



B.Com Honours

Semester V

Calicut University

BUSINESS INFORMATION SYSTEM

Course Code: COM5EJ308 • Module 3 Notes

Module III: Data Base Management Systems & MS Access

Covers database concepts, ER modeling, relational keys, accounting database designs, normalization (1NF & 2NF), and MS Access objects (Tables, Queries, Forms, Reports).

Unit 7: Database Systems & DBMS Characteristics

DBMS: Software package designed to define, manipulate, retrieve, and manage data in a database. Advantages over File Processing Systems: Data independence, reduced redundancy, centralized security, concurrent user access, and crash recovery.

Unit 8: Entity Relationship (ER) Model & Relational Keys

ER Model: Conceptual blueprint representing real-world entities (Rectangles), attributes (Ovals), and relationships (Diamonds). Concept of Relational Keys:

- 1. **Primary Key (PK):** Unique identifier for table records (e.g. Cust_ID).
- 2. **Foreign Key (FK):** Attribute referencing Primary Key of another table establishing relationships.
- 3. **Candidate Key & Composite Key:** Minimal super keys & multi-column primary keys.

Unit 9: Database Designs for Accounting & Business Applications

Designing relational schemas for accounting: Sales Order Processing, Ledger Master, Accounts Payable/Receivable, and Payroll Databases.

Unit 10: Database Normalization (1NF & 2NF)

Normalization: Systematic technique of decomposing tables to eliminate data redundancy and insertion/deletion anomalies.

- 1. **First Normal Form (1NF):** Eliminating repeating groups & multi-valued attributes (atomic values).
- 2. **Second Normal Form (2NF):** 1NF + Eliminating partial functional dependencies (non-key attribute dependent on full PK).

Unit 11: DBMS Software (Microsoft Access Objects)

MS Access Architecture: Tables (data storage), Queries (SQL select/join filters), Forms (user data entry GUI), and Reports (printable summary documents).

Practical Case Framework 1 (Relational Database Keys & ER Model Components): Map database key types, structural roles, and integrity constraint rules.

Relational Database Keys Reference Table:

Database Key Type	Structural Definition & Constraint	Accounting Schema Example
Primary Key (PK)	Uniquely identifies record; cannot contain NULLs	Account_No in Customer Ledger Table
Foreign Key (FK)	References PK of parent table; enforces Referential Integrity	Cust_ID in Invoice Sales Table
Composite Key	Combination of 2+ attributes forming unique primary key	Voucher_No + Item_Code in Voucher Line Table

Practical Case Framework 2 (Database Normalization 1NF & 2NF Solved Schema): Demonstrate normalization steps converting unnormalized invoice records into 2NF tables.

Normalization Progression Matrix:		
Normalization Level	Data Structural Rule	Normalized Accounting Tables Result
Unnormalized (UNF)	Contains multi-valued items per invoice row	Invoice(InvNo, CustName, Item1, Price1, Item2, Price2)
First Normal Form (1NF)	Atomic values; single item per record row	InvoiceLine(InvNo, ItemCode, ItemDesc, UnitPrice, Qty)
Second Normal Form (2NF)	Full functional dependency on Composite PK	Table 1: Items(ItemCode, ItemDesc, UnitPrice) Table 2: InvoiceDetails(InvNo, ItemCode, Qty)

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