

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

{Dustin, Lubber}.

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

{Dustin, Lubber, Horatio, Horatio}.

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

{red, green}.

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

{Dustin, Lubber, Horatio, Horatio}.

5. $\pi_{sname} (Sailors \bowtie Reserves)$.

{Dustin, Lubber, Horatio, Horatio}.

6. $\pi_{sname} (\pi_{sid} ((\sigma_{color='red'} (Boats)) \bowtie Reserves) \cap \pi_{sid} ((\sigma_{color='green'} (Boats)) \bowtie Reserves \bowtie Sailors))$

$\pi_{sname} ((22, 31, 31, 64, 74) \cap (22, 31))$

$= \pi_{sname} (22, 31)$.

{Dustin, Lubber}.

7. $\pi_{U.sname} ((\sigma_{(U.sid=V.sid) \wedge (U.bid \neq V.bid)})$

$(PU(\pi_{sid, sname, bid} (Sailors \bowtie Reserves)) \times PV(\pi_{sid, sname, bid} (Sailors \bowtie Reserves)))$

$U = \begin{bmatrix} 22 & 31 & 64 & 74 \\ 101 & 102 & 101 & 102 \\ 102 & 103 & 101 & 102 \\ 103 & 104 & 102 & 102 \end{bmatrix} \times \begin{bmatrix} 22 & 31 & 64 & 74 \\ 101 & 102 & 101 & 102 \\ 102 & 103 & 101 & 102 \\ 103 & 104 & 102 & 102 \end{bmatrix} = V$

{Dustin, Lubber, Horatio}.

8. $(\pi_{sid} ((\sigma_{age > 20} (Sailors))) - (\pi_{sid} ((\sigma_{color='red'} (Boats)) \bowtie Reserves \bowtie Sailors)))$

$(\pi_{sid} (22, 29, 31, 32, 58, 64, 74, 85, 95) - \pi_{sid} (22, 31, 64, 74))$

{29, 32, 58, 65, 95}.