# Chapters 1 – 2

* **Online Transactional Processing (OLTP) :** A system for processing transactions as soon as the computer receives them and updates the master files immediately in a database management system. A software program that is used to create, maintain, modify, and manipulate a relational database. This type of database is considered dynamic data or data that changes constantly and always reflects up-to-the-minute information.
* **Online analytical processing (OLAP):** A way of presenting data from an analytical database in which the data is summarized and presented in the form of a table. This type of database is considered *static data* or data that is never or rarely modified.
* **Hierarchical Database Model:** Data in this type of database model is structured hierarchically and is typically diagramed as an inverted tree. A relationship in a Hierarchical Database is represented by the term *parent and child*. In this type of relationship, a parent table can be associated with one or more child tables, but a single child table can be associated with only one parent table.
* **Network Database Model:**  The structure of a network database is represented in terms of *nodes* and *set structures*.
* **Node:** A node represents a collection of records, and a *set structure* establishes and represents a relationship in a network database. A record in the owner node can be related to one or more records in the member node, but a single record in the member node is related to only one record in the owner node and cannot exist without being related to an existing record in the owner node.
* **Structured Query Language (SQL):**A standardized language used to create, maintain, modify, and query relational databases. The three components of a basic SQL query are the SELECT….FROM…statement, the WHERE clause, and the ORDER BY clause.
* **Relational Database Management System (RDBMS):** A software program that is used to create, maintain, modify, and manipulate a relational database. The quality of an RDBMS is a direct function of the extent to which it supports the relational database model.
* **Set theory:** One of the two braches of mathematics the relational model is based upon.
* **Normalization:** The process of decomposing large tables into smaller ones in order to eliminate redundant data and duplicate data.

# Chapter 3

## *Value Related Terms*

* **Data**: Values you store in the database are data. Data is meaningless until you process the data to make it meaningful and useful.
* **Information**: Data that has been processed to make it meaningful and useful information.
* **Null:** Represents a missing or unknown value. Null *does not* represent a zero or a text string.
* **Zero-length string:** Two consecutive single quotes with no space in between (‘’). For example, zero-length string can be used to represent an employee who does not have a middle initial in their name, this is an acceptable value to the SQL Language.
* **Missing Value:** Commonly the result of human error. When data is considered missing, it’s represented in a record as a null.
* **Unknown Values:** Appear in a table for a variety of reasons. Value for a field is as yet to be defined; table might contain values that are truly unknown; none of the values applies to a particular record. Truly unknown values are represented within the record as null.

## *Structure-Related Terms*

* **Relations**: Data in a relational database is stored in relations, perceived by end users as tables. Relations are composed of tuples (records) and attributes (fields).
* **Primary Key**:A primary key is a field, or a group of fields uniquely identities each record within a table.
* **Composite Primary Key**: a Primary key composed of two or more fields.
* **Foreign Key:** Taking a copy of the primary key from one table and incorporating it into the structure of a second table in order to help implement and ensure relationship level integrity. This means that records in both tables will always be properly related because the value of the foreign key must match existing values of the primary key to which it refers. The second table already has a primary key of its own, and a primary key you are introducing from the first table is “foreign” to the second table.
* **Objects**: An object is a subject that a table represents. When the subject is an object; it represents something tangible, such as a person, place or thing. Each object has characteristics that may be stored as data then processed as information.
* **Event**: In addition to objects, the subject that a table represents can be an event. When the subject of a table is an event it means that the table represents something that occurs at a given point in time. Each event has characteristics it may be recorded.
* **Data Table**: A table that stores data used to supply information. Data in this type of table is dynamic because it can be manipulated and processed into information.
* **Validation table**: Validation table is also known as *look up table*. Validation tables store data that you specifically used to implement data integrity. Data in this type of table is static because it will very rarely change at all.
* **Field**: Field is also known as an *attribute*. The smallest structure and the database and it represents a characteristic of the subject of the table to which it belongs.
* **Multipart field**: Poorly designed databases may have multipart fields, also known as *composite fields.* Multipart field, contains two or more distinct items within its value, for example the city, state, and zip all in one field.
* **Multivalued field**: Contains multiple instances of the same data value. For example, an “account representative” field, may have more than one account representative listed in the field.
* **Calculated field:** Contains a concatenated a text value or the result of a mathematical expression.
* **Record:** A record is also known as a *tuple* and represents a unique instance of the subject of a table. It is composed of the entire set of fields in a table.
* **View:** A virtual table is composed of fields from one or more tables in the database; they enable you to work with data from multiple tables simultaneously; Microsoft access refers to *views* as saved queries.
* **Base tables:** Base tables are the source from which a ‘view’ or ‘virtual table’ retrieves its data.
* **Validation view:** a view that is used to implement data integrity, similar to a validation table, with the exception that it is not the source of the data and not the base table.
* **Indexed view:** Different from a “regular view” in that it does store data and you can index its fields, in order to improve the speed, at which the RDBMS processes that views data.
* **Index:** Indexes are physical structures used to optimize data processing. An index has absolutely nothing to do with the logical database structure.

## *Relationship-Related Terms*

* **Linking Table:** Is also known as a associative table. A linking table is a table used to establish a many-to-many relationship between a given pair of table.
* **Cardinality”** The type of relationship that exists between a pair of table in a relational database. This includes one-to-one, one-to-many, many-to-many.
* **One-to-One Relationship:** A relationship between a pair of tables in a relational database in which a single record in the first table is related to only one record in the second table, and a single record in the second table is related to only one record in the first table.
* **One-to-Many Relationship:** A relationship between a pair of tables in a relational database in which a single record in the first table can relate to many records in the second table, and a single record in the second table can be related to only one record in the first table.
* **Many-to-Many Relationship:** A relationship between a pair of tables in a relational database in which a single record in the first table can relate to many records in the second table, and a single record in the second table can be related to many record in the first table.
* **Degree of Participation:** The minimum and maximum number of records that one table can have associated with a single record in a related table.

## *Integrity-Related Terms*

* **Field Specification:** Field specification is also known as *domain*.Represents all of the general, physical, and logical elements of a field.
* **Entity Integrity:** Entity Integrity is also known as *Table-level Integrity.* Entity integrity ensures that a table is free of duplicate records and that the value of the table’s primary key are unique, are never null, and exclusively identify the table records.
* **Field-Level Integrity:** Field-Level Integrity is also known as *domain integrity.* The following are the requirements, of field level integrity. The identity and purpose of a field is clear and all of the of the tables in which it appears are properly identified; Field definitions are consistent throughout the database; the values of a field are consistent and valid;
* **Relationship-Level Integrity***:* Relationship-Level Integrityis also known as *referential integrity*. Relationship-Level-Integrity is a type of integrity that ensures the relationship between a pair of tables is sound and that the records in the tables are synchronized whenever data is entered into, updated in, or deleted from either table.
* **Business Rules:** Restrictions or limitations on certain aspects of a database based on the ways an organization perceives and uses its data.