

## Reading

Roman, Steven (1999) "Access Database Design and Programming" (chapter 5), O'Reilly, 2nd edition

ITR8 class (2001) "sofix database" <http://wotan.liu.edu/home/krichel/itr8/db/sofix.mdb>

## Questions

Which composer has the longest overall contribution to the music is the sofix database?

Which violinist has been playing tracks that are between 5 and 15 minutes long?

Which works were recorded between 1975 and 1980? (easy)

## Query

A base table is a table in the database.

A query is a request to the base tables, the result of which is a new derived table that contains the information sought.

Queries can be expressed through a relational algebra that consists of procedural statements.

## Example Query

- Find the titles of all works that have a track which is at least 300 seconds long. To do this:
- Join the TRACKS and WORKS table, by the work\_number key attribute of works.
  - From that joined table, select the rows where the tracktime is at least 300.
  - Project the selected rows onto the title attribute.

Rename an attribute

item-number	label-name	number	74321 59214 2	1
			arte nova classics	
			410 020-2	2
			deutsche grammophon	
			415 062-2	3
item-number	name	number	74321 59214 2	1
			arte nova classics	
			410 020-2	2
			deutsche grammophon	
			415 062-2	3

A1	A2	a	b
A1	A2	c	d
A1	A2	e	f
A1	A2	g	h

A-1	A-2	c	d
A-1	A-2	e	f
A-1	A-2	g	h

A1	A2	a	b
A1	A2	c	d
A1	A2	e	f
A1	A2	g	h

Compute the difference between two tables with the same attributes

A1	A2	a	b
A1	A2	c	d
A1	A2	e	f
A1	A2	g	h

A-1	A-2	c	d
A-1	A-2	e	f
A-1	A-2	g	h

A-1	A-2	c	d
A-1	A-2	e	f

Compute the intersection between two tables with the same attributes

A1	A2	a	b
A1	A2	c	d
A1	A2	e	f
A1	A2	g	h
A1	A2	i	j

A-1	A-2	g	h
A-1	A-2	i	j

A-1	A-2	a	b
A-1	A-2	c	d
A-1	A-2	e	f
A-1	A-2	g	h
A-1	A-2	i	j

Compute the union between two tables with the same attributes

Form the Cartesian product between tables with different attributes with the same attributes

A1	A-2
a	b
c	d
e	f

B-1	B-2	B-3
g	h	i
j	k	l

A-1	A-2	B-1	B-2	B-3
a	b	g	h	i
a	b	j	k	l
c	d	g	h	i
c	d	j	k	l
e	f	g	h	i
e	f	j	k	l

Form the projection of a table onto a subset of its columns

item-number	label-name	number
1	arte nova classics	74321 59214 2
2	deutsche grammophon	410 020-2
3	deutsche grammophon	415 062-2

throw everything away except the 1st and 3rd columns

item-number	label-name
1	74321 59214 2
2	410 020-2
3	415 062-2

Form a selection of a table according to a criterium  
 Selection criteria may comprise

- Constants values from the attribute domain
- Attribute names
- Algebraic expressions like =, > etc
- Logical expressions like AND, OR, NOT

Example

tracktime > 500

label = deutsche gramophone