**CSA0593**

**DATABASE MANAGEMENT SYSTEM**

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ASSIGNMENT-1

**Employee Training and Skill Development System:**

1) Create a database for tracking employee training programs, certifications, skills, and performance. Requirements: Design tables for employees, training modules, certifications, and skill assessments.

2) Write stored procedures to manage employee enrollments in training and generate performance reports.

3) Write queries to analyze training completion rates, skill advancement, and certification renewals.

4) Implement views for HR to track employee skill levels across departments.

**Employee Training and Skill Development System**

To build an **Employee Training and Skill Development System**, here’s a structured approach with tables, stored procedures, and views for effective management:

**1. Database Design**

Model tables for employees, training programs, certifications, and skill assessments.

**Employees Table**: Stores employee details.

CREATE TABLE Employees (

EmployeeID INT PRIMARY KEY,

FullName VARCHAR(100) NOT NULL,

Department VARCHAR(50),

HireDate DATE,

JobTitle VARCHAR(50)

);

**TrainingModules Table**: Contains information about training programs.

CREATE TABLE TrainingModules (

ModuleID INT PRIMARY KEY,

ModuleName VARCHAR(100) NOT NULL,

Department VARCHAR(50),

DurationHours INT,

Description TEXT

);

**Certifications Table**: Tracks employee certifications.

CREATE TABLE Certifications (

CertificationID INT PRIMARY KEY,

EmployeeID INT,

ModuleID INT,

DateIssued DATE,

RenewalDate DATE,

FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID),

FOREIGN KEY (ModuleID) REFERENCES TrainingModules(ModuleID)

);

**SkillAssessments Table**: Records skill assessments and performance scores.

CREATE TABLE SkillAssessments (

AssessmentID INT PRIMARY KEY,

EmployeeID INT,

SkillName VARCHAR(100),

AssessmentDate DATE,

Score INT,

FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID)

);

**Enrollments Table**: Tracks employee enrollment in training modules.

CREATE TABLE Enrollments (

EnrollmentID INT PRIMARY KEY,

EmployeeID INT,

ModuleID INT,

EnrollmentDate DATE,

CompletionDate DATE,

FOREIGN KEY (EmployeeID) REFERENCES Employees(EmployeeID),

FOREIGN KEY (ModuleID) REFERENCES TrainingModules(ModuleID)

);

**2. Stored Procedures**

Manage Employee Enrollments in Training

CREATE PROCEDURE EnrollEmployee (

IN empID INT,

IN moduleID INT

)

BEGIN

INSERT INTO Enrollments (EmployeeID, ModuleID, EnrollmentDate)

VALUES (empID, moduleID, CURDATE());

END;

Generate Employee Performance Reports:

CREATE PROCEDURE GeneratePerformanceReport (

IN empID INT

)

BEGIN

SELECT

e.FullName,

sa.SkillName,

sa.AssessmentDate,

sa.Score

FROM SkillAssessments sa

JOIN Employees e ON sa.EmployeeID = e.EmployeeID

WHERE sa.EmployeeID = empID

ORDER BY sa.AssessmentDate DESC;

END;

**3. SQL Queries**

Analyze Training Completion Rates:

SELECT

tm.ModuleName,

COUNT(e.EnrollmentID) AS TotalEnrollments,

SUM(CASE WHEN e.CompletionDate IS NOT NULL THEN 1 ELSE 0 END) AS Completed,

ROUND(SUM(CASE WHEN e.CompletionDate IS NOT NULL THEN 1 ELSE 0 END) / COUNT(e.EnrollmentID) \* 100, 2) AS CompletionRate

FROM TrainingModules tm

LEFT JOIN Enrollments e ON tm.ModuleID = e.ModuleID

GROUP BY tm.ModuleID;

Skill Advancement Analysis:

SELECT

EmployeeID,

SkillName,

MIN(Score) AS InitialScore,

MAX(Score) AS LatestScore,

MAX(Score) - MIN(Score) AS Improvement

FROM SkillAssessments

GROUP BY EmployeeID, SkillName;

Upcoming Certification Renewals:

SELECT

c.EmployeeID,

e.FullName,

tm.ModuleName,

c.RenewalDate

FROM Certifications c

JOIN Employees e ON c.EmployeeID = e.EmployeeID

JOIN TrainingModules tm ON c.ModuleID = tm.ModuleID

WHERE c.RenewalDate <= DATE\_ADD(CURDATE(), INTERVAL 30 DAY);

**4. Views for HR**

**Track Employee Skill Levels Across Departments**: CREATE VIEW SkillLevelsByDepartment AS

SELECT

e.Department,

e.FullName,

sa.SkillName,

AVG(sa.Score) AS AverageScore

FROM Employees e

JOIN SkillAssessments sa ON e.EmployeeID = sa.EmployeeID

GROUP BY e.Department, e.EmployeeID, sa.SkillName;

View Training Progress by Department:

CREATE VIEW TrainingProgress AS

SELECT

e.Department,

tm.ModuleName,

COUNT(e.EmployeeID) AS TotalEmployees,

SUM(CASE WHEN enr.CompletionDate IS NOT NULL THEN 1 ELSE 0 END) AS Completed

FROM Employees e

JOIN Enrollments enr ON e.EmployeeID = enr.EmployeeID

JOIN TrainingModules tm ON enr.ModuleID = tm.ModuleID

GROUP BY e.Department, tm.ModuleName;

**Conclusion:**

The **Employee Training and Skill Development System** is a robust framework designed to streamline workforce development by managing training, certifications, skill assessments, and performance tracking. It provides a scalable solution that enables organizations to align employee growth with strategic business objectives.

By leveraging structured tables, stored procedures, and insightful queries, the system supports automated processes like enrollment management, training completion analysis, and certification tracking. HR and management can access detailed views to monitor skill levels, identify training gaps, and ensure compliance with regulatory requirements.

The system not only enhances employee productivity and engagement but also fosters data-driven decision-making, ensuring that workforce development aligns with evolving business needs. Its modular design ensures scalability for future enhancements, positioning organizations to remain competitive while promoting a culture of continuous learning and growth.