COURSE HANDOUT

RELATIONAL DATABASE MANAGEMENT SYSTEM (BCAMJ-401)

BCA (Hons.)- 4TH SEMESTER

ACADEMIC YEAR (2024-25)

Dr.Archana Sharma

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Department of Computer Applications

Model Institute of Engineering & Technology (Autonomous)

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www.mietjmu.in

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
BCAMJ-401	Relational Database Management System	Major	4	4	0	0	40	60	100

COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Describe the key concepts of database systems.
CO2	Evaluate data model concepts, database architecture, and roles with in database Management.
CO3	Explain relational database principles and E-R models to design and optimize database systems.
CO4	Demonstrate relational model concepts and SQL to manage databases.
CO5	Apply normalization techniques and functional dependencies to design efficient database schemas.

Section-A

Unit-I
Introduction to DBMS: Introduction, Database Systems Characteristics of DB Approach, Advantages of DBMS, Database Users, DB Languages, Applications of Database, Database Administrator.

(08 Hrs)

Unit-II
Data Model Concepts: Data model concepts, Data Independence Three levels of Architecture, Database Administrator, Client-Server Architecture, Data Models, Database interfaces, Schemas, and Instances.

(08 Hrs)

Unit-III
Relational Database and E-R Model: Relational System, Codd's Rule, Relational Model, Optimization, Tables and Views, Entity, Types of Entity, Weak Entity Attributes , Entity sets , Entity – Relationship Diagrams.   **(12 Hrs)**

Section-B
Unit- lV
Relational Model Objects: Domains and Relations, Relations and predicates, Relational Data Integrity; Primary Key, Candidate Key , Foreign Key and their rules; Relational operators, Relational Algebra, Relational Calculus, SQL Language, Data definition, Data retrieval and update operations.

(12 Hrs)

Unit-V

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Database Design: Definition Of Functional Dependencies, Process Of Normalization, First Normal Form, Second Normal Form, Third Normal Form. Boycee Codd Normal Form, Fourth Normal Form, Fifth Normal Form.

(08 Hrs)

Textbooks

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	An introduction to Database Systems	C.J Date	Pearson	7th(2000)
2.	Database System Concepts	Korth, Silberchatz	Mcgraw Hill Education	7th (2019)

Reference Books

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Fundamentals of Database System	ElmasriRame, Navathe Shamkant	Pearson Education	7th (2015)
	COURSE PLAN			
	Unit-I Introduction to DBMS			

S.No	Topics	Recommended Books
1	Introduction, Database Systems	Book 1, Ch.1
2	Characteristics of DB Approach	Book (reference)1, Ch.1
3	Advantages of DBMS	Book (reference)1, Ch.1
4	Database Users	Book 1 (reference), Ch.1
5	DB Languages	Book 1 (reference), Ch.2
6	Applications of Database	Book 1 (reference), Ch.1
7	Database Administrator	Book 1, Ch.2
	Unit-II Data Model Concepts	
8	Data model concepts	Book (reference)1, Ch.2
9	Data Independence	Book 1, Ch.1
10	Three levels of Architecture	Book 1, Ch.2
11	Client-Server Architecture	Book 1, Ch.2
12	Data Models	Book (reference)1, Ch.2
13	Database interfaces, Schemas, and Instances	Book (reference)1, Ch.2
	Unit-III Relational Database and E-R Model	
14	Relational System, Codd's Rule	Book (reference)1, Ch.7
15	Relational Model	Book 1, Ch.3

16	Optimization, Tables and Views	Book 1, Ch.3
17	Entity, Types of Entity, Weak Entity Attributes, Entity sets	Book 1 (reference), Ch.3
18	Entity – Relationship Diagrams	Book 1 (reference), Ch.3
Unit-IV Relational Model Objects		
19	Domains and Relations	Book 1, Ch.6
20	Relations and predicates.	Book 1, Ch.6
21	Relational Data Integrity; Primary Key	Book 1 (reference), Ch.3
22	Candidate Key	Book 1 (reference), Ch.3
23	Foreign Key and their rules	Book 1 (reference), Ch.3
24	Relational operators	Book 1, Ch.5
25	Relational Algebra	Book 1, Ch.7
26	Relational Calculus	Book 1, Ch.8
27	SQL Language	Book 1 (reference), Ch.8
28	Data definition	Book 1 (reference), Ch.8
29	Data retrieval and update operations.	Book 1 (reference), Ch.8
Unit-V Database Design		
30	Definition Of Functional Dependencies	Book 1, Ch.11
31	Process Of Normalization	Book 1, Ch.12
32	First Normal Form	Book 1, Ch.12
33	Second Normal Form	Book 1, Ch.12
34	Third Normal Form	Book 1, Ch.12
35	Boycee Codd Normal Form	Book 1, Ch.13
36	Fourth Normal Form	Book 1, Ch.13
37	Fifth Normal Form	Book 1, Ch.13

ADDITIONAL WEB RESOURCES

1.	https://www.udemy.com/relational-database-design/
2.	https://www.coursera.org/learn/introduction-to-databases
3.	https://nptel.ac.in/courses/106104135

GRADING AND ASSESSMENT

- **Sessional Test**: 20 marks
- **Assignment**: 10 marks
- **Attendance**: 10 marks
- **Final Examination**: 60 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

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FACULTY INFORMATION

- **Office Hours**

  Monday (12:55 PM - 1:45 PM)
  Friday (12:55 PM - 1:45 PM)

- **Contact Information**
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