DATABASE MANAGEMENT SYSTEM

UNIT CODE: MATH/CU/AS/CC/04/6/A

Relationship to Occupational Standards
This unit addresses the unit of competency: Develop database Management System

Duration of Unit: 150 hours

Unit Description:
This unit specifies competencies required to manage database system. They include identification of database management systems, designing of database, Creation and manipulation of database, database testing e.g. using dummy data, implementation of the designed database, establishing transaction and concurrency mechanism and managing database security

Summary of Learning Outcomes:
1. Identify database management system
2. Design database
3. Create and manipulate database
4. Perform database testing e.g. using dummy data
5. Implement designed database (roll out)
6. Establish transaction and concurrency mechanism
7. Manage database security

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Method

1. Identify database management system	• Define database management system, components and terminologies
	• Classification of databases
	• Understand various database management system
	• Introduction to database management systems
	    • Excel
	    • Access
	    • SQL
		• Practical exercises
		• Oral questioning
		• Written test
		• Learner portfolio of evidence.

2. Design database system	• Define data abstraction, instances and schemas
	• Types of Database structures
	• Database operations
	   • INSERT
	   • SELECT
	   • UPDATE
	   • DELETE
	• Data models
	   • ER- Models
	   • Relational Models
	   • Hierarchical models
	   • Network Models
		• Practical exercises
		• Oral questioning
		• Written test
		• Learner portfolio of evidence.

3. Create and manipulate database system	• Creation of tables • Primary and secondary key • Linking of tables • Data variables • Database integration • Database Querying - SQL	• Practical exercises • Oral questioning • Written test • Learner portfolio of evidence.

4. Perform database testing e.g. using dummy data	• Integration testing
	• DB Query testing
	• Database test techniques
	   • Schema testing
	   • Stored procedure
	   • Trigger
	   • Stress
	   • views
	   • Benchmarking etc.
	• Perform database testing
	• Generate test report
		• Practical exercises
		• Oral questioning
		• Written test
		• Learner portfolio of evidence.

5. Implement designed database (roll out)	• Run the designed database • Test the design and Database functionality	• Practical exercises • Oral questioning • Written test • Learner portfolio of evidence
6. Establish transaction and concurrency mechanism	• Transaction mechanisms • Concurrency mechanisms • Management of multiple transactions	• Practical exercises • Oral questioning • Written test • Learner portfolio of evidence

7.Manage database security	• Restriction of access as per Internal policy • Types of restrictions • Backup and recovery methods • Statement sanitisation to remove SQL injections	• Practical exercises • Oral questioning • Written test

Suggested Methods of Instructions
- Presentations
- practical demonstrations by trainer;
- Guided learner activities
- research to develop underpinning knowledge;
- Supervised activities a
- projects in a workshop;
- Visiting lecturer/trainer from the ICT sector;
- Industrial visits.

Recommended Resources
Tools
- DB Comparer
- Ad miner
- Firebird
- Beaver
- phpMyAdmin
- Navicat for MySQL
- Test Data Generator
- Visual Query Designer

Equipment
- computers
- Servers