### Assignment Project Exam Help

https://powcoder.com

Relational Abgebrar
Practice Queries

CS430/630 Lecture 3

## Relational Algebra

- Basic operations:
  - $\triangleright$  Selection  $\sigma$  Selects a subset of rows from relation
  - Projection Assignment Project dixam flool prelation

  - Division ÷ A bit Andre Workplextypill recover leater on
  - ▶ <u>Set-difference</u> <u>Union</u> <u>Union</u> <u>Intersection</u>
  - $\triangleright$  Renaming  $\nearrow$  Helper operator, does not derive new result, just renames relations and fields

$$\rho(R(F),E)$$

▶ F contains oldname →newname pairs



### Operator Precedence

- In decreasing order of priority:
  - 1. Selection  $\sigma$  Projection  $\pi$
  - 2. Cross-productignicant Project Exam Help
  - 3. <u>Set-difference</u> https://powcoder.com
  - Add WeChat powcoder



#### Sailors

#### **Boats**

<u>sid</u>	sname	rating	age		1. ! .1	10.0100	1
22	ductin	A Zaigna	2650 PD	roject Ex	bid bid	name <mark>elp</mark> interlake	color
	dustiii	Assigin		loject Ex	101	interlake	red
31	lubber	8 htti	55,5	wcoder.c	: <del>ሰበ</del> ጸ	clipper	green
58	rusty	$10^{100}$	35.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	YUU	chipper	green

sid	<u>bid</u>	day
22	101	10/10/96
58	103	11/12/96

Sailors Boats

sid sname rating age

bid name color

#### Reserves

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https://powcoder.com
Find names of sailors who've reserved boat #103

$$\pi_{sname}$$
 (( $\sigma_{bid=103}^{\text{Add WeChat powcoder}}$  Sailors)

$$\pi_{sname}(\sigma_{bid=103}(Reserves \bowtie Sailors))$$

#### Sailors

#### **Boats**

<u>sid</u>	sname	rating	age		1. ! .1	10.0100	1
22	ductin	A Zaigna	2650 PD	roject Ex	bid bid	name <mark>elp</mark> interlake	color
	dustiii	Assigin		loject Ex	101	interlake	red
31	lubber	8 htti	55,5	wcoder.c	: <del>ሰበ</del> ጸ	clipper	green
58	rusty	$10^{100}$	35.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	YUU	chipper	green

sid	<u>bid</u>	day
22	101	10/10/96
58	103	11/12/96

# SailorsBoatssidsnameratingagebidnamecolor

#### Reserves

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https://powcoder.com

Find names of sailors who've reserved a red boat

$$\pi_{sname}(\pi_{sid}((\pi_{bid}(\sigma_{color='red'}(Boats)))\bowtie Res))\bowtie Sailors)$$

$$\pi_{sname}((\sigma_{color='red'}, Boats) \bowtie Reserves \bowtie Sailors)$$

#### Sailors

#### **Boats**

<u>sid</u>	sname	rating	age		1. ! .1	10.0100	1
22	ductin	A Zaigna	2650 PD	roject Ex	bid bid	name <mark>elp</mark> interlake	color
	dustiii	Assigin		loject Ex	101	interlake	red
31	lubber	8 htti	55,5	wcoder.c	: <del>ሰበ</del> ጸ	clipper	green
58	rusty	$10^{100}$	35.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	YUU	chipper	green

sid	<u>bid</u>	day
22	101	10/10/96
58	103	11/12/96

Sailors Boats

sid sname rating age

bid name color

#### Reserves

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#### https://powcoder.com

Find names of sailors who've reserved a red or a green boat Add WeChat powcoder

$$\rho \ (\textit{Tempboats}, (\sigma_{color = 'red' \lor color = 'green'}, \textit{Boats}))$$

 $\pi_{sname}$  (Temphoats  $\bowtie$  Reserves  $\bowtie$  Sailors)



