Structured Query Language

SQL - Day 2

Agenda

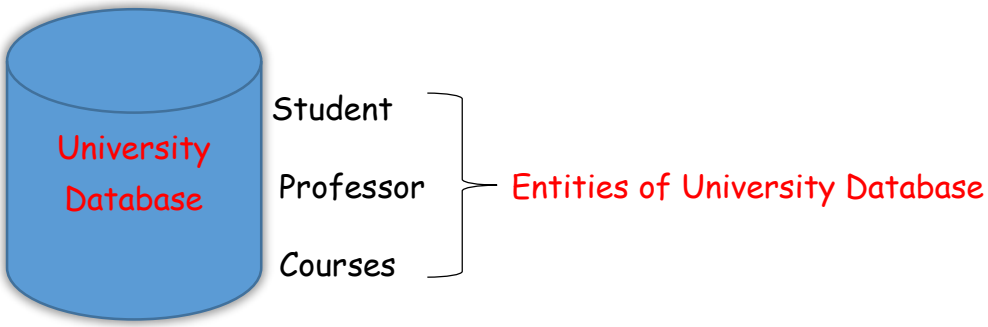
- **Entity**
- **Different types of attributes.**
  - **Multi valued attributes.**
  - **Simple/ Atomic attributes.**
  - **Compound/Composite attributes.**
  - **Derived attributes.**
  - **Stored attributes**
  - **Complex attributes**
  - **Key attributes**
  - **Non-Key attributes**
  - **Required attributes**
  - **Optional / null value attributes.**

What is an Entity?

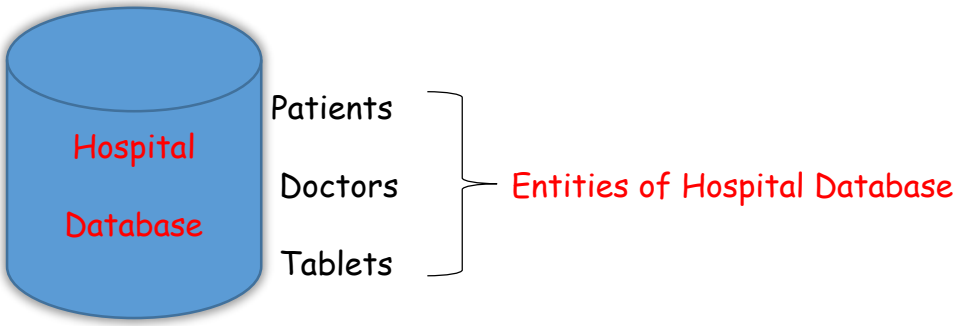
Objects whose information can be stored inside a database are referred as "Entity".

Let's look into few examples of entities in database.

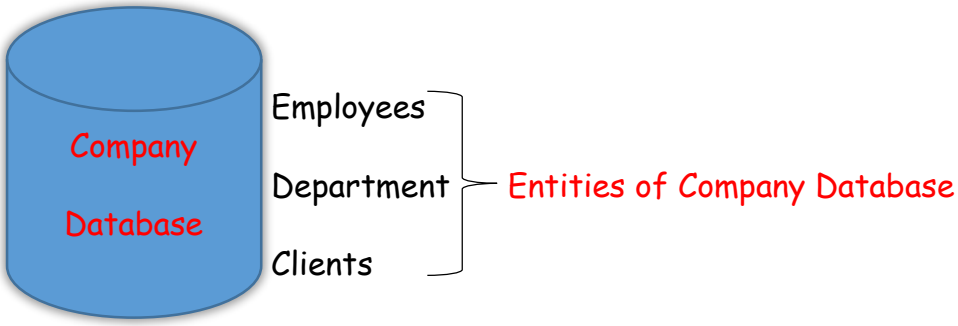
Example 1:



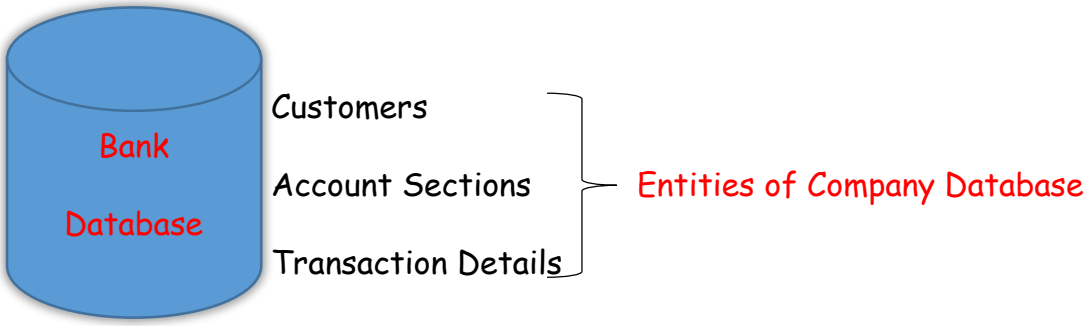
Example 2:



Example 3:



Example 4:



Types of Entities:

1. Tangible Entity
2. Intangible Entity

Tangible Entity:

Tangible Entities are those entities which exist in the real world physically.

Example: student, professor, doctors, employees, clients, customers etc.

