21ACY02	RDBMS & MySQL	L	T	P	C
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Course Objectives:

- Learners will be familiar with the RDBMS & MySQL and will get the reader accustomed with RDBMS concepts. This will help the reader in understanding the basics of RDBMS, what are Entities and Relationships, Overview on Normalization, Database Design and Performance Tuning and Advanced concept in RDBMS like Database Security and Database backup and Restore.

UNIT I	DATABASE CONCEPTS	9 Hours

Introduction – Tables - Primary Keys - Foreign Keys - Installation of SQLite - Installation of Docker based MySQL and DB2 database - **Database Storage** – Introduction - Database normalization - Indexes and how they are used in databases - Configure non-clustered indexes - Configure clustered indexes - **Entities and Relationships –** Introduction - Entities and Their Attributes – Domains - Basic Data Relationships - Documenting Relationships – Dea ling with Many-to-Many Relationships - Relationships and Business Rules - Data Modeling Versus Data Flow – Schemas.

UNIT II	THE RELATIONAL DATA MODEL	9 Hours

Introduction - Understanding Relations - Primary Keys - Representing Data Relationships – Views - The Data Dictionary – Normalization – Introduction - Translating an ER Diagram into Relations - Normal Forms - First Normal Form - Second Normal Form - Third Normal Form - Boyce–Codd Normal Form - Fourth Normal Form - Fifth Normal Form - Sixth Normal Form.

Unit III	DATABASE DESIGN AND PERFORMANCE TUNING	9 Hours

Introduction – Indexing – Clustering –Partitioning - **Creating Database Objects -** Understand data definition language (DDL) - Choose appropriate data types - **Manipulating Data –** Introduction - Understand datamanipulation language (DML).

UNIT IV	JDBC AS THE FUNDAMENTAL JAVA API	9 Hours

Introduction - JDBC basics - **JPA as the JAVA ORM API –** Introduction - From JDBC to JPA - **Database Security –** Introduction - Sources of External Security Threats - Sources of Internal Threats - External Remedies - Internal Solutions.

UNIT V	DATABASE BACKUP AND RESTORE	9 Hours

Introduction - Understand different types of backups - Define a backup and recovery strategy - Introduction of MySQL - Create Tables - Drop Tables - Insert Query - Select Query - Where Query - Update Query - Delete Query - LikeClause - MySQL Joins.

COURSE OUTCOMES:

- Understanding Database Concepts
- Understanding Database Storage & Database Security
- Understanding Entities and Relationships & Normalization
- Understanding the Relational Data Model
- Understanding Database Design and Performance Tuning
- Understanding Database Backup and Restore & MySQL

Text books:

1. IBM Database Administration Concepts and Configuration Reference © Copyright International Business Machines Corporation 1993, 2009. US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Reference books:

1. Fundamentals of Database Systems, book by Ramez Elmasri.
2. RDBMS with Oracle Developer 2000: Covers SQL PL /SQL Forms 5.0 and Report Writer by Sudhakar Bhoite.
3. A Developer's Guide to Database Management Systems: Using Oracle 10g RDBMS bySarfaraz Fayaz Khan and Mohammed Aref Abdul Raheed.
4. Oracle for Absolute Beginners: An easy-to-follow introduction to Oracle programmingby David Njoku.