SQL NOTES- SESSION 1, 2 & 3

WHAT IS SQL?

- SQL stands for Structured Query Language.
- It is used for communication with the database.

DATA

Data is a raw-fact which describes the attributes of an Entity.

Examples:

1) Person - entity
   Attributes and data(in red) of a person

   First name: Rohan
   Surname: Singh
   Phone number: 9876543210
   Dob: 14-MAY-199X
   Gender: MALE

2) Laptop - entity
   Attributes and data (in red) of a laptop

   Brand: *Dell*
   RAM: *8gb*
   Touch: *no*
   Storage: 1 TB

3) Water Bottle - entity
   Attributes and data (in red) of a water bottle

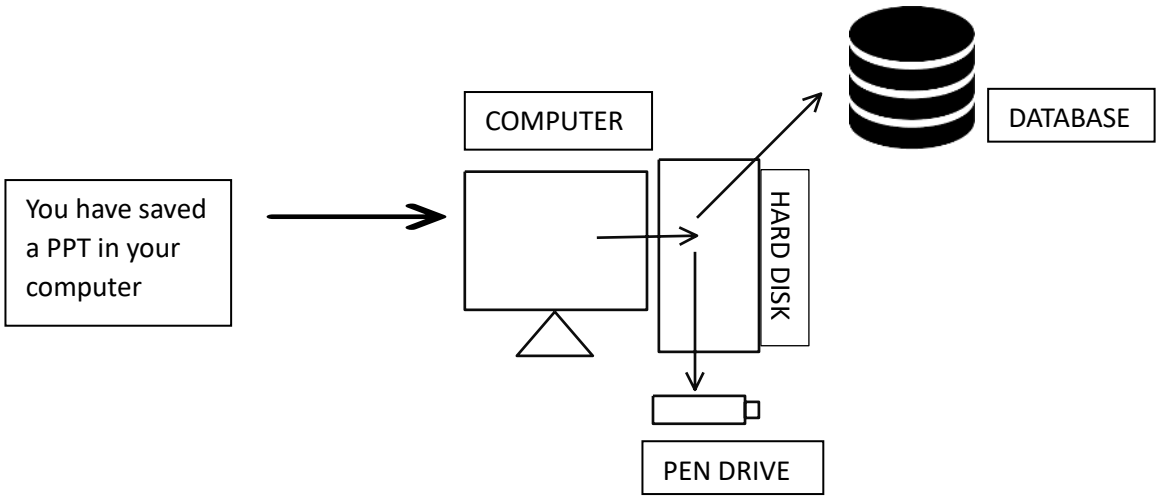
   Height: 20 cms
   Color: *blue*
   Capacity: *500 ml*

DATABASE :

Database is a place or a medium in which we store the data in a systematic and organized manner.

- The basic operations that can be performed on a database are
  - CREATE / INSERT
  - READ / RETRIEVE
  - UPDATE / MODIFY
  - DELETE / DROP

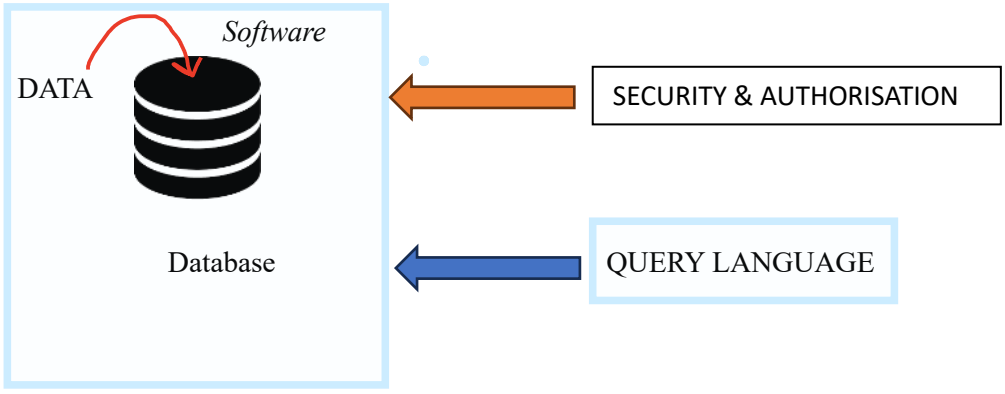
- These operations are referred as **CRUD** Operations.



