanumeric)
• CommunicationDate (Date)
• FollowUpDate (Date)
• Summary (TEXT)
• Body (TEXT)

Staff:
• StaffID (Number) – **PK**
• StaffRole (Alphanumeric)
• LicenseNumber (Alphanumeric)
• FirstName (Alphanumeric)
• LastName (Alphanumeric)
• Email (Alphanumeric)
• PhoneNumber (Number)

AssignedTo:
• StaffID (Number) – **PK/FK** (references Staff.StaffID)
• CaseID (Number) – **PK/FK** (references Case.CaseID)
• Date (Date)

Cases:
- CaseID (Number) – **PK**
- CaseType (Alphanumeric)
- Status (Alphanumeric)
- OpenDate (Date)
- DueDate (Date)
- CloseDate (Date)
- CaseDescription (TEXT)

DocumentLibrary:
- CaseID (Number) – **PK/FK** (references Case.CaseID)
- ClientID (Number) – **PK/FK** (references Client.ClientID)
- DocumentID (Number) – **PK/FK** (references Documents.DocumentID)
- DateAdded (Date)

Documents:
- DocumentID (Number) – **PK**
- ClientID (Number) – **FK** (references Client.ClientID)
- DocumentName (Alphanumeric)
- DocumentType (Alphanumeric)
- StoragePath (Alphanumeric)
- VerificationStatus (Number)

Property:
- PropertyID (Number) – **PK**
- CaseID (Number) – **FK** (references Case.CaseID)
- Address (Alphanumeric)
- LegalDescription (Alphanumeric)
- TitleStatus (Alphanumeric)

Transaction:
- TransactionID (Number) – **PK**
- CaseID (Number) – **FK** (references Case.CaseID)
- TransactionDate (Date)
- Amount (Assumed DECIMAL or Alphanumeric; adjust as needed)
- TransactionType (Alphanumeric)

real_estateTransaction:
- TransactionID (Number) – **PK**
- PropertyID (Number) – **FK** (references Property.PropertyID)
- InstitutionID (Number) – **FK** (references FinancialInstitution.InstitutionID)
- MortgageDetails (TEXT)
- MortgageStatus (Alphanumeric)
- ServiceType (Alphanumeric)

estateTransaction:
- TransactionID (Number) – **PK**
- TotalAssets (Alphanumeric)
- TotalLiabilities (Alphanumeric)
- Amount (Alphanumeric)

FinancialInstitution:
- InstitutionID (Number) – **PK**
- Name (Alphanumeric)
- contact_info (Alphanumeric)

LandRegistryOffice:
- OfficeID (Number) – **PK**
- Name (Alphanumeric)
- contact_info (Alphanumeric)
- address (Alphanumeric)

CorporateMinute:
- MinuteID (Number) – **PK**
- CorporateID (Number) – **FK** (references corporateClient.CorporateID)
- EntryDate (Date)
- MinuteStatus (Alphanumeric)
- Details (TEXT)

PartiesParticipating:
- PartyID (Number) – **PK/FK** (references ParticipatingParty.PartyID)
- CaseID (Number) – **PK/FK** (references Case.CaseID)
- RoleinCase (Alphanumeric)
- DateJoined (Date)
- InheritanceShare (Alphanumeric)
- Notes (TEXT)

ParticipatingParty:
- PartyID (Number) – **PK**
- Address (Alphanumeric)
- FirstName (Alphanumeric)
- LastName (Alphanumeric)
- Email (Alphanumeric)
- PhoneNumber (Number)
- CreatedDate (Date)
- PartyType (Alphanumeric)
- Relationship (Alphanumeric)