



Republic of the Philippines
Department of Education
REGION III
SCHOOLS DIVISION OFFICE OF NUEVA ECIJA

LEARNING ACTIVITY SHEET
SPECIAL PROGRAM IN ICT 10
INFORMATION SYSTEM AND RESEARCH 10
Fourth Quarter, Week 1

Name of Learner: _____

Date: _____

Grade Level /Section: _____

DATABASE MANAGEMENT SYSTEM

BACKGROUND INFORMATION FOR LEARNERS

Limitations faced in file system can be overcome by storing the data in a database where data are logically related. We can organize related data in a database so that it can be managed in an efficient and easy way.

A database management system (DBMS) or database system in short, is a software that can be used to create and manage databases. DBMS lets users to create a database, store, manage, update/modify and retrieve data from that database by users or application programs. Some examples of open source and commercial DBMS include MySQL, Oracle, PostgreSQL, SQL Server, Microsoft Access, MongoDB. A database system hides certain details about how data are actually stored and maintained. Thus, it provides users with an abstract view of the data. A database system has a set of programs through which users or other programs can access, modify and retrieve the stored data

The DBMS serves as an interface between the database and end users or application programs. Retrieving data from a database through special type of commands is called querying the database. In addition, users can modify the structure of the database itself through a DBMS.

Key Concepts in DBMS

a. Database Schema

Database Schema is the design of a database. It is the skeleton of the database that represents the structure (table names and their fields/columns), the type of data each column can hold, constraints on the data to be stored (if any), and the relationships among the tables. Database schema is also called the visual or logical architecture as it tells us how the data are organized in a database.

b. Data Constraint.

Sometimes, we put certain restrictions or limitations on the type of data that can be inserted in one or more columns of a table. This is done by specifying one or more constraints on that column(s) while creating the tables. For example, one can define the constraint that the column mobile number can only have non-negative integer values of exactly 10 digits. Since each student shall have one unique roll number, we can put the NOT NULL and UNIQUE constraints on the RollNumber column. Constraints are used to ensure accuracy and reliability of data in the database

c. Meta-data or Data Dictionary.

The database schema along with various constraints on the data is stored by DBMS in a database catalog or dictionary, called meta-data. A data dictionary, or data repository, is a central storehouse of information about the system's data. An analyst uses the data dictionary to collect, document, and organize specific facts about the system, including the contents of data flows, data stores, entities, and processes. The data dictionary also defines and describes all data elements and meaningful combinations of data elements

d. Database Instance

When we define database structure or schema, state of database is empty i.e. no data entry is there. After loading data, the state or snapshot of the database at any given time is the database instance. We may then retrieve data through queries or manipulate data through modification or deletion. Thus, the state of database can change, and thus a database schema can have many instances at different times.

e. Query

A query is a request to a database for obtaining information in a desired way. Query can be made to get data from one table or from a combination of tables. For example, "find names of all those students present on Attendance Date 2000-01-02" is a query to the database. To retrieve or manipulate data, the user needs to write query using a query language.

f. Data Manipulation

Modification of database consists of three operations, Insertion, Deletion or Update. Suppose Rivaan joins as a new student in the class then the student details need to be added in STUDENT as well as in GUARDIAN files of the Student Attendance database. This is called Insertion operation on the database. In case a student leaves the school, then his/her data as well as her guardian details need to be removed from STUDENT, GUARDIAN and ATTENDANCE files, respectively. This is called Deletion operation on the database. Suppose Atharv's Guardian has changed his mobile number, his GPhone should be updated in GUARDIAN file. This is called Update operation on the database.

g. Database Engine is the underlying component or set of programs used by a DBMS to create database and handle various queries for data retrieval and manipulation.

LEARNING COMPETENCY

Describe database concepts

ACTIVITIES

Activity 1 :

Identify the following:

- _____ 1. A skeleton of database.
- _____ 2. It is a request to a database for obtaining information in a desired way.
- _____ 3. It is the underlying component or set of programs used by a DBMS to create database.
- _____ 4. It serves as an interface between the database and end users or application programs.
- _____ 5. A central storehouse of information about the system's data.

Activity 2:

Enumerate and explain in your own words at least 3 database concepts.

REFLECTION:

What is the importance of having knowledge on database concepts?

REFERENCES

[keip107.pdf \(ncert.nic.in\)](https://ncert.nic.in/keip107.pdf)

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