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**Submitted to:**

**Mam Hira**

**1. Project Title:**

**Supermarket Database Management System (SDMS)**

**2. Purpose:**

The purpose of this project is to design and implement a robust relational database system for a supermarket. This database system efficiently manages employee records, product inventories, cashier operations, company product sourcing, expenses, and logging mechanisms for tracking changes.

**3. Objectives:**

* To develop a normalized, relational SQL-based database.
* To manage and track employee details, their roles, and salaries.
* To handle product stock and categorize based on price and category.
* To manage cashiers and their assigned products.
* To record additional expenses and generate summary reports.
* To implement stored procedures, views, functions, and triggers for automation and ease of data handling.
* To provide backup mechanisms and historical logs for audit purposes.

**4. Database Components:**

**A. Tables:**

* employees: Stores detailed information about all supermarket staff.
* cashiers: Maps employees working as cashiers with their shifts and credentials.
* products: Maintains inventory data including name, category, price, and expiry.
* cashierproducts: Logs which cashier handled which product and when.
* companyproducts: Tracks product purchases from supplier companies.
* otherexpenses: Records various operational costs.
* employeesbackup: Holds backup copies of employee data.
* employeeinsertlog & employeedeletelog: Maintain logs of insert/delete operations for audit.

**B. Stored Procedures:**

* UpdateEmployeeSalary: Updates salary of a given employee.
* InsertNewEmployee: Adds a new employee with exception handling.
* DeleteEmployee: Removes an employee and logs the change.
* GetMonthlyExpenseReport: Generates a report of expenses for the month.

**C. Views:**

* highsalaryemployees: Displays employees with high salaries.
* availablegroceries: Shows grocery products in stock.
* highpriceelectronics: Lists electronic items with higher-than-average prices.

**D. Triggers:**

* trgafterdeleteemployee: Logs employee deletion automatically.
* trgafterinsertemployee: Logs employee addition automatically.
* logemployeechanges: Tracks changes to employee data.

**E. Functions:**

* getfullname: Returns full name of employee.
* getage: Calculates age of employee.
* gettotalprice: Computes total price for selected items.
* getproductsbycategory: Lists products by category.
* getaverageprice: Calculates average product price.

**5. Data Queries & Operations:**

* **CRUD Operations:** Insert, update, delete for employees and products.
* **Joins:** Inner, left, right, full outer joins between tables.
* **Subqueries:** Including EXISTS, ANY, ALL, and scalar subqueries.
* **Aggregation:** MIN, MAX, AVG, COUNT, with GROUP BY and HAVING.
* **Backup & Restore:** Creating backup tables and inserting data from main tables.
* **Categorization:** Using CASE statements to classify data (e.g., price categories).

**6. Sample Data Included:**

The proposal includes initial data insertion for:

* 3 Employees
* 3 Products
* 2 Cashiers
* 3 Expenses
* 1 Company Product Entry

This ensures the schema is populated for test cases and reporting.

**7. Benefits:**

* Centralized data management.
* Automated logging of employee changes.
* Efficient inventory and cashier handling.
* Easy report generation for managerial decisions.
* Structured procedures reduce human error and maintain data integrity.

**8. Future Enhancements:**

* User authentication and role-based access control.
* Integration with a front-end application.
* Enhanced report generation (monthly, quarterly).
* Inventory threshold alert system.

**ERD:A diagram of a company

AI-generated content may be incorrect.**