Mahajana Education Society (R)
SBRR Mahajana First Grade College (Autonomous)
Affiliated to University of Mysore
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence
Post Graduate Wing
PoojaBhagavat Memorial Mahajana Education Centre
K R S Road, Metagalli, Mysuru – 570 016.

Date: 25th and 26th March 2025

Title of the Event and name of the venue:
Title: Hands-on Workshop on NoSQL Databases
Venue: MCA 05,MCA 06, MCA Lab 01 and 02

Details of the department organizing the event in collaboration with institution:
Department of Studies in Computer Science - MCA

Purpose and Scope of the event:
This hands-on workshop on NoSQL Databases aimed to provide participants with a comprehensive understanding of NoSQL technologies and their significance in modern application development. The sessions combined theoretical insights with practical experience, ensuring an interactive and immersive learning environment.

Key objectives of the workshop:

- Understand the fundamental concepts and advantages of NoSQL databases over traditional relational databases.
- Explore real-world applications of NoSQL in handling large-scale data, real-time processing, and analytics.
- Analyze various types of NoSQL databases—Key-Value Stores, Document Stores, Column-Family Stores, and Graph Databases.
- Gain hands-on experience with MongoDB for real-time data storage, querying, and visualization.

Details of the Event:

The workshop began with an overview of NoSQL databases, emphasizing the growing need for scalable, flexible solutions in the era of Big Data. Unlike traditional SQL databases, NoSQL databases provide high scalability, flexibility, and the ability to manage both structured and unstructured data. Participants learned how NoSQL databases overcome the challenges posed by relational databases when handling complex, dynamic, and large-scale datasets.

The session continued with a detailed exploration of the four main types of NoSQL databases, each serving different purposes:

- **Key-Value Stores**: Simple, fast, and highly scalable, these stores use key-value pairs for data storage. Examples like *Redis* and *DynamoDB* were discussed.

- **Document Stores**: These databases store data in document formats such as JSON or BSON, allowing for complex data storage. *MongoDB* and *CouchDB* were highlighted.
- **Column-Family Stores**: Optimized for large-scale read/write operations, column-family stores, such as *Apache Cassandra* and *HBase*, are ideal for massive datasets.
- **Graph Databases**: Perfect for applications involving complex relationships between data, graph databases like *Neo4j* and *ArangoDB* were explored in detail.

The session highlighted NoSQL's key advantage of horizontal scalability, enabling organizations to efficiently manage massive data volumes across distributed environments. This makes NoSQL databases ideal for various applications, including Big Data Analytics, where they process extensive datasets with high efficiency. Furthermore, NoSQL databases drive real-time web applications such as social media platforms and recommendation engines. In e-commerce, they are utilized to store product catalogs and manage customer data. Additionally, they play a crucial role in the Internet of Things (IoT) by handling sensor data, managing device logs, and supporting real-time processing.

The hands-on session focused on MongoDB, a popular document-based NoSQL database, where participants learned its architecture, how it stores complex data through BSON, and key concepts like databases, collections, and documents. They gained practical experience with MongoDB by performing CRUD operations and advanced querying techniques. By the end, participants had a solid understanding of MongoDB's capabilities for managing large datasets.

In conclusion, NoSQL databases are revolutionizing data management by offering flexibility, scalability, and efficiency for modern applications. Their ability to process large amounts of unstructured data in real-time makes them a preferred choice for businesses aiming for digital transformation. Through this workshop, participants gained not only theoretical knowledge but also hands-on experience, preparing them for practical applications.

Resource Person Details:

Mr. Shivumanjesh P, Assistant Professor, Department of MCA, MIT- Thandavapura, Mysuru

Target audience and No. of Participants/beneficiaries:

A total of 78 students from I semester MCA participated in this workshop.

