

Name:- ARYAN KOHLI

Section:- T16

Enroll no:- 04296203121

Branch:- I.T.

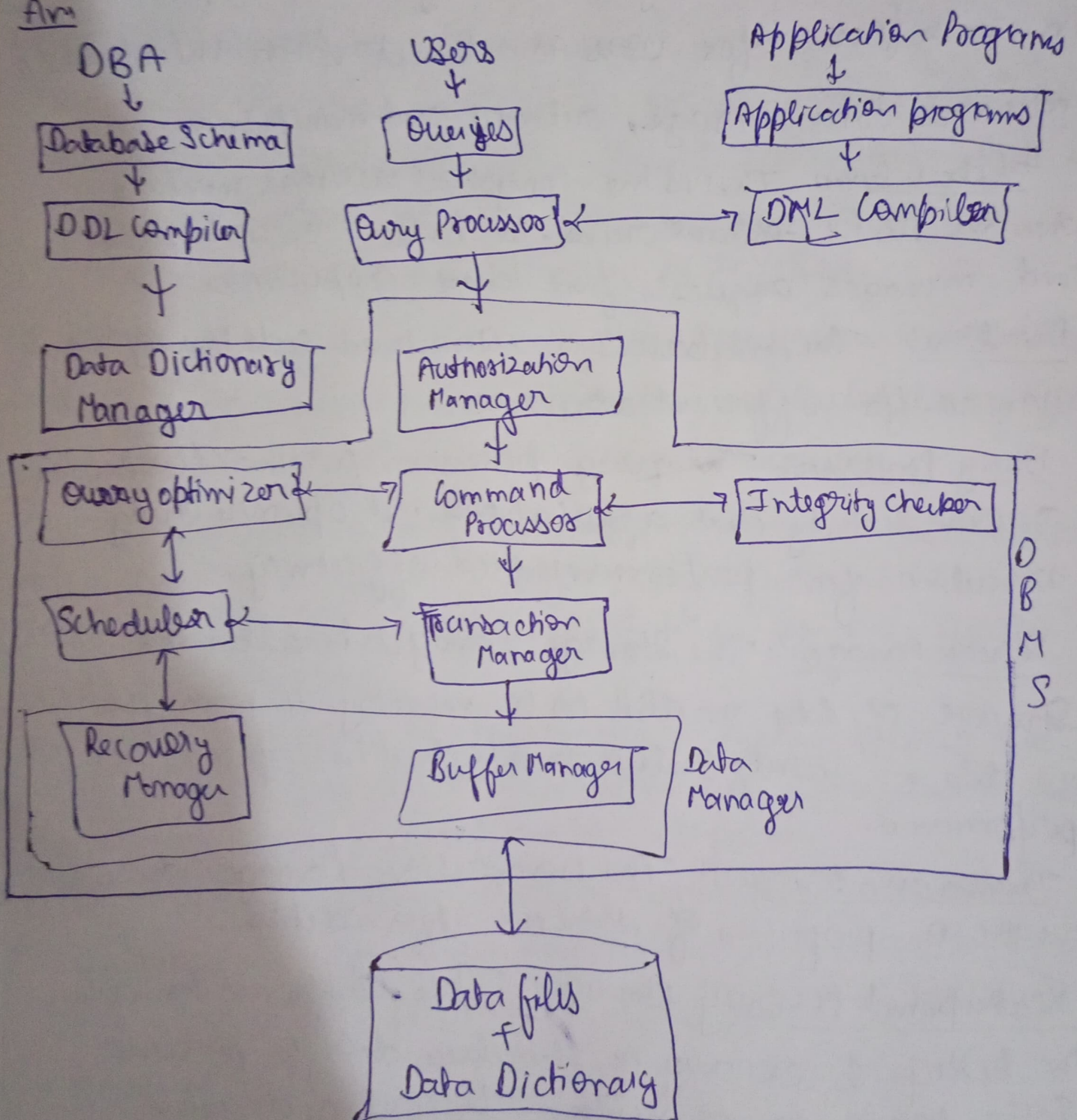
## Database Modelling

### Assignment - 1

#### UNIT - 1

Q1 Explain the database System architecture & its components.

Ans

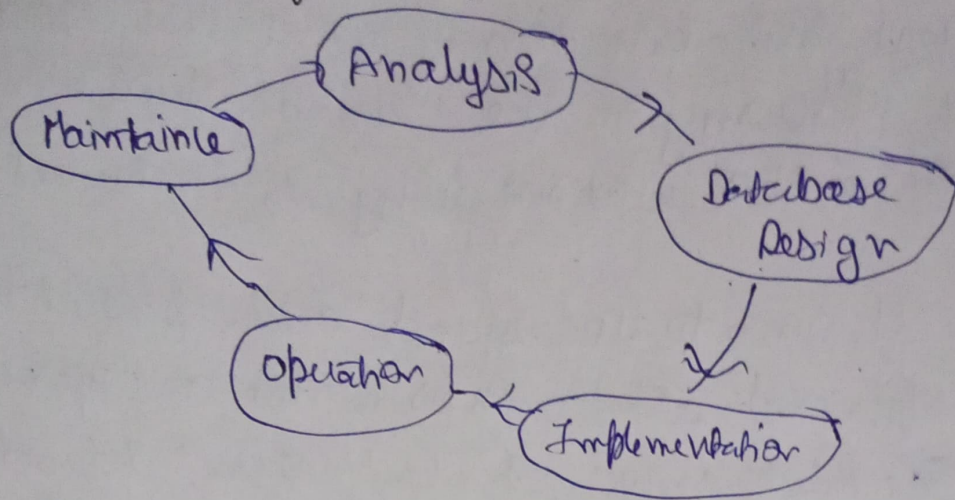




1. Client Application: This is the interface through which users interact with the database system. It could be a web application, desktop software, mobile app, or any other type of software.
2. Database Management System (DBMS): The DBMS is the core software that manages the database. It provides an interface for users to interact with the database, manages data storage, retrieval and manipulation.
3. Database Server: This is the physical or virtual machine where the DBMS software runs. It hosts the databases and manages requests from client applications.
4. Database: The database is a structured collection of data organized for efficient retrieval.
5. Query Processor: The query processor parses and executes queries sent by client applications. It optimizes query execution for performance and efficiency.
6. Storage Manager: The Storage Manager handles the storage of data on disk or in memory. It manages how data is stored, retrieved and cached to optimize performance.
7. Transaction Manager: The Transaction Manager ensures the ACID properties of database transactions.
8. Backup and Recovery Manager: This component handles the backup & recovery of database data to prevent data loss in case of system failure or disaster.



plan the lifecycle of ~~database~~ database.



1. Analysis starts by considering the Statement of requirements and finishes by producing a System Specification. The System Specification is a formal representation of what a System do, expressed in terms that are independent of how it may be realised.
2. Design begins with a System Specification and produces design documents, and provides a detailed description of how a system should be constructed.
3. Implementation is the construction of a computer system according to a given design document and taking account of the environment in which the system will be operating.
4. Testing compares the implemented system against the design documents and requirements Specification and produces an acceptance report.
5. Maintenance Involves dealing with changes in the requirements or the implementation environment, bug fixing or porting of the system to new environments.



Q3

Describe about the Conceptual data Modelling.

Ans

It is a high level abstraction of the entire database system, focusing on the relationships between different data entities without delving into technical details.

1. Purpose:- It aims to understand and represent the business concepts and relationships within an organization.
2. Entities and Relationships:- It identifies and defines the main entities within the domain of interest and relationships b/w them.
3. Attributes:- It describes the characteristics or properties of entities, known as attributes. Attributes provide further details about entities.
4. Modelling Techniques:- Common techniques for conceptual data modelling include Entity-Relationship Diagrams, UML class diagrams.
5. Agility and Flexibility:- Conceptual data modelling allows for flexibility and adaptability as it focuses on understanding the business requirements and can accommodate changes.
6. Communication tool:- It serves as a communication tool between stakeholders, including business analysts, database designers and developers.

Q4 Explain the design issues of ER and EER Model.

Ans In Entity Relationship (ER) and Enhanced Entity Relationship (EER) modelling, several design issues need to be addressed to ensure the effectiveness and accuracy of the model:-



## Entity Identification:

determining which attributes uniquely identify each entity is crucial. This involves identifying primary keys to ensure that each entity instance is uniquely identifiable within the model.

2. Attribute Specification: Defining the attributes of each entity accurately is essential.
3. Relationship Cardinality: Specifying the cardinality of relationships between entities is important.
4. Participation Constraints: Defining the participation constraints of entities in relationships is necessary.
5. Weak Entities: Identifying and properly modeling weak entities, which depend on the existence of another entity for identification, is crucial.
6. Specification and Generalization: Handling Specification and generalization relationships is important in BBR modelling.
7. Aggregation: Identifying aggregation relationships where multiple entities are grouped together to form a higher level entity is important.
8. Attribute Inheritance: Addressing attribute inheritance in BBR models, where subclass entities inherit attributes from superclass entities, is crucial.