Project: Corporate Banking Loan Origination System (CBLOS)

1. Overview

The **Corporate Banking Loan Origination System (CBLOS)** is a robust web-based solution designed for corporate banking sectors to streamline the loan application, evaluation, and disbursement process. The system caters to complex workflows required for high-value loans for businesses, providing functionalities such as credit evaluation, risk assessment, document management, and disbursement tracking.

The application follows **MVC architecture** and is built to be compatible with both **Java (Spring MVC)** and **.NET (ASP.NET Core MVC)** frameworks.

2. Core Modules Description

2.1 Loan Application Management

Manages the end-to-end process of capturing corporate loan applications, loan type selection, and tracking of application status.

2.2 Credit Evaluation and Risk Assessment

Assesses the creditworthiness of corporate borrowers and calculates the associated risk scores using predefined algorithms and external credit bureaus.

2.3 Document Management

Facilitates document uploads, storage, and validation required for loan processing, such as financial statements, collateral proof, and tax records.

2.4 Loan Approval Workflow

Implements a multi-level loan approval process based on predefined business rules and authorization hierarchies.

2.5 Disbursement Tracking and Reporting

Tracks loan disbursement schedules, repayment terms, and generates periodic reports for compliance and operational insights.

3. Module-Level Design

3.1 Loan Application Management Module

Purpose: Enables corporate clients to initiate and track loan applications.
- **Controller:**

- o LoanApplicationController
  - submitApplication()
  - trackApplicationStatus()
  - viewApplicationDetails()
- **Service:**
  - o LoanApplicationService
    - Validates and saves loan applications to the database.
    - Retrieves application status and details.
- **Model:**
  - o **LoanApplication Entity**
    - Attributes:
      - applicationId (PK)
      - companyName
      - loanType
      - loanAmount
      - status
      - submissionDate

3.2 Credit Evaluation and Risk Assessment Module

Purpose: Analyzes borrower creditworthiness and assigns a risk score.
- **Controller:**
  - o CreditEvaluationController
    - evaluateCredit()
    - getRiskScore()
- **Service:**
  - o CreditEvaluationService
    - Integrates with external credit scoring systems.
    - Calculates internal risk scores based on financial metrics.
- **Model:**
  - o **CreditEvaluation Entity**
    - Attributes:
      - evaluationId (PK)
      - applicationId (FK)
      - riskScore
      - creditScore
      - evaluationDate

3.3 Document Management Module

Purpose: Handles the upload, validation, and management of documents required for loan processing.
- **Controller:**
  - o DocumentController
    - uploadDocument()

- validateDocument()
- viewUploadedDocuments()
- **Service:**
  - DocumentService
    - Manages document uploads and metadata.
    - Validates documents for format and content.
- **Model:**
  - **Document Entity**
    - Attributes:
      - documentId (PK)
      - applicationId (FK)
      - documentType
      - filePath
      - uploadDate
      - isValid

3.4 Loan Approval Workflow Module

Purpose: Automates multi-level approval workflows for corporate loan applications.

- **Controller:**
  - ApprovalController
    - approveLoan()
    - rejectLoan()
    - viewApprovalStatus()
- **Service:**
  - ApprovalService
    - Enforces business rules for loan approvals.
    - Tracks approval levels and statuses.
- **Model:**
  - **Approval Entity**
    - Attributes:
      - approvalId (PK)
      - applicationId (FK)
      - approverId
      - approvalLevel
      - approvalStatus
      - comments
      - approvalDate

3.5 Disbursement Tracking and Reporting Module

Purpose: Tracks loan disbursements and generates operational and compliance reports.

- **Controller:**
  - DisbursementController
    - trackDisbursement()
    - generateDisbursementReport()
- **Service:**
  - DisbursementService

- Manages disbursement schedules.
- Generates reports for monitoring and compliance.
- **Model:**
  - **Disbursement Entity**
    - Attributes:
      - disbursementId (PK)
      - applicationId (FK)
      - disbursedAmount
      - disbursementDate
      - repaymentSchedule

4. Database Schema

4.1 Table Definitions

1. **LoanApplication Table**

```
CREATE TABLE LoanApplication (
    applicationId INT AUTO_INCREMENT PRIMARY KEY,
    companyName VARCHAR(100),
    loanType VARCHAR(50),
    loanAmount DECIMAL(18, 2),
    status ENUM('Pending', 'Approved', 'Rejected'),
    submissionDate DATE
);
```

2. **CreditEvaluation Table**

```
CREATE TABLE CreditEvaluation (
    evaluationId INT AUTO_INCREMENT PRIMARY KEY,
    applicationId INT,
    riskScore DECIMAL(5, 2),
    creditScore INT,
    evaluationDate DATE,
    FOREIGN KEY (applicationId) REFERENCES LoanApplication(applicationId)
);
```

3. **Document Table**

```
CREATE TABLE Document (
    documentId INT AUTO_INCREMENT PRIMARY KEY,
    applicationId INT,
    documentType VARCHAR(50),
    filePath VARCHAR(255),
    uploadDate DATE,
    isValid BOOLEAN,
    FOREIGN KEY (applicationId) REFERENCES LoanApplication(applicationId)
);
```

4. **Approval Table**

```
CREATE TABLE Approval (
    approvalId INT AUTO_INCREMENT PRIMARY KEY,
    applicationId INT,
    approverId INT,
    approvalLevel INT,
    approvalStatus ENUM('Pending', 'Approved', 'Rejected'),
    comments TEXT,
    approvalDate DATE,
    FOREIGN KEY (applicationId) REFERENCES LoanApplication(applicationId)
);
```

5. **Disbursement Table**

```
CREATE TABLE Disbursement (
    disbursementId INT AUTO_INCREMENT PRIMARY KEY,
    applicationId INT,
    disbursedAmount DECIMAL(18, 2),
    disbursementDate DATE,
    repaymentSchedule TEXT,
    FOREIGN KEY (applicationId) REFERENCES LoanApplication(applicationId)
);
```

5. Local Deployment Details

1. **Environment Setup:**
    o Install a local **MySQL** or **SQL Server** database.
    o Configure database connection strings in application.properties (Java) or appsettings.json (.NET).
    o Install the appropriate SDK: JDK for Spring MVC or .NET SDK for ASP.NET Core MVC.
2. **Steps to Deploy Locally:**
    o Clone the repository and build the project using Maven or Visual Studio.
    o Run the application locally and access it via http://localhost:<port>.

6. Conclusion

The **Corporate Banking Loan Origination System (CBLOS)** ensures an efficient and compliant workflow for processing corporate loans, providing transparency, scalability, and accuracy in financial operations.