**Data Management System for a University Case Study**

**Objective:**

The objective of this project is to design and implement a comprehensive data management system for a university using SQL, PLSQL, Advanced PLSQL, Red Hat, Bash scripting, Java SE, and OOP principles. The project encompasses various aspects, including database design, SQL and PLSQL implementation, automation scripts, Java application development, and integration.

**Milestones:**

1. **Database Design (Day 1):**

* Define a relational database schema including : students, courses, departments, and grades.
* Normalize the schema to ensure data integrity.
* Document the database design.

1. **SQL Implementation (Day 2):**

* Create SQL scripts to build the database schema.
* Populate the database with sample data.
* Test and validate the correctness of the database.

1. **PLSQL Implementation (Day 3):**
   * Write PLSQL scripts for:
   * Updating some information.
   * Calculating GPA.
   * Test the PLSQL scripts with sample data.
2. **Automation Scripts (Day 4):**
   * Bash script for database backup.
   * Bash script for monitoring disk space and sending alerts.
   * Schedule a script to check for anomalies and send notifications.
3. **Java Application Development (Days 5-6):**

* Develop Java classes for Student, Course, and Department using OOP principles.
* Implement CRUD (Create, Read, Update, Delete) operations in the Java application.
* Integrate the Java application with the SQL database.
* Test the application with various scenarios.

1. **Integration and Reporting (Day 7):**

* Implement a feature in the Java application to generate a report.
* The report should display a list of courses, enrolled students, and average GPA for each course.
* Ensure seamless integration between the Java application and the database.
* Make the presentation for the project.

**Final Deliverables (End of Week):**

1. Documented database schema and SQL scripts.
2. PLSQL scripts for data manipulation.
3. Bash scripts for automation tasks.
4. Java application source code with documentation.
5. A comprehensive report demonstrating the functionality and features of the data management system.
6. **Project Presentation (8-12 minutes):**
   * Prepare a concise and engaging presentation summarizing the key aspects of the project.
   * Highlight the database design, key SQL queries, PLSQL scripts, automation scripts, and Java application features.
   * Showcase the integration between the Java application and the database.
   * Discuss any challenges faced during the project and how they were addressed.
   * Emphasize the strengths and unique features of the data management system.
   * Demonstrate the generated report and its significance.
   * Allocate time for questions and answers.

**Assignment Type:**

This project is designed as an individual assignment, providing each of you with the opportunity to demonstrate your understanding and mastery of the skills acquired during the courses.