

1. List only the name and rating for all Sailors. (4 points)
  - a.  $\pi_{\text{sname}, \text{rating}}(\mathbf{S})$
2. List all sailor information for sailors with a rating > 8. (4 points)
  - a.  $\sigma_{\text{rating} > 8}(\mathbf{S})$
3. List the boat id for boats all red boats. (4 points)
  - a.  $\pi_{\text{bid}}(\sigma_{\text{color} = \text{"red"}}(\mathbf{B}))$
4. List the boat id for all red boats and all green boats. (4 points)
  - a.  $\pi_{\text{bid}}(\sigma_{\text{color} = \text{"red"} \text{ and } \text{"green"}}(\mathbf{B}))$
5. List the name of every sailor who is aged 16 or under. (4 points)
  - a.  $\pi_{\text{sname}}(\sigma_{\text{age} \leq 16}(\mathbf{S}))$
6. List the name and rating for all sailors who have a rating of 7 and below. (4 points)
  - a.  $\pi_{\text{sname}, \text{rating}}(\sigma_{\text{rating} \leq 7}(\mathbf{S}))$
7. Count the number of reservations for boat number 4. (4 points)
  - a.  $\rho_{\mathbf{R}}(\text{myCount}) \zeta_{\text{COUNT day}}(\sigma_{\text{bid} = 4}(\mathbf{R}))$
8. Find the names of sailors who have reserved boat 103. (4 points)
  - a.  $(\pi_{\text{sid}, \text{sname}}(\mathbf{S})) \bowtie (\pi_{\text{sid}, \text{bid}}(\mathbf{R})) (\sigma_{\text{bid} = 103}(\mathbf{B}))$
9. Find the names of sailors who have reserved a red boat. (4 points)
  - a.  $(\pi_{\text{sid}, \text{sname}}(\mathbf{S})) \bowtie (\pi_{\text{sid}, \text{bid}}(\mathbf{R})) (\sigma_{\text{color} = \text{"red"}}(\mathbf{B}))$
10. Find the colors of the boats reserved by Lubber. (4 points)
  - a.  $(\pi_{\text{bid}, \text{color}}(\mathbf{B})) \bowtie (\pi_{\text{sid}, \text{bid}}(\mathbf{R})) (\sigma_{\text{sname} = \text{"Lubber"}}(\mathbf{S}))$
11. Find the names of sailors who have reserved a red and green boat. (5 points)
  - a.  $(\pi_{\text{bid}, \text{sid}}(\mathbf{R})) \bowtie (\pi_{\text{sid}, \text{sname}}(\mathbf{S})) (\sigma_{\text{color} = \text{"red"} \text{ and } \text{"green"}}(\mathbf{B}))$
12. Find the names of sailors with age over 20 who have not reserved a red boat. (5 points)
  - a.  $(\pi_{\text{bid}, \text{color}} \neq \text{"red"}(\mathbf{B})) \bowtie (\pi_{\text{bid}}(\mathbf{R})) (\sigma_{\text{age} > 20}(\mathbf{S}))$