What is a Database?
A Database is a collection of related information.

What is a Database Management System(DBMS)?
It is a software that helps users to create and maintain databases, it helps users to perform "CRUD": create, read, update and delete.

There are two types of Databases:
1- Relational Databases that store data in tables: each table have columns and rows where each row is identified by a unique id.
2- Non-Relational Databases that do not store data in tables. There is no common characteristic for the different types of Non-Relational Databases: some may store data in documents, others in graphs, etc.

What is Relational Database Management System(RDBMS)?
It is a software that helps users to create and maintain relational databases.
RDBMS includes: mySQL, Oracle, postgreSQL, etc.

What is Structured Query Language(SQL)?
It is a standarized language used to interact with RDBMS.
We use SQL to communicate and give orders to RDBMS, and RDBMS manages the database.
Although there is a formal specification that defines SQL, each RBDMS implements SQL slightly differently; the concept is the same, but the implementaion is a little bit different; so you may need to tweak your code a little bit to migrate it between different RDBMS.
SQL is a hybrid language:it is made up of four different mini-languages:
1-- DQL(Data Query Language): used to query the database for information that already exist.
2-- DDL(Data Definition Language): used for defining databases schemas.
3-- DCL(Data Control Language): Used for user permission management; controls who can access the data in the database.
4-- DML(Data Manipulation Language): used to insert, update and delete data from the database.

What is Non-Relational Database Management System(NRDBMS)?
It is a software that helps users to create and maintain non-relational databases.
NRDBMS includes: mongoDB, firebase, etc. Each NRDBMS has its own language.

What is a Query?
It is a request to the DBMS for specific information.
A Google search is a query.

Tables have two parts: rows and columns.

A row is a horizontal alignment of data.
Data in a row contains information that describes a single entity

A column is a vertical alignment of data.
Data in a column describes a field of information all entities possess.
Students

id	name	age
1	Tim	15
2	Rim	16
3	Jim	17

Every table will have a special column known as "The Primary Key".
A Primary Key is a unique attribute that defines a single row.
The Primary Key can be an id, email, username, etc.
Primary Keys can be surrogate or Natural.

What is a surrogate key?
A surrogate key is a random value that identifies a row.
It has no mapping to the real world.

What is a Natural Key?
Natural key is a meaningful value that identifies a row.
It has mapping to the real world.

What is a Foreign Key?
A Foreign Key is a column in one table, that refers to the Primary Key in another table.
We use it to link the first table to the second one.
A single table can have multiple columens of foreign key.

Students

id	name	age	dorm_unit_id
1	Tim	22	1
2	Rim	24	2
3	Jim	26	3

Dorm_Units

dorm_unit_id	location	sq_ft
1	building A	30
2	building B	42
3	building A	30

A foreign key can refer to the same table.

Students

id	name	age	supervisor_id
1	Tim	15	2
2	Rim	16	1
3	Jim	17	1

Rim supervises Tim and Tim supervises Rim and Jim.

What is a composite key?
A combination of multiple columns, and these columns are used to identify all the rows that are involved.

Students

student_id	name	age
1	Tim	15
2	Rim	16
3	Jim	17

Teachers

teacher_id	name	age
1	Rob	40
2	Dan	26
3	Cal	38

Studied_Togather

student_id	teacher_id	hours
2	2	10
1	3	12
3	1	14