**Exercise 2.1**

Attribute

An attribute is a characteristic. In a database management system (DBMS), an attribute refers to a database component, such as a table.

Domain

A database domain is the data type used by a column in a database. This data type can be a built-in type (such as an integer or a string) or a custom type that defines constraints on the data.

Entity

Database entity is a thing, person, place, unit, object or any item about which the data should be captured and stored in the form of properties, workflow and tables. While workflow and tables are optional for database entity, properties are required (because entity without properties is not an entity).

Relationship

A relationship, in the context of databases, is a situation that exists between two relational database tables when one table has a foreign key that references the primary key of the other table. Relationships allow relational databases to split and store data in different tables, while linking disparate data items.

Entity Set

Entity Set is a collection of entities of the same entity type. In the above example of STUDENT entity type, a collection of entities from the Student entity type would form an entity set. We can say that entity type is a superset of the entity set as all the entities are included in the entity type. Let's try to understand this with the help of an example.

Relationship Set

A relationship set is a set of relationships of the same type.

One-to-Many Relationship

In a one-to-many relationship, one record in a table can be associated with one or more records in another table. For example, each customer can have many sales orders.

Many-to-Many Relationship

A many-to-many relationship occurs when multiple records in a table are associated with multiple records in another table. For example, a many-to-many relationship exists between customers and products: customers can purchase various products, and products can be purchased by many customers.

Participation Constraint

In a relationship, participation constraint specifies the presence of an entity when it is related to another entity in a relationship type. It is also called the minimum cardinality constraint.

Overlap Constraint

An overlap constraint determines whether or not two subclasses can contain the same entity.

Covering Constraint

Within an ISA hierarchy, a covering constraint determines where the entities in the subclasses collectively include all entities in the superclass.

Weak Entity Set

In entity relationship diagrams (ER diagrams), a weak entity set is indicated by a bold (or double-lined) rectangle (the entity) connected by a bold (or double-lined) type arrow to a bold (or double-lined) diamond (the relationship). This type of relationship is called an identifying relationship and in IDEF1X notation it is represented by an oval entity rather than a square entity for base tables. An identifying relationship is one where the primary key is populated to the child weak entity as a primary key in that entity.

Aggregation

Data aggregation is any process whereby data is gathered and expressed in a summary form. When data is aggregated, atomic data rows -- typically gathered from multiple sources -- are replaced with totals or summary statistics. Groups of observed aggregates are replaced with summary statistics based on those observations. Aggregate data is typically found in a data warehouse, as it can provide answers to analytical questions and also dramatically reduce the time to query large sets of data.

Role Indicator

If an entity set plays more than one role, role indicators describe the different purpose in the relationship.

**Exercise 2.2**