



Course Code: CL-2005

Course Name: Database Systems

Semester-Fall, 2024

Semester Project

PROJECT POLICY

- 1. Maximum Members: 2 members per group**
- 2. CROSS SECTION GROUPS ARE NOT ALLOWED**
- 3. PLAGIARISM CASES WILL RESULT IN ZERO MARKS FOR ALL GROUP MEMEBERS IF FOUND ANY.**
- 4. Late submission:** One day late 20 % marks deduction, Second day 50% marks deduction, afterwards zero marks, of every group member.

Description:

- The Corporate Vendor and Contract Management System helps large organizations manage vendor relationships, track contracts, and monitor procurement processes across multiple departments. This platform streamlines contract renewals, vendor performance evaluations, and purchasing workflows to ensure compliance and efficiency.

Vendor Registration and Management:

- **Vendor Registration:**
 - New vendors can register with the organization by providing essential information such as service categories, contact information, and compliance certifications.
 - Ensure data validation for all mandatory fields.
 - Include fields for certifications, ensuring vendors meet company standards for compliance.
- **Vendor Management:**
 - Track vendor performance, focusing on key metrics such as delivery timeliness, service quality, and adherence to compliance requirements.
 - Maintain a comprehensive vendor directory with contact details, services offered, and current performance ratings.

Contract Lifecycle Management:

- **Contract Creation and Negotiation:**
 - Allow departments to initiate and document contract terms, conditions, and special clauses.
 - Support contract negotiations by enabling authorized users to edit or annotate key contract areas.
- **Contract Renewal and Expiry Tracking:**
 - Automatically generate reminders for contract renewals or expirations and notify relevant stakeholders.
 - Store historical contracts for reference and compliance audits.

Purchase Order Creation and Tracking:

- **Purchase Order (PO) Creation:**
 - Enable departments to create purchase orders with predefined templates, ensuring they align with vendor agreements.
 - Capture essential information such as vendor details, items or services ordered, and the total cost.
- **Purchase Order Tracking:**
 - Track the status of purchase orders, from creation to fulfillment.
 - Ensure that all orders fall within approved budget limits and monitor any potential budget deviations.

Budget Tracking and Management:

- **Expense Monitoring:**
 - Implement a budget tracking feature to record expenditures on vendor contracts, purchase orders, and departmental spending.
 - Ensure expenditures are within allocated budgets, alerting managers to potential overspending.
- **Budget Allocation:**
 - Provide tools to allocate budgets across departments, allowing each team to manage their own vendor-related expenses.
 - Regularly update the budget status and track any changes to ensure financial responsibility.
- The use cases are as follows:
- **Vendor Registration and Login:** Vendors register, log in, and access their dashboard to manage contracts and performance.
- **Contract Management:** Manage contract initiation, terms, renewals, and track contract history.
- **Purchase Order Management:** Create and track purchase orders to ensure they align with vendor agreements and department budgets.
- **Vendor Performance Tracking:** Evaluate and rate vendors based on service quality, timeliness, and pricing.
- **Compliance and Auditing:** Conduct audits to ensure vendors comply with company policies and legal standards.

- **Task Allocation for Procurement Process:** Assign and track procurement-related tasks within the team.
- **Budget Monitoring and Tracking:** Track procurement expenses and budget status to prevent overspending.

Additional Description for Role-Based Use Cases for Corporate Vendor and Contract Management System:

Authentication:

Contract Renewal Notifications

- **Actors:** Contract Management Team, Procurement Manager
- **Description:** Automatically notify relevant team members and stakeholders about upcoming contract renewals to ensure timely action.
- **Use Case Steps:**
 - **Set Up Notifications:**
 - Set up reminders for contracts approaching expiration within a set timeframe (e.g., 30 days).
 - **Receive Alerts:**
 - Team members receive email or dashboard alerts for contracts needing review.
 - **Initiate Renewal Process:**
 - Begin discussions or negotiations with vendors for contract renewal.

View/Manage/Edit Vendor List

- **Actors:** Vendor Management Team, Procurement Manager
- **Description:** Add, update, and manage the vendor list for the organization.
- **Use Case Steps:**
 - **View Vendors:**
 - View the list of registered vendors and their details.
 - **Manage Vendors:**
 - Add new vendors to the system.
 - Remove or modify existing vendor information.
 - **Compliance Check:**
 - Ensure vendors meet compliance and certification requirements.

View/Manage Performances:

View/Manage Contracts

- **Actors:** Contract Management Team, Procurement Manager
- **Description:** Oversee contract details, statuses, and renewals.
- **Use Case Steps:**
 - **View Contracts:**
 - See the list of active and upcoming contracts.

- **Manage Contracts:**
 - Approve or reject contract proposals.
 - Update contract details, renewal dates, and terms.
- **Expiration Alerts:**
 - Set reminders for contract expirations and renewals.

