Example Instances Exercise

Sailors, *Boats*, and *Reserves* relations

(adapted from the book: Database Management Systems, 3e)

Sailors

sid	*sname*	*rating*	*age*
22	Dustin	7	45.0
29	Brutus	1	33.0
31	Lubber	8	55.5
32	Andy	8	25.5
58	Rusty	10	35.0
64	Horatio	7	35.0
71	Zorba	10	16.0
74	Horatio	9	35.0
85	Art	3	25.5
95	Bob	3	63.5

Reserves

sid	*bid*	*day*
22	101	10/10/18
22	102	10/10/18
22	103	10/8/18
22	104	10/7/18
31	102	11/10/18
31	103	11/6/18
31	104	11/12/18
64	101	9/5/18
64	102	9/8/18
74	103	9/8/18

Boats

bid	*bname*	*color*
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red

Question 1

Find names of sailors who've reserved boat #103

Solution 1:

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

Solution 2:

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

Question 2

Find names of sailors who've reserved a red boat

Solution

Information about boat color only available in Boats; so need an extra join

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

Question 3

Find sailors who've reserved a red or a green boat

Can identify all red or green boats, then find sailors who've reserved one of these boats

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

$$\pi_{sname}(Tempboats \bowtie \mathrm{Re}serves \bowtie Sailors)$$

Submit: Question 4 (ONLY)

Find those sailors who've reserved a red and a green boat

Step 1 Need to identify

1) Sailors who've reserved red boats
2) Sailors who've reserved green boats

Step 2: Find the intersection (note that *sid* is a key for Sailors)

Submit: Your queries for question 4 (only)