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CRM Database System

Final Practicum Project – PL/SQL

1. Project Idea

Vision Technologies Company is an IT service provider and product seller. To strengthen customer engagement and streamline operations, the company requires a Customer Relationship Management (CRM) database system.

This project focuses exclusively on the database side, using PL/SQL to design schemas and implement business logic. The CRM database will manage customer records, product inquiries, service requests, and technician assignments.

The system introduces automation through PL/SQL procedures, triggers, and packages to ensure efficient handling of service requests, enforce service timelines, and generate reports. By embedding logic directly into the database, the solution reduces manual intervention and improves reliability.

2. Database Schema Overview

The CRM database will consist of the following core tables:

- **CUSTOMERS**: customer_id, name, contact, company, tier
- **PRODUCTS**: product_id, name, category, price, stock
- **SERVICE_REQUESTS**: request_id, customer_id, product_id, issue_type, status, priority, created_at
- **TECHNICIANS**: technician_id, name, skill_level, availability
- **ASSIGNMENTS**: assignment_id, request_id, technician_id, assigned_at
- **FEEDBACK**: feedback_id, request_id, rating, remarks
- **SLA_RULES**: sla_id, priority_level, resolution_time_hours

3. PL/SQL Features and Logic

The innovation lies in embedding business rules directly into PL/SQL:

- Triggers
    - Auto-assign technicians based on skill and availability when a new request is logged.

    - Update request status automatically when feedback is submitted.
- Procedures
    - Escalate overdue tickets by checking SLA compliance.
    - Generate weekly reports summarizing resolved vs. pending requests.
- Packages
    - Bundle related procedures for ticket management, SLA monitoring, and reporting.
- Functions
    - Calculate average resolution time per technician.
    - Compute customer satisfaction scores from feedback.

4. Innovation and Improvement

Compared to traditional CRM databases, this project introduces:

- Automation: Reduced manual assignment of technicians and escalation handling.
- Optimization: SLA rules enforce timely resolution and improve accountability.
- Integration: Feedback directly influences technician workload distribution.
- Security: Role-based access ensures sensitive customer data is protected.

This design ensures Vision Technologies can manage both product sales and service requests efficiently, while maintaining high customer satisfaction.

5. Expected Outcomes

- A fully designed CRM database schema tailored to Vision Technologies' operations.
- PL/SQL scripts (tables, triggers, procedures, packages) implementing business logic.
- Demonstration of automated workflows (ticket assignment, SLA enforcement, reporting).
- Documentation of schema and PL/SQL logic for academic and practical use.