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| **SESSION** | **February/MARCH 2024** |
| **PROGRAM** | **Master of CoMPUTER APPLICATIONS (MCA)** |
| **SEMESTER** | **I** |
| **course CODE & NAME** | **DCA6104 – Advanced Database Management System** |
| **CREDITS** | **4** |
| **nUMBER OF ASSIGNMENTS & Marks** | **02**  **30** |

**Set-I**

**1. What are the various types of database management systems? Briefly explain with the help of example.**

**Ans:**Database management systems (DBMS) come in various types, each designed for specific use cases and requirements.

**Here are some common types:**

**1. Relational Database Management Systems (RDBMS):**

- These are the most traditional and widely used types of DBMS.

- Data is organized into tables with rows and columns, and relationships between tables are established using keys.

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**2. Define functional dependency. Explain transitive dependencies with examples and show how these are significant in designing databases.**

**Ans**:Functional dependency is a concept in database management that describes the relationship between attributes (or columns) within a relation (or table). It specifies that the value of one attribute uniquely determines the value of another attribute in the same relation.

**For example,** let's consider a relation R with attributes A and B. We say that B is functionally dependent on A (denoted as A -> B) if for every unique value of A, there is only one corresponding value of B.

Transitive dependency occurs when the value of one attribute determines the value of another

**3. Describe multi-query optimization with its application. Also discuss the One-Pass algorithm for database.**

**Ans:Multi-query optimization** is a database optimization technique that aims to improve the performance of executing multiple queries simultaneously. Instead of optimizing and executing each query independently, multi-query optimization considers the entire workload of queries and finds efficient ways to execute them together, thereby reducing overall execution time and resource usage.

**Here's how multi-query optimization works:**

**1. \*\*Query Analysis\*\*:** The database system analyzes the entire workload of queries to

**Set-II**

**4. Explain the concept of database recovery management. Discuss the different levels of backup used for recovering data.**

**Ans:Database recovery management** is the process of ensuring that a database can be restored to a consistent and usable state after a failure or disaster. This involves creating backups of the database at regular intervals and implementing mechanisms to restore data in case of data loss or corruption. The main goals of database recovery management are to minimize data loss, maintain data integrity, and minimize downtime.

**Different Levels of Backup Used for Recovering Data:**

**1. Full Back up:**

**5. What is persistent programming language? How can it be differentiated with embedded SQL? Illustrate.**

**Ans:A persistent programming** language is a programming language that provides built-in support for interacting with persistent storage, such as databases, by integrating database access directly into the language syntax and semantics. This allows developers to manipulate data stored in databases without needing to use external libraries or APIs explicitly. Persistent programming languages often provide constructs for defining database schemas, executing

**6. What are the different approaches for XML Query Languages? Explain.**

**Ans:XML (Extensible Markup Language)** query languages are used to retrieve and manipulate data stored in XML documents. Several approaches have been developed to query XML data effectively.

**Here are the main approaches:**

**1. XPath (XML Path Language):**

- XPath is a query language used to navigate through elements and attributes in an XML document.

- It provides a concise syntax for selecting nodes based on their location in the XML tree structure.

- XPath expressions resemble file system paths, with operators for selecting elements, attributes, and text nodes.