Purchase Order Management

- **Actors:** Department Heads, Procurement Team
- **Description:** Manage the creation and tracking of purchase orders across departments.
- **Use Case Steps:**
 - **Create Purchase Orders:**
 - Enter item details, quantity, and vendor information.
 - **Track Purchase Orders:**
 - Monitor the status of submitted purchase orders.
 - **Budget Validation:**
 - Ensure purchase orders stay within department budgets.

Budget Monitoring

- **Actors:** Budget Manager, Finance Team
- **Description:** Monitor and manage the budget for vendor contracts and purchase orders.
- **Use Case Steps:**
 - **View Budget Overview:**
 - Review the allocated budget and spending categories.
 - **Expense Tracking:**
 - Log expenses for contracts, orders, and related procurement costs.
 - **Adjust Budgets:**
 - Make budget adjustments as necessary based on expenditure.

Vendor Performance Evaluation

- **Actors:** Procurement Team, Department Heads
- **Description:** Evaluate vendor performance based on quality and delivery standards.
- **Use Case Steps:**
 - **Collect Feedback:**
 - Record feedback on vendor quality, pricing, and timeliness.
 - **Rating Assignment:**
 - Assign performance ratings to vendors for reference in future decisions.
 - **Generate Reports:**
 - Compile vendor performance summaries and reports.

Tasks:

- **Draw the ERD of the above scenario.**
- **Map them into Relational Schema.**
- **Extend the database schema to include new tables and relationships.**
- **Implement registration forms for vendors & include valid inputs.**
- **Create modules for contract initiation, purchase order tracking, and vendor performance evaluation, including rating and review functionalities.**
- **Build intuitive web forms and dashboards for managing vendors, contracts, and purchase orders, ensuring ease of use.**
- **Generate vendor performance, contract renewal, and procurement budget reports with filtering and sorting capabilities.**
- **Connect the frontend to the MySQL database via Node.js, providing seamless data integration.**
- **Create triggers that run specific checks in the background and notify the user of important events:**

Contract Renewal Notifications:

- You can create a button called 'Check Contract Renewals'. When the user clicks this button, the system will automatically check for contracts that are about to expire within a specified time frame (e.g., 30 days).
- The trigger will run on the server-side to find any expiring contracts and then send notifications to the user about those contracts.

Purchase Order Budget Checks:

- Another button can be called 'Check Budget Alerts'. When clicked, this will trigger the system to check if any purchase orders have exceeded their assigned budget.
- The backend will compare the order amount to the budget and notify the user if any orders are over budget.
- **Develop stored procedures for vendor registration, contract renewal, and performance evaluation to streamline operations.**
- **Apply constraints like foreign keys, unique constraints, and check constraints to ensure data consistency.**
- **Design and implement the HTML and CSS components for the user interface.**
- **Your marks are dependent on the creativity of your HTML and CSS files. Detailed rubric is shared in this document as well.**
- **Implementation of any additional/relevant use case will be considered bonus.**
- **You can use tools like draw.io to make ERD. Hand written ERD is not acceptable.**

DELIVERABLES

ERD

The entity-relationship (ER) data model allows us to describe the data involved in a real-world enterprise in terms of ENTITIES and their relationships and is widely used to develop an initial database design.

RELATIONAL SCHEMA

The relational schema allows us to map the aforementioned ERD to the database design.

DATABASE

You are required to design a database that meets the user's needs and implement this using MYSQL in .sql file(s).

WEBSITE

A fully functional app requires an interface for users to interact with. Create a web interface using HTML, and connect this interface with your database.

➤ FORMS AND REPORTS on the Website

PROJECT REPORT (USING MS WORD)

Contain all flow of your project in detail and must contain:

- Contain your ERD
- Table description using DESC command <https://www.scaler.com/topics/describe-table-mysql/>
- All the assumptions

RUBRIC

PROJECT FUNCTIONALITY	DELIVERABLES	MARKS
SQL	ERD	5
	SCHEMA DIAGRAM	5
	DDL SCRIPT (TABLE CREATION AND INSERTION) IN WORKBENCH	5
	ALL NECESSARY CONSTRAINT IN DDL	5
	TRIGGERS	5
	STORED PROCEDURES	5
FRONTEND	LOGIN PAGE	5
	NAVIGATION BETWEEN WEBPAGES	5
	SEPARATE PORTALS BETWEEN DIFFERENT USERS	7
	ALL NECESSARY PAGES (INTERACTIVE)	8
NODE JS	CONNECTION BETWEEN MYSQL AND FRONTEND THROUGH NODE JS	15
	BUTTONS TO IMPLEMENT DML QUERIES THROUGH FRONTEND, AND THEIR NAVIGATION IN BACKEND	15
WORD REPORT	CONTAINS DETAILED DESCRIPTION OF YOUR PROJECT	10
BONUS	BOOTSTRAP, VISUALIZATION, QUERY OPTIMIZATION	5

Good Luck!