

Section 2.2: cont'd

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8:38 AM

query - a request for information from a database

to answer a query, the database management system has to perform one or more fundamental operations on the database

we will look at 3 of these fundamental operations:

select
project
join

the Select operator:

note: must specify which database/table you are operating on

- selects entire rows (records) from tables

Syntax:

σ column title = "some value" (table name)

↑
Greek letter "sigma"

subscript

↑
don't forget this!

example: from the handout: look at CLASSES

what is the output of

$\sigma_{\text{Section} = \text{"X02"}} (\text{CLASSES})$?

answer:

$\{(\text{"Math 185"}, \text{"X02"}, \text{"Leah"}, \text{"TB 173"})\}$

or:

Course	Section	Instructor	Room
Math 185	X02	Leah	TB173

example: what operation on CLASSES gives the records for courses in CBA 101?

$\sigma_{\text{Room} = \text{"CBA 101"}} (\text{CLASSES})$

The Project operator:

- picks columns/attributes from a relation/table

syntax:

π list of column titles (table name)

subscript

π list of column titles (table name)
 \uparrow
 Greek letter "pi"

example: what would be the output of

$\pi_{\text{Instructor, phone}} (\text{FACULTY})$?

Instructor	phone
Gilles	x4495
Leah	x4490
Pat	x4542

or $\{ ("Gilles", "x4495"), ("Leah", "x4490"), ("Pat", "x4542") \}$

example: Write an operation to list course, section, and instructor for all courses

$\pi_{\text{course, section, Instructor}} (\text{CLASSES})$

note: the output of

$\pi_{\text{course, Instructor}} (\text{CLASSES})$

is

Course	Instructor
Math 163	Pet
Math 163	Pet
⋮	⋮

} repeated entry

in set theory, duplication doesn't matter, so you'd collapse the two into a single row

in databases, you can actually use the keyword "distinct" to keep the duplicate entries

- in this course, you can either leave "as is" or collapse duplicates

⇒ either is acceptable