# Experiment No: 01

**Title: Study of different DBMS and ER Diagram.**

**Database Management System**is a**(D**so**B**ftw**M**ar**S**e f**)**or storing and retrieving users' data while considering appropriate security measures. It consists of a group of programs which manipulate the database. The DBMS accepts the request for data from an application and instructs the operating system to provide the specific data. In large systems, a DBMS helps

users and other third-party software to store and retrieve data.

## Types of DBMS:

1. **Hierarchical DBMS-**
   * In a Hierarchical database, model data is organized in a tree-like structure. Data is Stored Hierarchically (top down or bottom up) format.
   * Data is represented using a parent-child relationship. In Hierarchical DBMS parent may have many children, but children have only one parent.

## Network DBMS-

* + The network database model allows each child to have multiple parents. It helps you to address the need to model more complex relationships like as the orders/parts many-to-many relationship.
  + In this model, entities are organized in a graph which can be accessed through several paths.

## Relational DBMS-

* + Relational DBMS is the most widely used DBMS model because it is one of the easiest.
  + This model is based on normalizing data in the rows and columns of the tables. Relational model stored in fixed structures and manipulated using SQL.
  + Example: Oracle, SQL Server, MySQL, SQLite, and IBM DB2.

## Object-oriented D-BMS

* + In Object-oriented Model data stored in the form of objects. The structure which is called classes which display data within it.
  + It defines a database as a collection of objects which stores both data members values and operations.
  + Example: Some Object-Oriented Databases were designed to work with OOP languages such as Delphi, Ruby, C++, Java, and Python.

## Graph Databases-

* + Graph databases are NoSQL databases and it uses the graphical structure for semantic queries.
  + Data is stored in the form of nodes, edges, and properties in which node is equivalent to a record, the edge is a link between two nodes and properties are additional information added into the nodes.
  + Example: Neo4j, Azure Cosmos DB, SAP HANA, Sparksee, Oracle Spatial and Graph, OrientDB, ArrangoDB and MarkLogic.

## Document Datab- ases

* + Document databases (DBs) are also a NoSQL database.It stores data in the form of documents which are key values. Each document makes the relationship of the data with other data elements and attributes.
  + It became popular due to its storage of documents and NoSQL properties. The specialty of NoSQL data storage is that it provides a faster mechanism for storing and searching for documents.Example: Hadoop / Hbase, Hyperable, MapR, , Amazon SimpleDB, Apache Flink, IBM Informix and Azure DocumentDB.

1. **ER model Datab**-**a**H**se**er**s**e, the ER model is applied as a database. Each row in the table represents one instance of an object type, and each column in a table represents an attribute type.

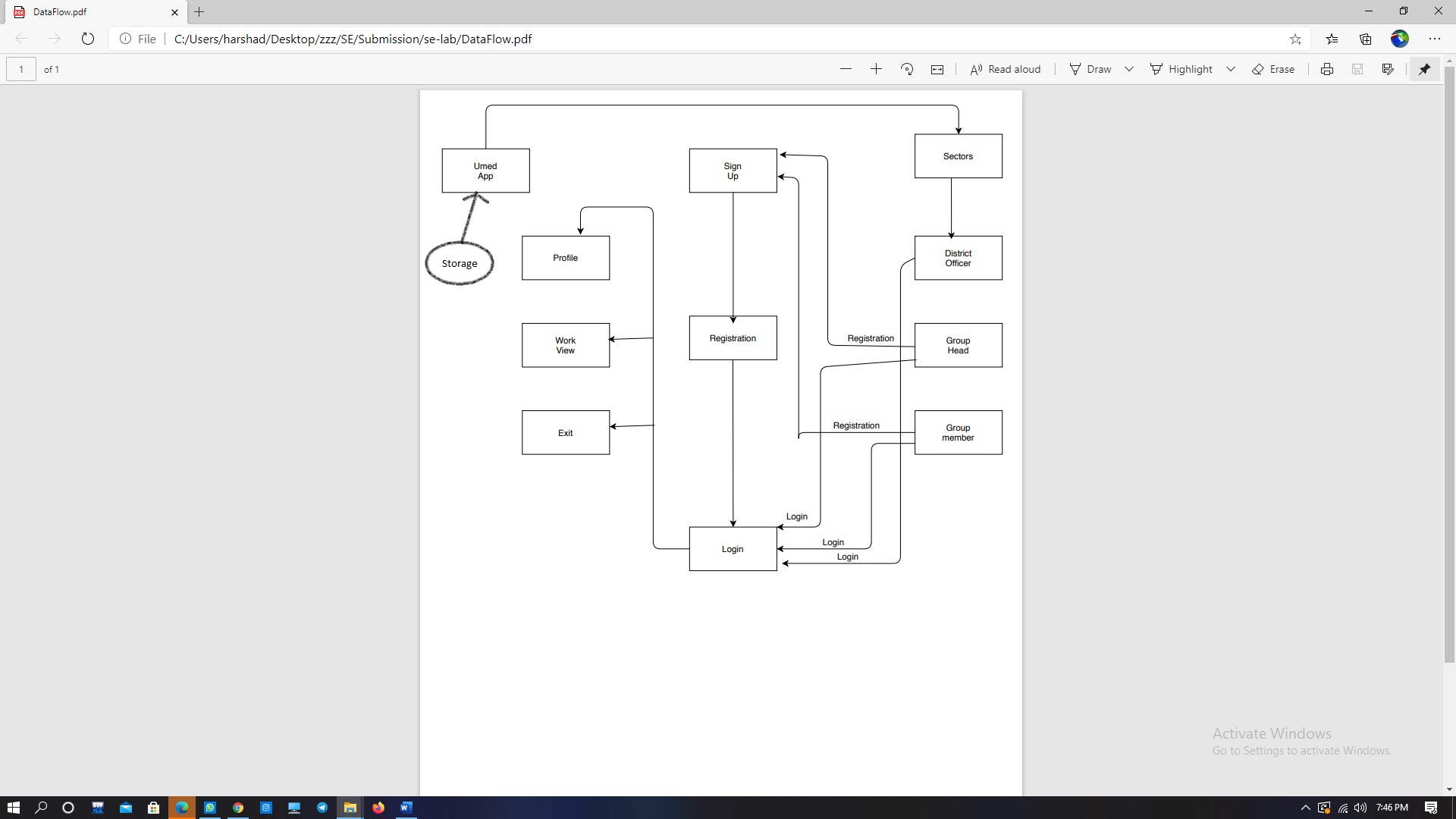
# Entity–relationship model :

* An entity–relationship model (or ER model) describes interrelated things of interest in a specific domain of knowledge.
* A basic ER model is composed of entity types (which classify the things of interest)

and specifies relationships that can exist between entities (instances of those entity types).

* In software engineering, an ER model is commonly formed to represent things a business needs to remember in order to perform business processes.
* Consequently, the ER model becomes an abstract data model, that defines a data or information structure which can be implemented in a database, typically a relational database.

# ER Diagram for UMED Data Management Application –

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