

TOPIC 4 LEARNING MODULE

COURSE NUMBER : **CC 105**

COURSE TITLE : INFORMATION MANAGEMENT 1

COURSE LEARNING OUTCOME

- *Analyze an existing database system with respect to quality issues: Reliability, scalability, efficiency, effectiveness and security.*

STUDENT LEARNING OUTCOMES

- *Show understanding about the system development life cycle and database life and its importance of a good database design.*
- *Discuss understanding about the importance of a Database Management System software in implementing a relational database system*

LEARNING CONTENT:

1. **System Development Life Cycle (SDLC)**
2. **Database Life cycle (DBLC)**
3. **Database Management system (DBMS)**

INTRODUCTION

Successful database design must reflect the information system of which the database is a part. The information systems are developed within a framework known as the **System Development Life Cycle (SDLC)**. That within the information system, the most successful databases are subject to frequent evaluation and revision within a framework known as the Database Life Cycle (DBLC).

Databases are part of a larger picture called an **information system**. **Database designs** that fail to recognize that the database is part of a larger whole are not likely to be successful. **Information systems** don't just happen it is the product of a carefully staged development process.

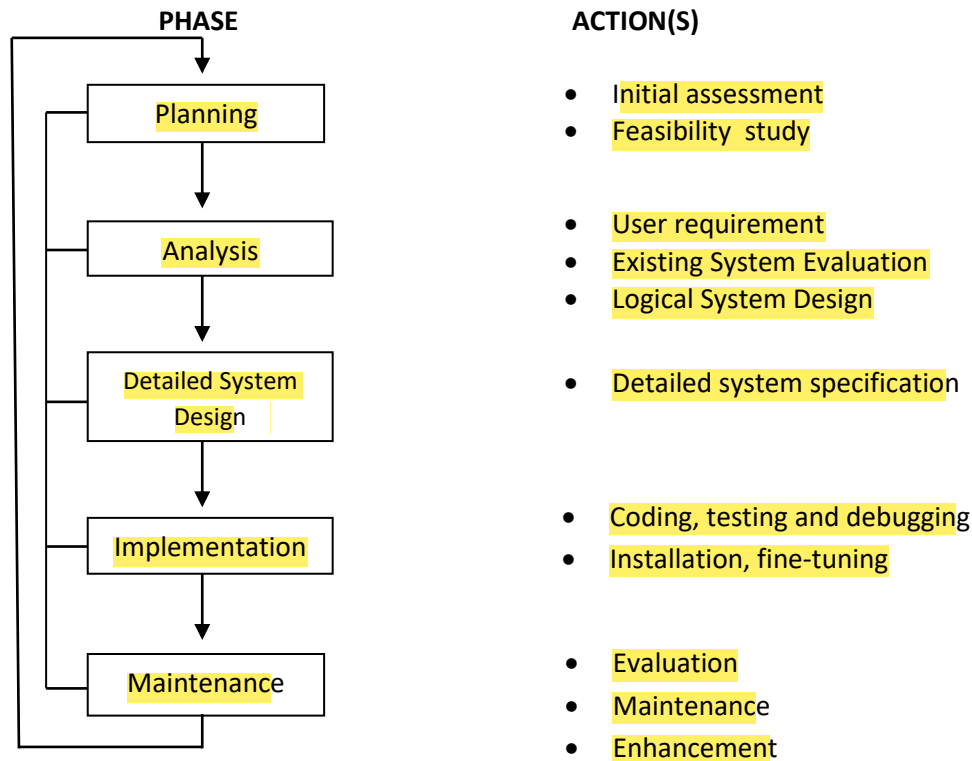
A. LESSON CONTENT

Basically database is a carefully designed and constructed repository of facts. The repository of fact is a part of a larger whole named information system. An information system provides for **data collection, storage, and retrieval**. It's also facilitates the transformation and the management of **both data and information**. Thus, a complete information system is composed of people, **hardware, software,**

the database/s, application programs, and procedures. System Analysis is the process that establishes the need for and the extent of an information system. The process of creating an information system is known as systems development.

The performance of an information system depends on a triad of factors: 1. Database design and implementation, 2. Application design and implementation, 3. Administrative procedures

The System Development Life Cycle (SDLC) traces the history (life cycle) of an information system



PLANNING

Assessment should answer some important questions:

1. Should the existing system be continued?
2. Should the existing system be modified?
3. Should the existing system be replaced?

Feasibility study must address the following.

1. The technical aspects of hardware and software requirements.
2. The system cost

ANALYSIS

Problems defined during the planning phase are examined in greater detail during the analysis phases. A macro analysis must be made of both individual needs and organizational needs, addressing questions such as

1. What are the requirements of the current system's end users?
2. Do those requirements fit into the overall information requirements?

The analysis phase of SDLC is, in effect, a thorough audit of user requirements.

DETAILED SYSTEM DESIGN

In this phase the designer completes the design of the system's processes. The design includes all the necessary technical specifications for the screens, menus, reports, and other devices that might be used to help make the system a more efficient information generator.

