

**Malnad College of Engineering**  
(An autonomous institute under VTU)  
**Department of CSE (AI&ML)**



**Report on Workshop on**  
**"Mastering DBMS From Theory to Practice"**

**Title:** "Mastering DBMS From Theory To Practice"

**Date:** 9<sup>th</sup> July, 2024

**Speaker:** K. R. Prasanna Kumar

**About the speaker:** The speaker is an Assistant Professor in Computer Science and Engineering at Siddaganga Institute of Technology since 2006. He holds an M.Tech from Visvesvaraya Technological University, Belagavi.

## **Introduction**

On 9th July 2024, the AI & ML branch of Malnad College of Engineering organized an exclusive workshop on Database Management Systems (DBMS), specifically covering Relational Algebra and Structured Query Language (SQL). The workshop aimed to enhance the understanding and practical skills of branch students in database management, a crucial aspect of Artificial Intelligence and Machine Learning.

## **Workshop Overview**

The workshop was designed to provide both theoretical knowledge and practical experience, the morning session focused on Relational Algebra, and the afternoon session dedicated to SQL. Sessions were led by K. R. Prasanna Kumar, a well-regarded expert in the field of DBMS with extensive industry and academic experience.

## **Topics Covered:**

- i. Relational Algebra**
- ii. Structured Query Language (SQL)**

The session introduced students to the fundamental concepts of Relational Algebra. The instructor explained the importance of Relational Algebra in query processing and optimization in DBMS. Key topics covered included:

1. **Basic Operations:** Selection, Projection, Union, Set Difference, and Cartesian Product.
2. **Advanced Operations:** Joins (Theta Join, Equi-Join, Natural Join), Division, and Rename.
3. **Relational Calculus:** A brief introduction to Tuple Relational Calculus and Domain Relational Calculus.

The session was interactive, with the instructor encouraging students to solve problems using Relational Algebra operations. This hands-on approach helped students grasp abstract concepts more concretely.

## Structured Query Language (SQL)

After a lunch break, the workshop resumed with an in-depth session on SQL. The session aimed to bridge the gap between theoretical concepts and practical application. Key topics covered in this session included:

1. **SQL Basics:** Introduction to SQL syntax, Data Definition Language (DDL), and Data Manipulation Language (DML).
2. **Query Formulation:** Writing and optimizing queries using SELECT, INSERT, UPDATE, and DELETE statements.
3. **Joins and Subqueries:** Practical exercises on various types of joins (INNER, LEFT, RIGHT, FULL) and subqueries.
4. **Advanced SQL:** Introduction to Views, Indexes, Transactions, and Stored Procedures.

Students were provided with access to a database environment where they could practice writing and executing SQL queries. This hands-on experience was invaluable in reinforcing their learning and building confidence in using SQL for real-world database management tasks.

## Feedback and Outcomes

The workshop received overwhelmingly positive feedback from the participants. Students appreciated the clear and concise explanations provided by the instructor, as well as the practical exercises that complemented the theoretical sessions. Many students reported a significant improvement in their understanding of Relational Algebra and SQL.

## Conclusion

The DBMS workshop on Relational Algebra and SQL was a resounding success, providing AI & ML branch students with essential skills and knowledge in database management. The exclusive nature of the workshop allowed for focused and personalized instruction, ensuring that each participant could fully benefit from the sessions. Such workshops are instrumental in preparing students for the demands of the industry and enhancing their academic and professional capabilities in the field of Artificial Intelligence and Machine Learning.