DATABASE MANAGEMENT SYSTEM (DBMS)

It is a software which is used to maintain and manage the database

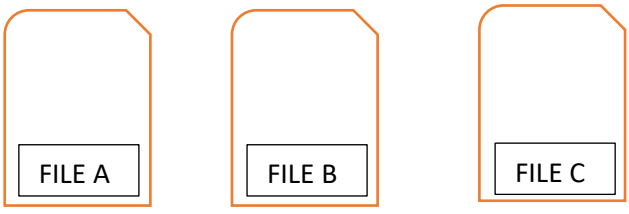
- **DBMS provides 2 important features i.e Security** and **Authorization.**



DBMS SOFTWARE

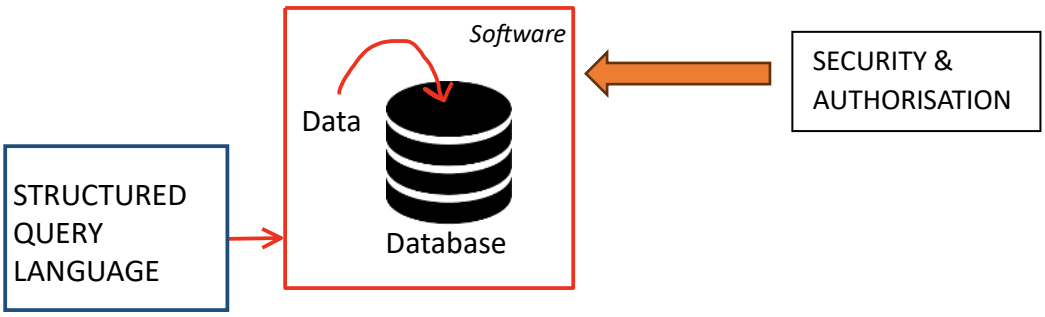
- We use query language to communicate or interact with DBMS
- DBMS stores the data in the form of *files*.

Example:



RELATIONAL DATABASE MANAGEMENT SYSTEM(RDBMS)

- It is a type of DBMS software in which we store the data in the form of rows and columns(tables).
- It also provides 2 important features i.e security and authorization.
- We use SQL to communicate or interact with RDBMS
- RDBMS stores the data in the form of Tables.



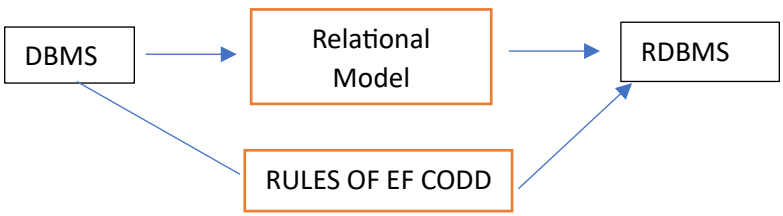
RDBMS

EXAMPLE:

EMPNO	Names	Sal
1	A	5000
2	B	6000
3	C	2000
4	D	1000
5	E	2000

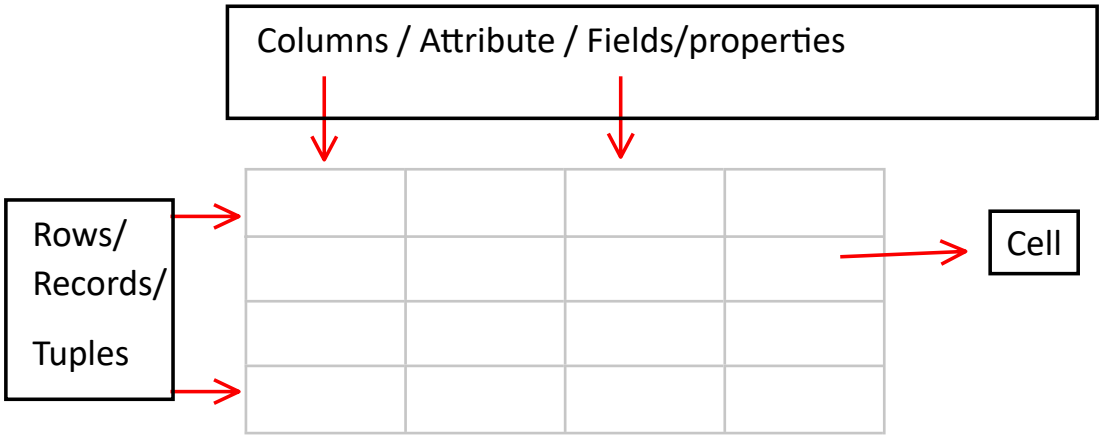
RELATIONAL MODEL

- Relational Model was designed by E.F CODD.
- In Relational Model we can store the data in the form of tables.
- Any DBMS which follows Relational Model becomes RDBMS .
- Any DBMS which follows rules of EF CODD becomes RDBMS .



