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School of Computer Science and Engineering
Lovely Professional University
Jalandhar - Delhi G.T. Road, Phagwara, Punjab (India) - 144411

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On

CODEQUERY: THE ULTIMATE PL/SQL AND DATA SCIENCE BOOTCAMP

Project
On

Student Feedback and Evaluation Portal

Submitted by,

Name : Dakshineswar.M
(**Reg. no**. : 12303280)

Name : Harish Ramesh
(**Reg. no**. : 12305986)

Name : Akshit Salgundi
(**Reg. no**.: 12306490)

Name : J Tharun Adithya
(**Reg. no**.: 12306086)

Submitted to,

Dr. Avinash Kaur
(**UID** : 14557)

Dr. Parminder Singh
(**UID** : 16479)

Project Objectives and Importance

- Automate feedback collection from students
- Store ratings for different teaching criteria
- Generate teacher-course wise summary
- Implement using PL/SQL procedures, functions and triggers

Addressing Feedback Challenges

Manual feedback systems often lead to significant inefficiencies and data integrity issues. Our solution directly tackles these prevalent problems.

Time-Consuming & Error-Prone

Manual collection and processing of feedback wastes valuable time and is highly susceptible to human errors, impacting data accuracy.

Lack of Centralization

Scattered feedback data makes it difficult to maintain a unified view and hinders comprehensive analysis across departments or courses.

Difficult Data Analysis

Without structured data, extracting meaningful insights and trends from feedback becomes an arduous and often incomplete task.

No Real-Time Summary

Delay in summarizing feedback means educational stakeholders cannot react promptly to emerging issues or celebrate immediate successes.

Project Scope: Key Capabilities

The system's scope focuses on automating the entire feedback lifecycle, from collection to actionable insights.

1

Digital Feedback Collection

Implement web-based forms for students to submit feedback digitally, ensuring easy access and submission.

2

Multi-Aspect Rating

Enable rating of diverse aspects, including teacher knowledge, communication skills, course content relevance, and classroom environment.

3

Automated Report Generation

Systematically generate comprehensive summary reports for teachers, courses, and overall institution performance.

4

Dynamic Average Updates

Utilize PL/SQL procedures to automatically compute and update average ratings in real-time, reflecting the latest feedback.

5

Data Consistency with Triggers

Enhance data integrity and consistency through the implementation of database triggers, ensuring data accuracy post-submission.

Core Technologies Utilized

The system leverages robust and industry-standard technologies for database management and backend logic.

Database Management/Frontend

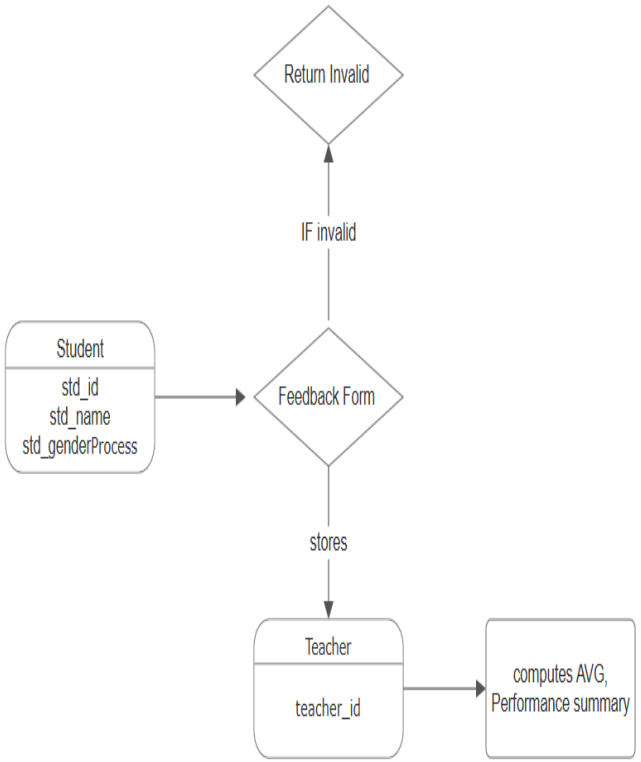
- **Oracle APEX:** Have used this for creating the frontend so that students and teachers all can interact with the system.
- **SQL:** Standard query language for database interaction, ensuring efficient data manipulation and retrieval.

Backend Development

- **PL/SQL:** Oracle's procedural extension to SQL, used for developing complex stored procedures, functions, and triggers to manage feedback logic.

Design & Modeling

draw.io: Employed for creating clear and concise Entity-Relationship (ER) diagrams, visualizing the database schema and relationships.



Database Design & Schema

The system's foundation is a well-structured relational database, designed to efficiently store and manage all feedback-related data.

Key entities include **Student**, **Teacher**, **Course**, **Feedback**, and **Summary**. Relationships are defined through primary and foreign keys, ensuring data integrity. For example, a student can provide feedback on multiple courses (1:M), and feedback is linked to specifi teachers and courses. A summary table stores aggregated ratings, updated automatically.

System Results and Validation

Our implemented system successfully achieves its core objectives, demonstrating accuracy and automation in feedback processing.

1

Accurate Rating Collection

The system correctly captures and stores student ratings for various feedback criteria, ensuring data integrity.

2

ID Validation

Robust validation ensures only legitimate student and teacher IDs are accepted, preventing erroneous data entries.

3

Accurate Summary Generation

Reports reflecting average summaries for teachers and courses are consistently accurate, providing reliable insights.

4

Trigger-Based Updates

The summary table updates automatically via PL/SQL triggers whenever new feedback is submitted, ensuring real-time accuracy without manual intervention.

Future Enhancements

To further enhance the system's capabilities and user experience, several key features are planned for future development.

- **Login System (Authentication):** Implement secure user authentication for students, teachers, and administrators.
- **Export Functionality:** Allow exporting feedback data and reports to common formats like Excel and PDF for offline analysis and sharing.
- **Email Notifications:** Integrate automated email notifications for teachers when new feedback is available or when summary reports are updated.
- **Real-Time Graphical Dashboard:** Develop an interactive dashboard providing visual insights into feedback trends and key metrics.
- **Web/Mobile App Integration:** Explore integration with a user-friendly web frontend or mobile application for enhanced accessibility and usability.

Procedures & Triggers

1

- Procedure: COUNT_FEEDBACK
  Purpose: Returns total feedback count for a teacher.

2

- Procedure: UPDATE_AVG
  Purpose: Updates average star rating for a teacher.

3

- Function: TEACHER_SCORE
  Purpose: Calculates the average feedback score for a teacher.

4

- Trigger: TCHR_SUMM
  Purpose: After feedback is added/updated, it updates or inserts summary data into TEACHER_SUMMARY.

Conclusion

- The process of gathering, storing, and evaluating student feedback is effectively streamlined and automated by the Student Feedback Management System. The system enables accurate validation, seamless data insertion, and quick retrieval of feedback summaries by utilizing PL/SQL procedures. This reduces the errors that come with manual data entry in addition to saving time. The system provides a methodical and structured way to handle student-teacher feedback, which can greatly enhance instructional quality and institutional effectiveness.