19.2.5.   DATABASE MANAGEMENT SYSTEM (100 HOURS)

19.2.5.01 INTRODUCTION

This module unit is designed to equip the trainee with knowledge, skills and attitude that will enable him/her understand the construction and management of databases.

19.2.5.02 GENERAL OBJECTIVES

By the end of this module unit, the trainee should be able to:-
a)   appreciate database design and development
b)   understand the components of database management systems
c)   develop and manipulate a database

19.2.5.03 COURSE SUMMARY AND TIME ALLOCATION (100 HOURS)

CODE	TOPIC	SUB-TOPIC	TIME		
			T	P	TOTAL
19.2.5.1	INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS	• meaning of DBMS • historical evolution of DBMS • traditional vs. database approaches • components of a database management systems • classification of database system • advantages of DBMS • role of key players in database design and development	18		18

19.2.5.2	DATABASE ORGANIZATION	• Meaning of database organisation
		• database organization approaches
		  - distributed
		  - centralized
		  - client/server
		  - database
			6		6

19.2.5.3	PRINCIPLES AND TECHNIQUES OF DATABASE DESIGN	• meaning • database design cycle	8		8
19.2.5.4	RELATIONAL DATABASE SYSTEM	• meaning of rational database system • characteristics • relational algebra • relational calculus	10		16
19.2.5.5	ENTITY RELATION SHIP	• meaning of entity relationship • connotations of entity relationship • drawing ERDs	2		8

CODE	TOPIC	SUB-TOPIC	TIME		
			T	P	TOTAL
19.2.5.6	NORMALIZATION	• meaning and importance of normalization • normalization rules • performing normalization	10		14
19.2.5.7	QUERYING A DATABASE	• meaning of a database query • features • categories of SQL statements • design SQL statements • design SQL Queries • use of SQL statements to interrogate a database	4	20	24
19.2.5.8	FUNCTION OF DATABASE MANAGEMENT SYSTEM	• meaning • transaction processing • concurrency controls • database recovery • database security and authorization	4		4
19.2.5.9	EMERGING TRENDS	• emerging trends in database management system • challenges of emerging trends in database management system • coping with emerging trends in database management system	2		2

19.2.5.1T   INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

THEORY
19.2.5.1.T0   Specific Objectives

By the end of this topic, the trainee should be able to:-
a)   meaning of database management system
b)   describe Components of databases
c)   trace the historical evolution of DBMS
d)   differentiate between traditional and database approach
e)   describe the advantages of DBMS
f)   classify database systems
g)   describe the role of key players in database design and development

CONTENT
19.2.5.1.T1   Meaning of database management system

19.2.5.1.T2   Components of databases

19.2.5.1.T3   Historical evolution of DBMS

19.2.5.1.T4   Traditional verses database approaches

19.2.5.1.T5   Advantages of DBMS

19.2.5.1.T6   Database systems

19.2.5.1.T7   Role of key players in database design and development

19.2.5.2T   DATABASE ORGANISATION

THEORY
19.2.5.2.T0   Specific Objectives
By the end of this topic, the trainee should be able to:-
a)   explain the meaning of database organisation
b)   describe database organization approaches

CONTENT
19.2.5.2.T1   Meaning of database organisation

19.2.5.2.T2   Describing database organisation approaches
distributed
centralized
client/server

19.2.5.3T   PRINCIPLES AND TECHNIQUES OF DATABASE DESIGN

THEORY
19.2.5.3.T0   Specific Objectives
By the end of this topic, the trainee should be able to:-
a)   describe the principles and techniques of database design
b)   describe database design cycle

CONTENT
19.2.5.3.T1   Principles and techniques of database design

19.2.5.3.T2   Database design cycle

19.2.5.4T   RELATIONAL DATABASE SYSTEM

THEORY
19.2.5.4.T0   Specific Objectives
By the end of this topic, the trainee should be able to:-
a)   explain meaning of relational database system
b)   explain the characteristics of a relational database system
c)   explain the relational algebra
d)   explain relational calculus

CONTENT
19.2.5.4.T1   Meaning of relational database system

19.2.5.4.T2   Characteristics of a relational database system

19.2.5.4.T3   Relational algebra
meaning
properties
operations

19.2.5.4.T4   Meaning of relational calculus

PRACTICE
19.2.5.4.P0   Specific Objectives
By the end of this topic, the trainee should be able to:-
a)   perform operations on relational algebra

19.2.5.4.P0   **Performing relational algebra operations**

19.2.5.5T   ENTITY RELATIONSHIP

THEORY
19.2.5.5.T0   **Specific Objectives**
By the end of this topic, the trainee should be able to:-
a)   explain the meaning of entity relationship

b)   describe the connotations of ER

c)   draw entity relationship diagrams

19.2.5.5.T1   Meaning of entity relationship

19.2.5.5.T2   Describing connotations of ER

PRACTICE
19.2.5.5.P0   **Specific Objectives**
By the end of this topic, the trainee should be able to:-
a)   draw entity diagram

19.2.5.5.P1   Drawing entity diagram

19.2.5.6T   NORMALIZATION

THEORY
19.2.5.6.T0   **Specific Objectives**
By the end of this topic, the trainee should be able to:-
a)   explain meaning and importance of normalization

b)   describe normalization rules

c)   perform normalization

19.2.5.6.T1   Description of Normalization

19.2.5.6.T2   Importance of Normalization

19.2.5.6.T3   Normalization rules

1NF
2NF
3NF

PRACTICE

19.2.5.6.P0   **Specific Objectives**

By the end of this topic, the trainee should be able to:-
a)   Perform normalization

19.2.5.6.P1   Performing normalization

19.2.5.7T   QUERYING A DATABASE

THEORY

19.2.5.7.T0   **Specific Objectives**

By the end of this topic, the trainee should be able to:-
a)   explain the meaning of a database query

b)   describe SQL Features

c)   identify the categories of SQL

d)   design SQL statement

CONTENT

19.2.5.7.T1   Meaning of a database query

19.2.5.7.T2   Features of SQL

19.2.5.7.T3   Categories of SQL

PRACTICE

19.2.5.7.P0   **Specific Objectives**

By the end of this topic, the trainee should be able to:-
a)   design and use SQL statements to interrogate a database

CONTENT

19.2.5.7.P1   Designing and using statements to interrogate a database

19.2.5.8T   FUNCTION OF DATABASE MANAGEMENT SYSTEMS

THEORY

19.2.5.8.T0   **Specific Objectives**

By the end of this topic, the trainee should be able to:-
a)   a) explain the meaning and importance of database management systems

CONTENT

19.2.5.8.T1   Meaning and importance of database management systems

transaction processing

concurrency controls

database recovery

database security and authorization

19.2.5.9T   EMERGING TRENDS

THEORY

19.2.5.9.T0   Specific Objectives

By the end of this topic, the trainee should be able to:-

a)   identify emerging trends in database management systems

b)   explain the challenges of emerging trends in database management systems

c)   cope with emerging trends in database management systems

CONTENT

19.2.5.9.T1   Identification of emerging trends in database management system

19.2.5.9.T2   Explaining the challenges of emerging trends in DBMS

19.2.5.9.T3   Coping with challenges of emerging trends in DBMS

TEACHING/LEARNING RESOURCES

Relevant text books and free e-books

www contents

Appropriate DBMS software (MS access, Oracle 10g,

Whiteboard

Appropriate charts, pictures, clips

ASSESSMENT MODE

Written tests

Practical tests

A Database Project

Oral tests