

# Legal Case Management System Proposal Using DBMS

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## Abstract

The **Legal Case Management System** (LCMS) uses a **DataBase Management System** (DBMS) to manage a firm's case data, client information, documents, billing, and important dates (i.e. court dates, document submission deadlines, legal time periods). The system is robust, featuring several core functionalities alongside necessary querying and updating operations. Relationships between data records are also contingent upon the system's success and are outlined informally. Integrity constraints and User Roles and Interface Requirements are included to ensure accessibility and ease of implementation.

## Introduction

The Legal System is the backbone of civil society and is run with clockwork efficiency. Many techniques have ensured successful execution of justice in the past, but there have been gaps in the structure, which have led to certain circumstances of unfair outcomes of trials, charges, and sentences. Many of these gaps can be traced to an improper management of data. This proposal outlines a Legal Case Management System using DBMS technology to design and implement functionality that will ensure not only efficiency, but the utmost effectiveness in data handling in the most important aspects of the legal process a firm may encounter.

The system features case record management, document handling, billing, scheduling & task management, client information and communication management, historical legal records, and external notable persons management.

## System Overview

### *Core Functionalities*

The LCMS will offer the following core functionalities:

1. Case Record Management
  - Store and track each case details such as case number and status, client charges/legal details, and assigned lawyers and other legal parties

2. Document Management
  - Manage case-related documents with categorization based on relevance and time sensitivity
3. Important Dates Management
  - Track important deadlines for court dates, meetings, document submission dates, legal time periods (sentencing periods) and task assignments
4. Billing and Time Tracking
  - Track billable hours, client expenses, and invoices
5. Client Information and Emailing Tracking
  - Client personal information such as date of birth, address, billing information, and any communication through email
6. Relevant Historical Legal Records Management
  - Maintain and update a searchable database of relevant historical legal cases and records that pertain to each case
7. All External Notable Persons Record Management
  - Maintain and update a database of all external persons relevant to a case, such as Crown lawyers, Judges, Police Officers, and Witnesses

## DBMS Requirements

### *Expected Entities and Information*

The DBMS will store and manage the following types of entities and their information:

- **Case Data:** case number, status, client information, assigned lawyers and external legal parties
- **Assigned Lawyers Data:** Lawyer name, education, experience, time at the firm, ongoing cases
- **Client Legal Profile Data:** Client personal profile, charges, criminal history
- **Document Data:** Document type, date, time sensitivity, client relevance, lawyer relevance
- **Important Dates Management:** time sensitivity, task
- **Task Management Data:** task type, location, persons, formal or informal
- **Invoice Data:** billable hours, client information, expenses, lawyer assigned
- **Client Personal Profile Data:** client name, DOB, address, billing records, family, medical history, communication history
- **Communication Data:** email content, title, date, firm as recipient or sender
- **Historical Legal Records Data:** document data, judge, parties, outcome
- **External Relevant Persons Data:** information of judges, Crown lawyers, police officers and witness (DOB, statements, profession, relevance to case)

*Example Tables*

Case ID	Status	Client Legal ID	Records Relevance	Lawyer Assigned ID	Invoice_ID
ID_02314554	In Progress	ID_01284	None	ID_907	ID_21343242
ID_32143254	Awaiting Trial	ID_07621	Historical Record ID_6577, Case Document ID_4356	ID_197	ID_32165677
ID_32423425	Closed	ID_01312	External Persons ID_2456, Case Document ID_3478	ID_108	ID_87695634

Client Legal ID	Name	Charges	Criminal History	Client Personal ID
ID_01284	Charles Seymor	Theft	None	ID_01233
ID_07621	Marshall Simon	Robbery	Aggravated Assault	ID_07656
ID_01312	Alex Bloom	Aggravated Assault	None	ID_01345

Client Personal ID	Name	DOB	Family	Address	Medical History
ID_01233	Charles Seymor	28/09/2003	M-F-S-B-B	1842 Sheppard Ave E	None
ID_07656	Marshall Simon	17/06/1978	F-S-S	188 Glenford Dr	Cardiovascular Illness, Anticoagulants and Beta-blockers

					for medication
ID_01345	Alex Bloom	09/08/1998	M-F	46 Robbinstone Dr	Dyslexic, History of Bipolar Disorder

Lawyer_ID	Name	Education	Experience
ID_907	John Doe	TMU LAW '18	5 years criminal defense
ID_997	Jane Doe	UoFT Law '22	1 Year tax associate
ID_108	Gerald McDonohue	Carleton Law '2012	10 year partner

### *Relationships Among Records*

The DBMS will have the following relationships:

