

SEMESTER-III

COURSE 5: DOCUMENT ORIENTED DATABASE

Theory

Credits: 3

3 hrs/week

Course Objective:

- To educate student regarding databases and how to manage databases.
- To handle the large amount of data handling demands of business
- To implement a data store that provides high performance, high availability, and automatic scaling
- To Process an immense diversity of data that needs to be stored and processed.
- To make use of features and functionalities to work on NO SQL Data Base Mongo DB

COURSE OUTCOME NO	Upon successful completion of this course, students should have the knowledge and skills to:	PROGRAM OUTCOM NO
CO1	Have knowledge about database and DBMS Architecture	PO5, PO7
CO2	Able to know No SQL databases, various features of Mongo DB, the installation procedure, and how to interact with MongoDB.	PO5, PO7
CO3	Able to work on Mongo DB's rich query language to support create,read, update, and delete (CRUD) operations.	PO5, PO7
CO4	Analyses the aggregation framework to perform aggregation operations.	PO5, PO7
CO5	Able to work on indexes, types of index, index properties, and the various indexing strategies to be considered. Indexes are used to improvethe performance of a query.	PO5, PO7

Unit –I

Overview of Database Management Systems:

Introduction ,Data and Information , Characteristics of the Database Approach - Self-Describing Nature of the a Database System , Insulation between Programs and Data, Data Abstraction , Support of Multiple Views of the data , Sharing of Data and multiuser Transaction Processing , Actors on the Scene - Database Administrators , Database Designers , End Users , System Analysts and Application Programmers , Advantages of using a DBMS - Controlling Redundancy ,Restricting unauthorized Access , Providing Persistent Storage for Program Objects and Data Structures, Permitting Inferencing and Actions Using Rules ,Providing Multiple User Interfaces , Representing Complex Relationships Among data , Enforcing Integrity Constraints , Providing Backup and Recovery ,Database System Concepts and Architecture , DBMS Architecture and Data Independence - The Three-Schema Architecture , Data Independence , Database Languages and Interfaces.

Unit – II

Mongo DB Features and Installation, The Need for No SQL Databases, What Are No SQL Databases?

CAP Theorem, BASE Approach, Types of NoSQL Databases, MongoDB Features, Document Database

MongoDB Is Schemaless MongoDB Uses BSON , Rich Query Language, Terms Used in MongoDB, Data Types in MongoDB, Working with Database Commands, Create Database, Drop Database.

Unit III

MongoDB CRUD Operations, Collections, Create a Collection, Create Capped Collections, Create Operations, Insert Documents, Read Operations, Query Documents, Update Operations, Update Documents, Delete Operations, Delete Documents, Working with Arrays.

Unit IV

Data Modelling and Aggregation, Data Models, Embedded Data Models, Normalized Data Models Data Model Relationship Between Documents, Data Model Using an Embedded Document, Data Model Using Document References.

Unit V

Indexes and Working with Indexes, Index Types, Index Properties, Indexing Strategies.

Text Book:

1. “Fundamentals of Database Systems” by R.Elmasri and S.Navathe
2. “Database System Concepts” by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.
3. MongoDB Recipes: With Data Modeling and Query Building Strategies By Subhashini Chellappan, Dharanitharan Ganesan , Publisher : Apress

Reference Book:

1. “Database Management Systems” by Raghu Ramakrishnan, NcGrawhill,2002
2. “Prinicples of Database Systems” by J.D.Ullman
3. MongoDB Basics 1st ed. Edition , by Peter Membrey (Author) Publisher : Apress Web Resources

Web Links:

1. <https://docs.mongodb.com/manual/tutorial/getting-started>
2. <https://www.tutorialspoint.com/mongodb/index.htm>

Recommended Co – Curricular Activities:

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

B. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

1. Programming exercises,
2. Practical assignments and laboratory reports,
3. Observation of practical skills,
4. Individual and group project reports.
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs from individual and collaborative work.

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SEMESTER-III

COURSE 5: DOCUMENT ORIENTED DATABASE

Practical

Credits: 1

2 hrs/week

Course Objective:

The objective of this course is to enable student to implement database related queries using MongoDB.

COURSE OUTCOME	UPON SUCCESSFUL COMPLETION OF THIS COURSE, STUDENTS SHOULD HAVE THE KNOWLEDGE AND SKILLS TO	PROGRAM OUTCOME NO
CO1	Installation of mongo db ,configuring, running mongo db	PO5, PO7
CO2	Implementation of crud operations	PO5, PO7
CO3	Implementing index methods, aggregation methods	PO5, PO7
CO4	To study and implement DDL, DML commands using MYSQL	PO5, PO7
CO5	Implementing MySQL Programmes using Control Structures and functions.	PO5, PO7

WEEK 1:

Installing configuring running of Mongo db

Week 2:

Working with data base commands in mongo db

Week 3:

Working with crud operations in mongo db

Week 4:

Implementing aggregation operations in mongo db

Week 5:

Implementing index operations

Week 6:
Working with create, alter, drop, rename and Truncate tables using MYSQL

Week 7:

Working with insert, update, delete, select statements using MYSQL

Week 8:

Write an MYSQL Program to retrieve the data from two tables using joins.

Week 9:

Write a MYSQL program to retrieve and display the names of the top5 students with highest marks in a specified course.

Week 10:

Write an MYSQL Program to calculate the average marks of all students and display it along with their name.

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