#### Sailors

#### **Boats**

<u>sid</u>	sname	rating	age		1. ! .1	10.0100	1
22	ductin	A Zaigna	2650 PD	roject Ex	bid bid	name <mark>elp</mark> interlake	color
	dustiii	Assigin		loject Ex	101	interlake	red
31	lubber	8 htti	55,5	wcoder.c	: <del>ሰበ</del> ጸ	clipper	green
58	rusty	$10^{100}$	35.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	YUU	chipper	green

sid	<u>bid</u>	day
22	101	10/10/96
58	103	11/12/96

# Sailors Sid sname rating age bid name color

#### Reserves

Assignment Project Exam Help

Find names of sailors who we reserved a red and a green boat

$$\rho$$
 (Tempred,  $\pi \underset{sid}{\text{Add}}(WeChat \underset{color=red}{\text{powce}}\text{bats}) \bowtie Reserves))$ 

$$\rho$$
 (Tempgreen,  $\pi_{sid}((\sigma_{color=green}, Boats)) \bowtie Reserves))$ 

$$\pi_{sname}((Tempred \cap Tempgreen) \bowtie Sailors)$$

#### Sailors

#### **Boats**

	sname		age		bid	name	color
22	dustin	Assign:	nent P	roject Ex	<del>oid</del> <del>am, H</del>	name <mark>elp</mark> interlake	tod
31	lubber	8 htts	55.5	wooder o	101	clipper	
58	rusty	10	35.0	wcoder.c	AND	cnpper	green

sid	<u>bid</u>	<u>day</u>
22	101	10/10/96
58	103	11/12/96



Sailors				Boats		
sid	sname	rating	age	<u>bid</u>	name	color

#### Reserves

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Find names of sailors who ve reserved only red boats

$$\rho$$
 (Tempred,  $\pi \underset{sid}{\text{Add}}(WeChat \underset{color=red}{\text{powcestats}}) \bowtie Reserves))$ 

$$\rho(\textit{Tempothers}, \pi_{\textit{sid}}((\sigma_{\textit{color} <> '\textit{red}'} \textit{Boats}) \bowtie \mathsf{Reserves}))$$

$$\pi_{sname}((Tempred-Tempothers) \bowtie Sailors)$$

## An Example of Self-Joins

Sailors

dustin AssignmentoProject Exam Help  lubber 8 https://powcoder.com  rusty 10 35.0	sid	sname	rating	age	
10 lubber 8 https://powcoder.com 10 35.0 rusty	22	dustin	A§sign:	nent Pi	oject Exam Help
58 rusty 10 35.0	31	lubber	8 http	55,5	wcoder com
Add WeChat powcoder	58	rusty	10	35.0	

Add Weenat poweoder

Find sailors with maximum age



## An Example of Self-Joins

sid	sname	rating	age	<u>sid</u>	sname	rating	age
22	ductin	7	45.0	22	dugtin	7	45.0
22	dustin	7 Assigni	45.0 nent P	31 rojec	lubber t Exam I	8 Telp	55.5
ZZ	dustin	1	43.0	20	Tusty	10	33.0
31	lubber	+ 2 htt	084/100	<b>200</b> 0	eksem	7	45.0
31	lubber	8	755/JV		aastiii	,	
31	lubber	8 Ad	d wec	hat p	owcode	8	55.5
31	iubbei	Ö	55.5	Þδ	Tusty	10	33.0
58	rusty	10	35.0	22	dustin	7	45.0
58	rusty	10	35.0	31	lubber	8	55.5
50	WI STY	10	25.0	50	riigtv	10	25.0
50	Tusty	10		90	Tusty	10	

▶ Join condition: "left" age smaller than "right" age



## An Example of Self-Joins

$$\rho(S1,Sailors) \qquad \rho(S2,Sailors) \\ \rho(TempJoin(1 \rightarrow f1,2 \rightarrow f2,3 \rightarrow f3,4 \rightarrow f4), \\ \text{Assignmen SProject Exam Help} \qquad S2) \\ S1.age < S2.age \\ \rho(LeftHalff,\pi/powcoder.com/rempJoin) \\ f1,f2,f3,f4 \\ \text{Add WeChat powcoder} \\ \end{cases}$$

- Finally, subtract the resulting left hand side from the initial relation, and you get sailors with maximum ages
  - Final result is

Sailors-LeftHalf