1. **Case - Client:** Each case is related to one or more clients
2. **Case - Assigned Lawyer:** Each case is assigned to one or more lawyers
3. **Case - External Persons:** Each case can involve multiple external persons (judges, police officers, witnesses)
4. **Case - Document:** Each case has multiple associated documents
5. **Case - Date:** Each case has multiple dates assigned
6. **Case - Client Legal Profile:** Each case has one Client Legal Profile
7. **Case - Invoice:** Each case can be linked to many invoices
8. **Invoice - Client Personal Profile:** Each invoice has one Client Personal Profile
9. **Client Client Legal Profile - Client Personal Profile Data:** Each Client Legal Profile has one Client Personal Profile
10. **Client Client Personal Profile - Communication:** Each client has multiple communications
11. **Task - Assigned Lawyer:** Each task is assigned one lawyer
12. **Document - Assigned Lawyer:** Each document is associated with one assigned lawyer
13. **Invoice - Assigned Lawyer:** Each invoice has one assigned lawyer
14. **Case - Historical Legal Records:** Each case may have multiple relevant historical legal records
15. **Document -Task:** Each document can be linked to one or more scheduled task

## Informal Queries and Update Operations

### *Informal Queries*

1. What is the status of case ID A?
2. Retrieve all documents for case ID B.
3. Show the upcoming deadlines for lawyer A.
4. Show all ongoing cases for lawyer C.
5. Retrieve all documents for case number A sorted by time sensitivity.
6. Find all client profiles with criminal history with fraud in charges.
7. List all cases where external party B is a judge or police officer and is involved.
8. What are the upcoming tasks related to case number B.
9. Find all invoices where the total expenses exceed \$10,000.
10. Show the most recent email sent by the firm to client A.
11. Which external parties are relevant to cases handled by lawyer C?
12. List all documents for client B sorted by relevance to lawyer A.
13. Retrieve all historical legal records where Judge A presided over the case.

### *Update Operations*

1. Update the status of case ID B to 'In Progress'.
2. Add 5 billable hours for lawyer A on case ID Z.
3. Add a document to case ID A.
4. Update the status of case number C to 'Closed'.
5. Assign lawyer A to case number B.
6. Add a new charge to client B's legal profile.
7. Update the billable hours for lawyer A on case number B.
8. Change the due date of document submission for case number A to DD/MM/YYYY.
9. Add an expense of \$500 to invoice number B for client C.
10. Update the communication history for client A to include an email sent on DD/MM/YYYY.
11. Add external party A (e.g., a witness) to case number B.
12. Modify the task type for case number A from formal to informal.
13. Update lawyer C's years of experience to reflect 5 years at the firm.

## Integrity Constraints

The following constraints are crucial for the integrity of the LCMS:

1. **Case Number:** Must be unique and not null. (key constraint, entity integrity constraint)
2. **Status:** Should be restricted to predefined values (e.g., "Open", "In Progress", "Closed"). (domain constraint)
3. **Lawyer ID:** Must be unique and not null. (key constraint, entity integrity constraint)

4. **Name:** Cannot be null. (entity integrity constraint)
5. **Client ID:** Must be unique and not null. (key constraint, entity integrity constraint)
6. **Personal Profile:** Must include unique attributes like date of birth and address, which should not be null. (entity integrity constraint)
7. **Document ID:** Must be unique and not null. (key constraint, entity integrity constraint)
8. **Document Type:** Should be constrained to predefined types (eg. legal, informal). (domain constraint)
9. **Invoice ID:** Must be unique and not null. (key constraint, entity integrity constraint)
10. **Billable Hours and Expenses:** Must be non-negative. (domain constraint)
11. **Client ID:** Must match an existing Client Legal Profile. (referential integrity constraint)
12. **Personal Profile:** Should include essential attributes like name, address, and date of birth. (entity integrity constraint)
13. **Email ID:** Must be unique and not null. (key constraint, entity integrity constraint)
14. **Date:** Should be a valid date and not null. (domain constraint)
15. **Record ID:** Must be unique and not null. (key constraint, entity integrity constraint)
16. **Person ID:** Must be unique and not null. (key constraint, entity integrity constraint)
17. **Role:** Should be constrained to predefined roles (e.g., Judge, Police Officer). (domain constraint)

## User Roles and Interface Requirements

### Attorneys

- **Role:** Access case files, track deadlines, manage tasks, and access communication between clients.
- **Interface:** User-friendly desktop/mobile interface optimized for legal workflows.

### Paralegals

- **Role:** Organize case files, prepare documents, see tasks, and access communication with clients.
- **Interface:** Task management interface with real-time status updates.

### Clients

- **Role:** Access invoices, and communicate with attorneys.
- **Interface:** Secure, client-facing web portal.

### Billing Department

- **Role:** Handle client billing and financial reports.
- **Interface:** Financial dashboard for tracking billable hours, expenses, and payments.

## **Conclusion**

The LCMS proposed here leverages a DBMS to handle the complexities of the legal system, ensuring transparency, integrity and efficiency. By providing comprehensive functionalities and an outline of informal query operations, the LCMS leverages the robustness of a modern-day DBMS system. With additional overview and integration, this system could prove to be successful for any law firm looking to ensure the utmost success when carrying out their promise to justice and client satisfaction.