**RelationalModel.**

The relational model uses a collection of tables to represent both

data and the relationships among those data. Each table has multiple columns, and

each column has a unique name. Tables are also known as relations.

Entity-Relationship Model.

The entity-relationship (E-R) data model uses a collection

of basic objects, called entities, and relationships among these objects. An entity

is a “thing” or “object” in the real world that is distinguishable from other

objects

Semi-structured Data Model.

The semi-structured data model permits the specification

of data where individual data items of the same type may have different

sets of attributes. This is in contrast to the data models mentioned earlier, where

every data item of a particular type must have the same set of attributes.

in the relational model the term relation is used to refer to a table, while the

term tuple is used to refer to a row. Similarly, the term attribute refers to a column of a

table.

A domain is atomic if elements of the domain are considered to be indivisible units.

superKey:

A superkey is a set of one or more attributes that, taken collectively, allow us to

identify uniquely a tuple in the relation. For example, the ID attribute of the relation

instructor is sufficient to distinguish one instructor tuple from another. Thus, ID is a

superkey. The name attribute of instructor, on the other hand, is not a superkey, because

several instructors might have the same name.

--------------------------------------data : 01/05/2023----------------------------------

Basic Types

char(n): A fixed-length character string with user-specified length n. The full form,

character, can be used instead.

varchar(n): A variable-length character string with user-specified maximum length

n. The full form, character varying, is equivalent.

• int: An integer (a finite subset of the integers that is machine dependent). The full

form, integer, is equivalent.

• smallint: A small integer (a machine-dependent subset of the integer type).

• numeric(p, d): A fixed-point number with user-specified precision. The number

consists of p digits (plus a sign), and d of the p digits are to the right of the decimal

point. Thus, numeric(3,1) allows 44.5 to be stored exactly, but neither 444.5 nor

0.32 can be stored exactly in a field of this type.

• real, double precision: Floating-point and double-precision floating-point numbers

with machine-dependent precision.

• float(n): A floating-point number with precision of at least n digits.

-------------------------------commands:-----------------------------------------

1. create table command:

create table department

(dept name varchar (20),

building varchar (15),

budget numeric (12,2),

primary key (dept name));

2.To remove a relation from an SQL database:

drop table <table name>;

3.Good example of foreign key and primary key:

create table department

(dept name varchar (20),

building varchar (15),

budget numeric (12,2),

primary key (dept name));

create table course

(course id varchar (7),

title varchar (50),

dept name varchar (20),

credits numeric (2,0),

primary key (course id),

foreign key (dept name) references department);

create table instructor

(ID varchar (5),

name varchar (20) not null,

dept name varchar (20),

salary numeric (8,2),

primary key (ID),

foreign key (dept name) references department);

create table section

(course id varchar (8),

sec id varchar (8),

semester varchar (6),

year numeric (4,0),

building varchar (15),

room number varchar (7),

time slot id varchar (4),

primary key (course id, sec id, semester, year),

foreign key (course id) references course);

create table teaches

(ID varchar (5),

course id varchar (8),

sec id varchar (8),

semester varchar (6),

year numeric (4,0),

primary key (ID, course id, sec id, semester, year),

foreign key (course id, sec id, semester, year) references section,

foreign key (ID) references instructor);

4.To find the column from table(we use "select" command for selecting columns from table):

select <column name>,<column name 2>,<column name ...> from <table name>;

5.To find distinct data from column (means no duplicate from table).we need to add "distinct" keyword:

example: select distinct<column name> from <table name>;

6.The select clause may also contain arithmetic expressions involving the operators

+, −, ∗, and / operating on constants or attributes of tuples. For example, the query:

select ID, name, dept name, salary \* 1.1

from instructor;

* The where clause allows us to select only those rows in the result relation of the from clause that satisfy a specified predicate
* SQL allows the use of the logical connectives and, or, and not in the where clause.

The operands of the logical connectives can be expressions involving the comparison

operators *<*, *<*=, *>*, *>*=, =, and *<>*.