Mater Dei College
Tubigon, Bohol
2nd Semester, A.Y. 2022-2023

TOPIC 1 NOTES

COURSE NUMBER: **CC 105**
COURSE TITLE : INFORMATION MANAGEMENT 1

WEEK 1

COURSE LEARNING OUTCOME

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

STUDENT LEARNING OUTCOMES

1. *Compare and contrast manual, file-based and database system on how these three keep records.*

LEARNING CONTENT:

1. The Manual, File-based, and Database System
2. Database Approach

INTRODUCTION

Welcome to the first week session of this course. As what we all know, nowadays data are one of the most important resources of the organization. That is why, it needs to be taking care of. In this week, we are going to discuss about how records are being kept and to know the similarities and differences among the three.

A. LESSON CONTENT

Definition of Terms:

Manual Filing System - is an organization of data wherein files are stored on labeled cabinets.

File-Based System - is a collection of application programs that perform services for the end-users such as production reports. Each program defines and manages its own data. The first attempt to solve the problems encountered in manual filing system and to computerize the processing of data was led to the development of traditional file-based system.

Limitations of file-based approach:

1. Separation and isolation of data – when data is isolated in separate file, it is more

difficult to access data.

2. Duplication of data – due to decentralized approach taken by each department, the file-based system encouraged the uncontrolled duplication of data and this very undesirable for several reasons.
    - Duplication is wasteful – it costs time and money to enter the data more than once. It takes up additional storage space with associated cost.
    - Duplication can lead to loss of data integrity – meaning the data is no longer consistent.

3. Data dependence – the physical structure and storage of the data files and records are defined in the application code. This means that changes to an existing structure are difficult. Time consuming and subject to error. This characteristic of file-based is known as program-data dependence.

4. Incompatibility of files - structure of files is embedded in the application programs, the structure is dependent on the application program language. A structure of a file generated by COBOL may have different structure of a file generated by a “C” program so the direct incompatibility of such files makes them difficult to process jointly therefore it requires application programmer to write software to convert the file to some common format to facilitate processing. Again, this can be time-consuming and expensive.

5. Fixed queries/proliferation of application programs – from the end-user's point of view, file-based system proved to be a great improvement over the manual system. But requirement for new or modified queries grow. Filing system is very dependent upon the application program. So, the type of query or report that could be produced is fixed there is no facility for asking.

6. No control over the access and manipulation of data beyond that imposed by the application programs.

To become more effective, new approach is required where **database** and **Database Management System** (DBMS) emerged and called database system. Databases and database systems are an essential component of everyday life in modern society. Daily, most of us encounter several activities that involve some interaction with a database. For example, if we go to the bank to deposit or withdraw funds, if we make a hotel or airline reservation, if we access a computerized library catalog to search for a bibliographic item, or if we purchase something on-line such as a book, toy, or computer- chances are that our activities will involve someone or some computer programs accessing database. Even purchasing items at a supermarket in many cases, automatically updates the database that holds the inventory of grocery items.

These interactions are examples of what we may call **traditional database applications**, in which most of the information that is stored and accessed is either textual or numeric. In the few years, advances in technology have led to exciting new applications of database systems. New media technology has made it possible to store images, audio clips, and video streams digitally. These types of files are becoming an

important component of **multimedia databases**. **Geographic systems (GIS)** can store and analyze maps, weather data, and satellite images. **Data warehouses** and on-line **analytical processing (OLAP) systems** are used in many companies to extract and analyze useful information from very large databases to support decision making. **Real-time** and **active database technology** is used to control industrial and manufacturing processes. And database search techniques are being applied to the World Wide Web to improve the search for information that is needed by users browsing the Internet.

Database Approach
Data – raw facts; building blocks of information. Unprocessed information
Information – processed data to reveal meaning

DATABASE

- Collection of related data (and a description of this data called **meta-data/ data dictionary/ system catalog also known as the data about data)**, designed to meet the information needs of an organization.
- Single repository of data, which is defined once and use simultaneously by many departments and users. All the data is integrated with a minimum amount of duplication.
- A shared corporate resource
- A database is designed, built, and populated with data for a specific purpose with some meaning.
- Self-describing collection of integrated records. The self-describing nature of the database that provides **program-data independence.**
- A database maybe generated and manually or it may be computerized.
- Database objects are tables, forms, queries, reports.

Characteristics of a database approach:

1. *Self-describing nature of the database* – it provides program-data independence. It provides not only the data but the description of the data itself.
2. *Insulation between programs and data* – the structure of data files is stored in the DBMS separately from the access programs. We call this property program-data independence.
3. *Data abstraction* - wherein we can change the internal definition of an object without affecting the users of the object, provided that the external definition remains the same.
4. *Support of multiple views of the data* – a database typically has many users, each of whom may require a different perspective or **view** that is why DBMS provides a view mechanism. A view maybe a subset of the database or it may contain virtual data that is derived from the database file but not explicitly stored.
5. *Sharing of data and multiuser transaction processing* – it allows multiple users

to access the database at the same time and this application is called on-line ***transaction processing (OLT)*** example of this transaction is the on-line seat reservation of an air flight***.*** A fundamental role of DBMS software is to ensure that concurrent transactions operate correctly and efficiently.

B. SYNTHESIS

The way we organize our data can help us become more productive and could make our work easier and faster. The system in keeping records evolves from generation to generation. Before the advent of the technology we rely on the manual way of keeping records where in data are put on labeled cabinets. File-based system is already a computerized system which keep data on a machine but one drawback for this is that data are isolated. Hence, we cannot easily share them. The solution to the problem that we encountered using the file-based is the database system. Database system is a must to every organization nowadays. It help us keep our daily transactions and could give us the right information that we needed.