Intangible Entity:

Intangible Entity: Intangible Entities are those entities which exist only logically and have no physical existence.

Example: Bank Account, courses, tablets, department, transaction details, account sections.

Let Us understand what is

Table

Rows

Columns

Cells

Table:

A table is a data structure that organizes information into rows and columns. It can be used to both store and display data in a structured format.

USN	NAME	MIDDLE NAME	DOB	AGE	GENDER	CONTACT NUMBER	E-MAIL ID	ADDRESS	YEAR OF JOINING
15EC11	Wil Willams	John	26-03-2003	18	M	+44 99991 99999	will@gmail.com	1 N. Gainsway Ave.Apt I Oxnard, CA 93035	2015
11MBA1	Dave Davidson	Kate	28-06-1999	21	M	+67 99993 12999	dave@gmail.com	721 Plymouth St. Glendale, AZ 85302	2011
19ME12	Mercy Janis	Mike	21-04-2001	19	F	+55 79923 12999	mercy@yahoo.com	20 Berkshire Drive West Fargo, ND 58078	2019
20BSC1	Don Demarco	Jan	18-02-2001	19	M	+34 98193 12999	don@yahoo.com	8306 S. Central Rd. Worcester, MA 01604	2020
17CS42	Wil Willams	Andy	29-02-2003	17	M	+58 98193 12999	will17@gmail.com	9798 Talbot St. New Rochelle, NY 10801	2017

For example, databases store data in tables so that information can be quickly accessed.

Rows:

A row is a series of data placed out horizontally in a table. It is a horizontal arrangement of the objects, words, numbers, and data. In Row, data objects are arranged face-to-face with lying next to each other on the straight line.

Rows are also called as tuples or record.

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Columns

A column is a vertical series of cells in a table. It is an arrangement of figures, facts, words, etc.

Columns are mostly placed one after another in the continuous sequence. In a table, columns are mostly separated from each other by lines, which help to enhance readability and attractiveness.

Columns are also called as attributes.

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Cells:

The intersections of both rows and columns is known as cells.

Cells are also known as Fields.

USN	NAME	MIDDLE NAME	DOB	AGE	GENDER	CONTACT NUMBER	E-MAIL ID	ADDRESS	YEAR OF JOINING
15EC11	Wil Willams	John	26-03-2003	18	M	+44 99991 99999	will@gmail.com	1 N. Gainsway Ave.Apt I Oxnard, CA 93035	2015
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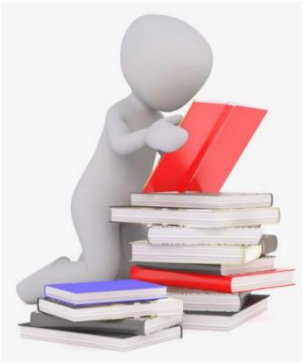
Let's Understand Different types of Attributes or Columns.

Different types of attributes/columns available are:

- **Single valued attributes.**
- **Multi valued attributes.**
- **Simple/ Atomic attributes.**
- **Compound/Composite attributes.**
- **Derived attributes.**
- **Stored attributes**
- **Complex attributes**
- **Key attributes**
- **Non-Key attributes**
- **Required attributes**
- **Optional / null value attributes.**

Let's understand each type of attributes one by one...



Single valued attributes.

Single-valued attribute is an attribute that can have only a single value.

For example: A person can have only one age, only one gender, and a manufactured part can have only one serial number.

Multi valued attributes.

An attribute that can hold multiple values is known as multivalued attribute. It is represented with double ovals in an ER Diagram.

For example – A person can have more than one phone numbers or email ids so the phone number or email id attributes are multivalued attribute.

Composite attribute

Composite attribute is an attribute where the values of that attribute can be further subdivided into meaningful sub-parts."

For examples – Persons 'Name' is a composite attribute which can be stored as first name, last name, middle initial.

'Address' is a composite attribute which can be divided into street number, city, state, country etc.

Simple/ Atomic attributes.

Simple/ Atomic attributes is an attribute where the values of that attribute cannot be further subdivided into sub-parts.

For examples – Date of birth of a person cannot be further divided into sub parts.

Derived attribute

Derived attributes are the attributes that do not exist in the physical database, but their values are derived from other attributes present in the database.

For example:

- Age of a person can be derived from the date of birth attribute.
- Duration of the course can be derived from start date of joining and end date of course.

Stored attribute.

Stored attributes are the attributes whose values cannot be derived using other attributes.

For Example - student_id, name, roll_no, course_Id, mobile number, email.

Complex attribute.

Complex Attribute is a type of attribute in database. It is formed by nesting composite attributes and multi-valued attributes in arbitrary way. We can say this as the both are in the attribute.

For Example- Address attribute, address can be a combination of all the other attributes like street Number, Locality Number, city, state, country.

Key attribute.

A key attribute is the unique characteristic of the entity.

For Example- USN of Student, Bank Account Number, Employee Id.

Non-Key Attribute.

Attributes that are not unique (attributes other than Key Attribute).

For Example- Name, Address, DOB, AGE.

Required Attribute.

A required attribute is an attribute that must have a value in it.

For Example- Name, Address, DOB, AGE.

Optional/null value Attribute.

Optional attribute may or may not have a value in it or it can be left blank.

For Example-Middle name of person.

Thank You☺☺