

B.COM (COMPUTERS) DEGREE COURSE (II YEAR)

RELATIONAL DATABASE MANAGEMENT SYSTEM

Paper: 205
P.P.W: 5 (3+2) Hrs

Max Marks: 70T + 30P= 100
Exam Duration: 3 Hrs

UNIT-I:

Introduction to Database – Evolution of Database systems – Database Administrator – Data Models – Entity Relationship Model, Object Oriented Model, Relational model, Network model, hierarchical model. Components of DBMS – Hardware, Software, Data, People (or) users, Database. Database Approach objectives – Sharability, Availability, Data Independence, Data Integrity. Advantages of Database approach – Program Data Independence, Minimal Data redundancy, Improved Data consistency, Improved Data sharing, Enforcement of Standards, Improved Quality. Components of Database Environment – computer aided software Engineering (CASE) tools, Repository, DBMS, Database, Application Sharing – Sharing data Between Functional Units, Sharing Data Between different levels of users, sharing data between different locations, Risks and costs of Database – Organizational conflicts, Development project failure, system failure, Overhead costs, Requirement of skilled people. Database development life cycle (DDLC) – Preliminary planning, Feasibility Study, Requirement Definition, Conceptual Design, Implementation, Database evaluation and Maintenance.

UNIT-II:

Fundamentals of Database – Attribute, Entity, object. E-R Model – E.R. Diagram example, strong entity type, weak entity type, Simple attribute, composite attribute, simple Versus Composite Attributes, Multi valued Attributes. Relation ship Definition – Degrees of relationship – Unary Relationship, Binary Relationship, Ternary Relationship, specialization – Generalization –Aggregation – relation Data Model – Relations, Null values, Keys, foreign Key – Integrity Constraints – Domain constraints, Entity integrity, Referential Integrity, Operational constraints. Normalization – Meaning of Normalization, uses of Normalization, steps in Normalization, First normal form (1NF), Second normal form (2NF), Third normal form (3NF), Boyce Codd Normal Form(BCNF), Comparison of BCNF and 3NF. Relational Algebra-Union, Intersection, Difference, Product, Project, Join, Select, divide, assignment. Different types of joins.

UNIT-III:

Structured query language (SQL) – Role of SQL in Database Architecture – Data Schema and Table Definition – Data Manipulation – Database Change operations – Arithmetic operators – addition (+), Subtraction (-), Division (/), Multiplication (*), Exponentiation (**), Enclosed operation (). Logical operators – and operator, Or operator, NOT operator, Dual Table in ORACLE – Null value Concepts – aggregate functions or group functions – Nested queries – Correlated Nested Queries – Grouping Data from tables – views or Virtual tables – client server Database systems.

UNIT-IV:

File organization and Addressing Methods – Sequential File organization, Indexed sequential file organization, Data file organization, Mapping logical data structures to physical data structures, mapping relational databases, mapping network databases, mapping hierarchical databases. Database administration. Functions of DBA – Schema definition, Storage structure and Access method definition, Schema and physical organization modification, granting of authorization for Data access, integrity constraint specification. Goals of DBA- having knowledge of SQL, having knowledge of operating system, database initialization, able to create database, perform backup methods etc., database security – Authentication, authorization and views, Encryption. Database recovery – code rules in database – information rule, not null rule etc., uses of code rules – classification of data base on code rules.

UNIT-V:

Need of distributed databases - distributed database system design - distributed query processing – Data integrity – Two phase commit protocol, distributed locking, time stamping, distributed two phase locking. Client server systems – Two tier architecture. DBMS functions and Capabilities – DBMS feature requirements – Mandatory, important, optional, Unnecessary, Undesirable. Implementation issues – database administration, database testing, preparing users for change, loading database, database maintenance.

Lab Work: Developing simple queries using SQL.

SUGGESTED READINGS:

1. Modem Database Management : MeFadden
2. An Introduction to Database System: Bipin C. Desai
3. Database Management & Design : Gary Hansen & James Hansesn
4. DBMS : F-korth and Sudershan.