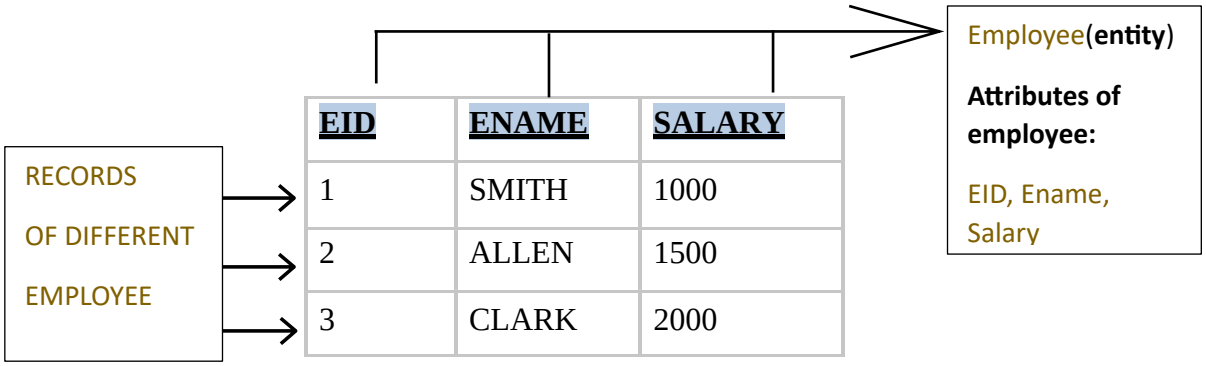
TABLE

- It is a logical organization of data which consists of rows and columns.



- The cell is formed by intersection of rows and columns in a table.
- The cell is the smallest unit in a table which stores data.

Example: EMP (TABLE)



EID	ENAME	SALARY
1	SMITH	1000
2	ALLEN	1500
3	CLARK	2000

RULES OF E.F CODD :

1.The data entered into a cell must always be a single valued data.

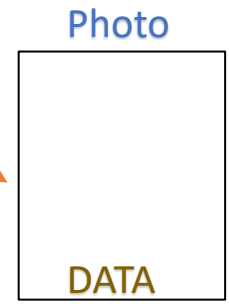
EID	ENAME	PHONE_NO
1	SMITH	101
2	ALLEN	102, 202
3	CLARK	103

EID	ENAME	PHONE_NO	ALTERNATE NO
1	SMITH	101	
2	ALLEN	102	202
3	CLARK	103	

2.According to E.F CODD we can store the data in Multiple Tables. If needed we can establish a connection between the tables with the help of Key Attribute.

3.In RDBMS we store everything in the form of tables including Metadata.
Metadata: The details about a data is knows as Metadata.

EID	ENAME	PHOTO
1	SMITH	
2	ALLEN	
3	CLARK	



Metadata

Image Name: Mypic

size: 127kb

resolution: 400 x 600

format: jpeg

META TABLE

Image name	size	Format	Resolution
Mypic	127	jpeg	400 x 600

4.The data entered into the table can be validated in 2 steps.

- By assigning Datatypes.
- By assigning Constraints.

Datatypes are mandatory, whereas Constraints are Optional.

Datatypes in SQL :

It is used to specify or determine the type of data that will be stored in a particular memory location.

DATATYPES:

1.CHAR

2.VARCHAR / VARCHAR2

3.DATE

4.NUMBER

5.LARGE OBJECTS

- Character Large Object
- Binary Large Object

NOTE : SQL is not a Case Sensitive Language.

1. CHAR : In character datatype we can store 'A-Z' , 'a-z' , '0-9' and Special Characters (!, $, &, @, etc)

- Characters must always be enclosed within single quotes ' '.
- Whenever we use char datatype, we must mention size
- Size: it is used to specify number of characters it can store.
- The maximum number of characters it can store is 2000 characters.
- Char follows fixed length memory allocation.

Syntax: CHAR (SIZE)

Example: CHAR (8)