Dr. B.R. Jayakumari
Principal

PRINCIPAL
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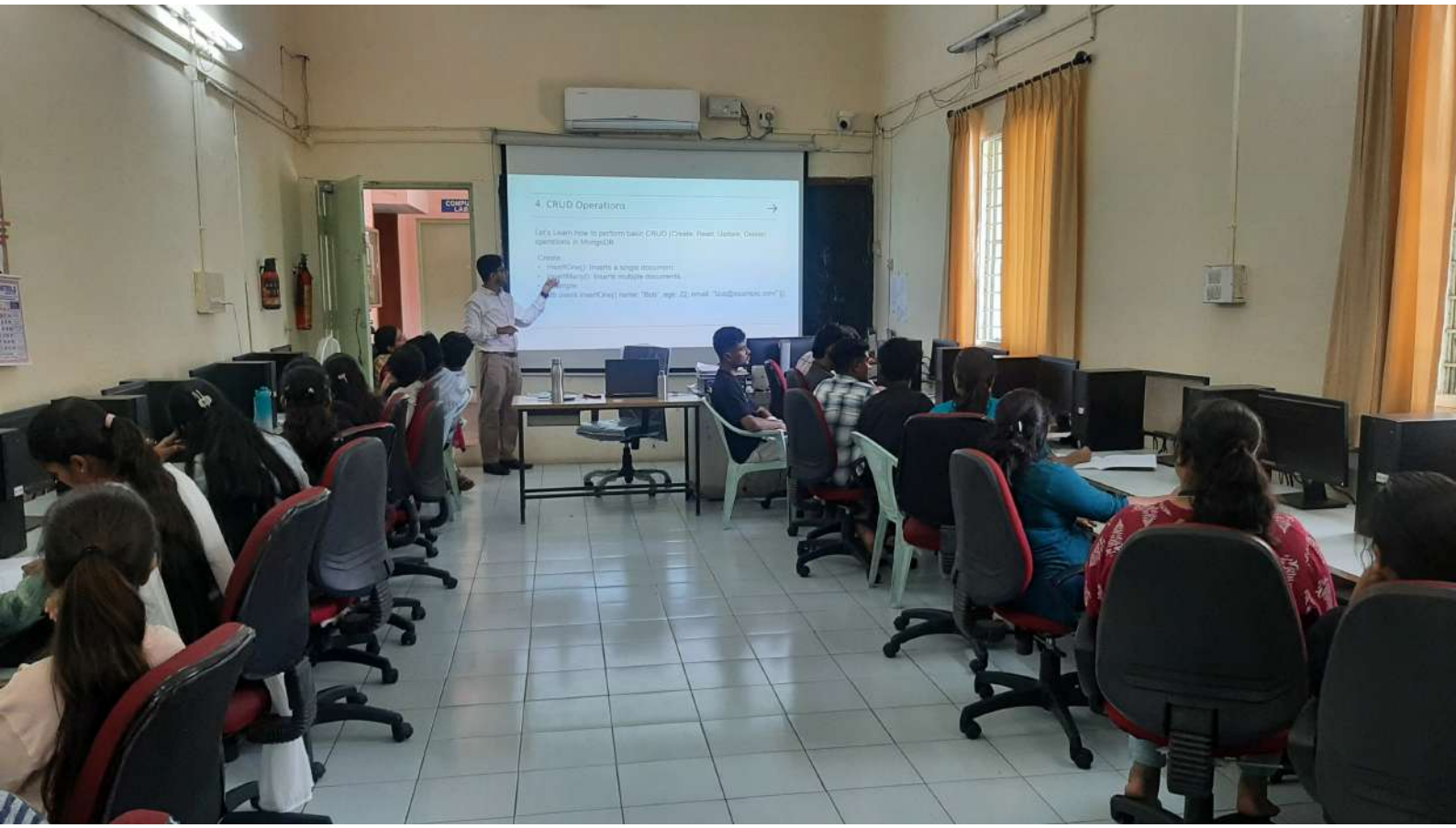
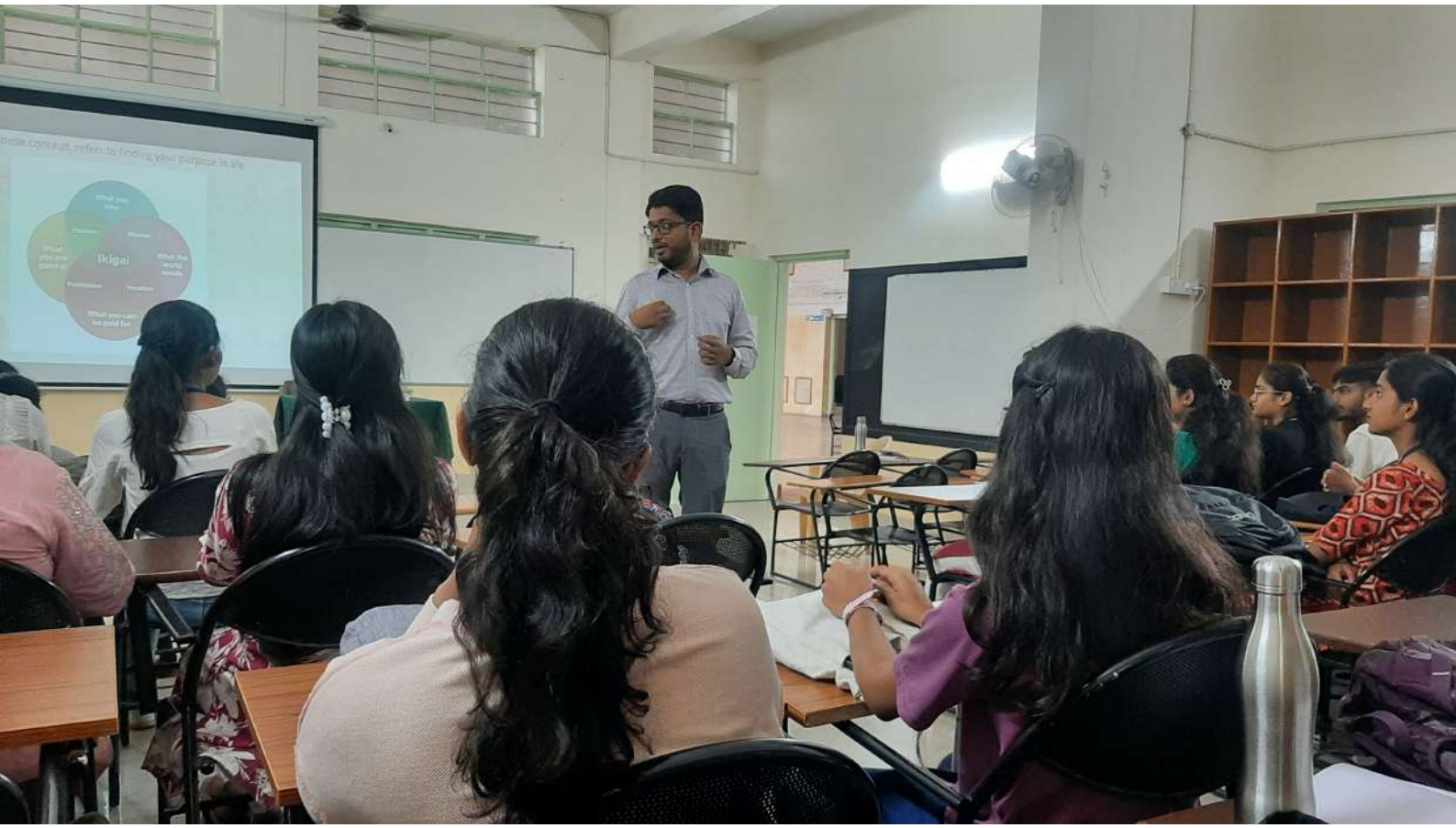
Event Coordinator


4. CRUD Operations
Let's Learn how to perform basic CRUD (Create, Read, Update, Delete) operations in MongoDB
Create:


Evolution of Job role in Mankind
Industrial Revolution
Informational Revolution
Social Revolution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