

# Kadi Sarva Vishwavidhyalaya, Gandhinagar

## BCA Semester II

### BCA204 – Part 2: Core 5

### Database Management System – I

**Rationale:**

Database Management System – I enables beginners to understand the basic concepts of database and various other activities that can be carried out in a database environment. This subject will allow students to develop understanding of the basic concepts of data in general and relational Database System in particular. The students will learn Database concept, Data Models, various approaches to Database Design, strength of Relational Model

**Learning Outcomes**

- To understand the concept of Database
- To recognize the elements of Database for real applications
- To identify the key relationship between Database components
- To deal with every tiny elements of the Database

**Resource Required**

- Lab Facility with Microsoft Office Software
- Projector

**Teaching and Evaluation Scheme:**

Sub. Code	Sub. Type	Subject Title	Teaching Scheme		Exam Scheme				Total Marks
			Cr.	Hrs. / Week	Theory		Practical		
					Internal	External	Internal	External	
BCA 204	Core	Database Management System -I	4	4	30	70	-	-	100

**Course content:**

**Unit-I**

(25%)

**Introduction to File Systems and Database Systems**

**Applications:** The Database is evolved from computer file systems. Here we will learn serious Data Management limitations and eliminating the shortcomings of file system by Database Management.

Data and Information

- Files and File System ,
- Problems with File System, 3GL and 4GL, Limitations of File System, Structural and Data Dependence, Field Definition and naming Conventions , Data Redundancy, Data Inconsistency, Data Anomaly
- Introduction of the Database
- Types of Databases
  - ✓ SingleUser, Desktop, MultiUser, Workgroup, Enterprise, Centralized, Distributed, Operational
- Introduction of DBMS

- Interaction between End User and Database(Role of DBMS)
- Advantages of DBMS
- Database System Environment(Components)
- DBMS Functions

**Book:** Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 5 -20

**Unit-II** (25%)

**Data and ER Models**

**Applications:** Data Modeling is the first step in the Database design journey, serving as a bridge between real world objects and the Database that recites in the computer

- Building Blocks of Data Models
  - ✓ Entity, Attribute, Relationship and Types ,Constraints
- Types of Data Model
  - ✓ Hierarchical, Network , Relational, Object- Oriented
  - ✓ E-R Model----- Pg No:109 -115
    - Types (Chen’s , Crow’s Foot)
    - Symbols and Relationship
    - Connectivity and Cardinality, Relationship Strength (Strong, Weak)
    - Weak Entity
    - Generalization and specialization

**Book:** Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 30- 44, Pg No:109 -115

**Unit-III** (25%)

**Relational Database Model**

**Applications:** In this chapter the students will learn the Relational Model’s Logical Structure and more about how the ER Diagrams can be used to design a relational Database.

- DBMS Vs. RDBMS
- Tables and Characteristics
- Functional Dependency
- Keys - Super Key , Candidate Key , Primary Key , Foreign Key , Secondary Key, Composite Key
- Integrity Rules - Entity Integrity , Referential Integrity
- Relational Set Operators - Union, Intersect, Difference, Divide, Product, Select, Project, Join (Natural, Equi, Theta, Left Outer, Right Outer)

**Book:** Database Systems Design, Implementation and Management by Peter Rob & Carlos Coronel, Pg No: 61-76

**Unit-IV** (25%)

**Advanced Data Modelling Applications:** This unit will depict to summarize the data required to implement a successful database Design

- Attribute, Types and Symbols ----- Pg No:105-108
  - Simple Attribute, Composite Attribute, Single Valued, Multi Valued , Derived
- Degrees of Abstraction----- Pg No: 46- 50
  - External, Conceptual, Internal, Physical
- Relationship Degree----- Pg No: 118-120
  - Unary, Binary, Ternary
- ER Diagram of Library Management System
- ER Diagram of University Management System

## **Text Book**

1. Database Systems Design, Implementation, and Management. 7<sup>th</sup> Edition and Further  
Author: Peter Rob, Carlos Coronel And Publication: Cengage Learning

## **Reference Book**

1. Introduction to Database Management System, Publication: Tata McGraw- Hill , Author :  
ISRD Group
2. An Introduction to Database Systems, Publication: Pearson Author : C. J. Date, A. Kannan &  
S. Swamynathan

## **Question Paper Scheme:**

University Examination	Duration: 3 Hours.	Total marks: 70
Q.1-Unit-I & II		(11 Marks)
Objective / Short Questions		
Q.2-Unit-I		(12 Marks)
Descriptive / Long questions		
Q.3-Unit-II		(12 Marks)
Descriptive / Long questions		
Q.4-Unit-III & IV		(11 Marks)
Objective / Short Questions		
Q.5-Unit-III		(12 Marks)
Descriptive / Long questions		
Q.6-Unit-IV		(12 Marks)
Descriptive / Long questions		

Note: Q.2,3,5 and Q.6 must have at least 40% Internal Options (i.e. Attempt Any 3 out of 5)

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