IMPLEMENTATION

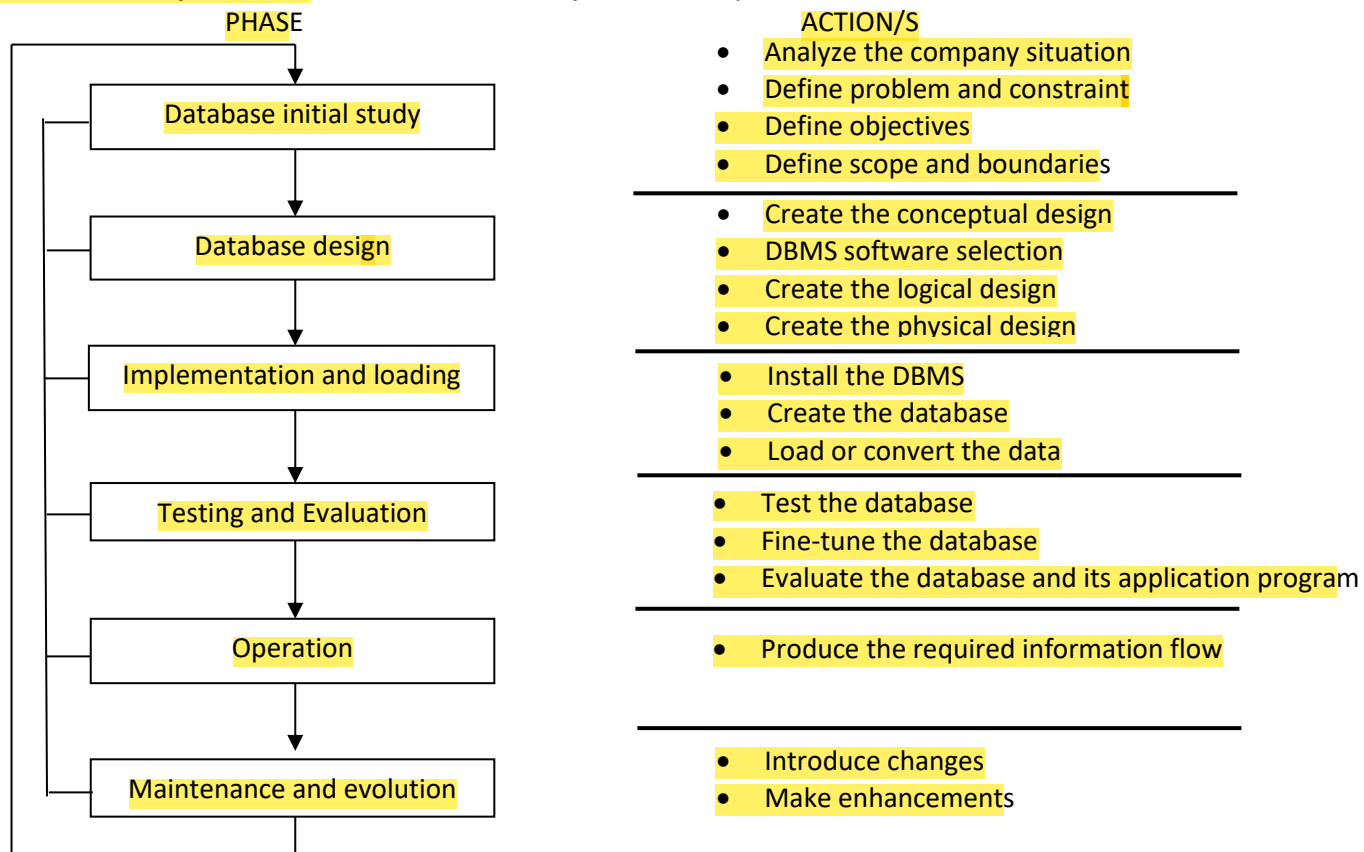
During this phase, the hardware, DBMS software, and application programs are installed and the database design is implemented. During the initial stages of the implementation phase, the system enters into a cycle of coding, testing, and debugging until it is ready to be delivered. The actual database is created, and the system is customized by the creation of tables and views, user authorization and so on.

MAINTENANCE

Almost as soon as the system is operational, end users begin to request changes in it. Those changes generate system maintenance activities, which can be grouped into three types:

- *CORRECTIVE MAINTENANCE* in response to system error
- *ADAPTIVE MAINTENANCE* due to change in the business environment
- *PERFECTIVE MAINTENANCE* to enhance the system

The **Database Life Cycle (DBLC)**. Database is also subject to a life cycle



DATABASE INITIAL STUDY

Analyze the company situation

The company situation describes the general conditions in which a company operates its organizational structure and its mission. To analyze the company situation, the database

designer must discover what the company's operational components are, how they function, and how they interact.

Define problems and constraints

The designer has both informal and formal information. If the company has existed for any length of time it already has some kind of system in place (either manual or computer-based). How does the existing function? What input does the system require? What documents does the system generate? How is the system output used? By whom?

Define objectives

A proposed database system must be designed to help solve at least the major problems identified during the problem discovery process. As the list of problems unfolds, several common sources are likely to be discovered. In any case the database designer must begin to address the following questions.

1. What is the proposal system's initial objective?
2. Will the system interface with other existing or future systems in the company?
3. Will the system share the data with other systems or users?

Define Scope and Boundaries

The designer must recognize the existence of two sets of limits: **scope and boundaries**. The system's **scope** defines the extent of the design according to operational requirements. Will the database design encompass the entire organization, one or more departments within the organization, or one or more functions of a single department? Knowing the database design scope helps in defining the required data structures, the type and number of entities, the physical size of the database, and so on.

The proposed system is subject to limits known as boundaries, which are external to the system. Boundaries are also imposed by existing hardware and software. Unfortunately, in the real world, a system often must be designed around existing hardware. Thus, the scope and boundaries become the factors that force the design into a specific mold, and the designer's job is to design the best system possible within those constraints. Sometimes problems definition and objective must be reshaped to meet the scope and boundaries.

DATABASE DESIGN

The second phase focuses on the design of the database model that will support company operations and objectives.

Conceptual Design

In this stage, data modeling is used to create an abstract database structure that represents real-world objects in the most realistic way possible. It must embody a clear understanding of the business and its functional areas. All the data is needed is there, and all that is there is needed.

Procedure flow in the database design:

