1.Construct a ER Diagram for Online Shopping Management System?

Entity: An entity is a thing or concept that exists independently and has its own set of characteristics, Properties attributes.

In various contexts, entities can be : Objects, concepts, Events and Individuals.

Arguments: An argument is a claim or statement that is Supported by evidence, reasoning or logic

Relationships: A relationship is a connection or association between two or more entities.

Entity-Relationship Model (ER-Model)

The ER Model is a model for identifying entities to be representated in the database and representation of how these entities are related.

• The ER Model specities enterprise schema that represents the overall logical structure of a database graphically.

2.a) Make use of Three tier schema architecture for data independence?

b) Identify Different Database Users (Actors on Scene, Workers behind the scene)

Three-Tier Schema Architecture for Data Independence

The three-tier schema architecture is a widely used framework in database management that ensures data abstraction and independence while improving efficiency and flexibility. It consists of three layers: internal schema (physical level), conceptual schema (logical level), and external schema (view level).

At the internal schema (physical level), data is stored in physical storage such as hard drives, SSDs, or cloud-based storage. This level manages how data is actually saved using indexing, file structures, and data organization techniques. Changes at this level do not affect the logical or external levels, providing physical data independence.

The conceptual schema (logical level) defines the structure of the entire database, including entities, relationships, constraints, and integrity rules. It acts as a bridge between the physical and external levels. This level provides logical data independence, meaning that modifications in table structures (such as adding or removing attributes) do not affect how users interact with the database at the external level.

Finally, the external schema (view level) provides user-specific views of the data. Different users or applications may need different

representations of the same data. For example, in an online shopping system, a customer might only see product details and their order history, while an admin may access sales reports and inventory levels. This layer ensures that users only see relevant data, improving security and usability.

2 b)Different Database Users

In a database system, users can be classified into two main categories: Actors on Scene (who interact directly with the database) and Workers Behind the Scene (who maintain, design, and manage the database).

Actors on Scene are those who directly engage with the database through applications. The end users include customers, employees, or business clients who retrieve or update data without knowing the underlying database structure. For example, a customer placing an order in an e-commerce system interacts with the database through a user-friendly website. Application developers are responsible for building these interfaces, ensuring smooth interaction between users and the database. Meanwhile, Database Administrators (DBA) manage the database, ensuring security, optimizing performance, and performing backups.

On the other hand, Workers Behind the Scene play a crucial role in designing, optimizing, and maintaining the database. System analysts work closely with businesses to understand their data requirements and design efficient database models. Database designers define schemas, relationships, and constraints to ensure the database structure supports business needs. Additionally, system developers (DBMS developers) contribute to the development of database management systems such as MySQL, Oracle, and PostgreSQL. Finally, security administrators protect sensitive data.

3.Construct a ER Diagram for Airlines Management System.
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ER Diagram for Airline Reservation System:
The ER diagram for the airline reservation system, the system data and their attributes. The data and the attributes are represented by the table, and the table shows how they are related to each other.

The below diagram shows the database design for the airline reservation system. This database design shows all the system data, and the output for the user ate stored in the database. In DBMS, a good ER diagram is needed for the creation of an airline reservation system.
Importance of ER diagrams
The ER diagram for the project is the foundation for building the project's database. The properties, data types and attributes are defined by the ER diagram.