

Can have relations on more than two sets.

A relation on A, B, C is a subset of $A \times B \times C$

$$(a, b, c) \in A \times B \times C.$$

Meal: Drink, Main Course, Side.

$$D = \{ \text{coffee, milk} \}$$

$$M = \{ \text{steak, chicken} \}$$

$$S = \{ \text{mac + cheese, carrots, broccoli} \}$$

$$D \times M \times S$$

$$(\text{coffee, steak, carrots}) \in D \times M \times S.$$

A relation on $D \times M \times S$ is a subset of $D \times M \times S$

Weight-Status relation $(\text{milk, steak, mac + cheese}) \notin W$
 $(\text{coffee, chicken, broccoli}) \in W.$

$$W = \{ (c, c, b), (c, s, c), \dots \}$$

Example DB Doctors office.

"Attributes" subs ~~of~~ over which the relation is defined.

(Patient ID, Patient Name, Dr name, Date, Time, Duration, No-show)

Database is a subset of Patient ID $\times$ Patient Name $\dots \times$ No-show.

7 attributes.

Key: a subset of attributes that uniquely identifies a row (7-tuple).

(Patient ^{ID} Name, Date, Time)

(Doctor Name, Date, Time).

SELECT
PROJECT

SELECT [set of conditions] $\Rightarrow$ returns all rows that satisfy the set of conditions.

SELECT [Pat-Name = "Chang" $\wedge$ Doctor = "Spencer"]

row 5 (23, 42, Cheng, Spencer, 11/4/13, 8AM, 23, N)

SELECT [Date $\leq$ 11/7/13 $\wedge$ Date $\geq$ 11/5/13]

rows 2, 4, 6.

PROJECT [Set of attributes]

→ deletes all other attributes (columns) and then eliminates duplicates.

PROJECT [doctor, patient name]

(Cheng, Spencer)
(Zinn, Spencer)
.
.
:

(Cheng, Spencer)
(Zinn, Spencer)
(Smith, Spencer)
(Sanders, Harrison)
(Cheng, Harrison).

(Cheng, Harrison)

Which Doctors had a "no show" during the month of November?

SELECT (No-Show = "yes" $\wedge$ Date $\leq$ 11/30/13
 $\wedge$ Date $\geq$ 11/1/13)

PROJECT [Doctor]

Spencer & Harrison.

Which patients missed an appt in the last week?

Select [No-Show = "Yes" $\wedge$ Date $\leq$ 11/8/13 $\wedge$ Date $\geq$ 11/4/13]
Project [Patient Name].

Zinn, Sanders.

What's the average time Dr. Harrison spent w/
patients in Nov?

Select [Doctor = Harrison $\wedge$ Date $\leq$ 11/30/13 $\wedge$ Date $\geq$ 11/1/13]
Project [Duration]
A No-Show = "No"

22, 27

~~SELECT [Item Number = 14]~~