

PBL

Database Management System

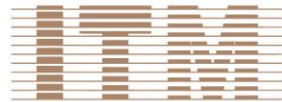
Project-Based Learning (PBL) in Database Management Systems (DBMS) is a highly effective approach in helping students understand complex concepts of Database design and the execution of SQL queries by applying them to real-world scenarios.

Key Learning Outcomes:

- Understand and apply ER modeling concepts.
- Design a relational database schema based on an ER diagram.
- Implement the database using SQL.
- Develop queries to retrieve and manipulate data.
- Ensure data integrity and implement constraints.
- Practice database normalization.

Project Phases and Activities:

1. **Project Initiation** – Student groups will be formed and objective of the PBL will be explained among the students.
2. **Requirements Analysis and ER Modelling** –
 - Gather detailed requirements for the database system.
 - Identify entities, attributes, and relationships.
 - Draw an Entity-Relationship (ER) diagram.
3. **Database Design** –
 - Convert the ER diagram to a relational schema.
 - Define tables, columns, and relationships.
 - Determine primary keys, foreign keys, and other constraints.
 - Normalize the database to at least the third normal form (3NF).
4. **Database Implementation** –
 - Create the database and tables using SQL.
 - Insert sample data into the tables.
 - Develop SQL queries for data retrieval and manipulation.
 - Implement data integrity constraints.
5. **Testing and Validation** –
 - Test the database with various queries.
 - Validate data integrity and consistency.



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6. Final Presentation and Report –

- Prepare a comprehensive project report documenting the design, implementation, and testing phases.
- Present the project to the class and instructors.
- Demonstrate the functioning of the database system.

Evaluation Method:

1. Requirement Analysis (10%):

- Completeness and accuracy of requirements.
- Identification of key entities and relationships.

2. ER Modeling (20%):

- Correctness and completeness of the ER diagram.
- Proper use of ER modeling concepts (entities, attributes, relationships, etc.).

3. Database Design (20%):

- Appropriateness of the relational schema.
- Correct application of normalization techniques.
- Proper definition of keys and constraints.

4. Database Implementation (20%):

- Accuracy of SQL code for table creation and data insertion.
- Correctness and efficiency of SQL queries.
- Implementation of data integrity constraints.

5. Testing and Validation (10%):

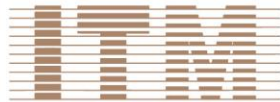
- Thoroughness of testing.
- Validation of data integrity and consistency.
- Peer review feedback incorporation.

6. Final Presentation and Report (20%):

- Clarity and professionalism of the presentation.
- Quality and completeness of the project report.
- Demonstration of the working database system.

List of PBLs:

1. **University Course Management System** - To design and implement a database system for managing university courses, students, faculty, and enrollment processes.
2. **Inventory Management System** - To design and implement a database system for managing inventory in a warehouse, including product details, stock levels, suppliers, and order tracking.
2. **Hotel Reservation System** - To design and implement a database system for managing hotel reservations, including room availability, customer details, bookings, and payments.
3. **Library Management System** - To design and implement a database system for managing library resources, including books, members, loans, and returns.
4. **Hospital Management System** - To design and implement a database system for managing hospital operations, including patient records, staff information, appointments, and billing.
5. **Online Bookstore Management System** - To design and implement a database system for managing an online bookstore, including book inventory, customer details, orders, and reviews.
6. **Employee Management System** - To design and implement a database system for managing employee details, including personal information, job roles, attendance, and payroll.
7. **Event Management System** - To design and implement a database system for managing events, including event details, participant registration, scheduling, and feedback.
8. **Restaurant Management System** - To design and implement a database system for managing a restaurant's operations, including menu items, orders, customers, and reservations.
9. **Real Estate Management System** - To design and implement a database system for managing real estate properties, including property details, agents, clients, and transactions.



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