Rheann L Vera

Professor Garcia

CS 300-ON

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Relational Algebra

1. List only the name and rating for all Sailors.

$$\prod_{\text{sname, rating}} (\text{Sailors})$$

2. List all sailor information for sailors with a rating>8).

$$\sigma_{\text{rating} > 8} (\text{Sailors})$$

3. List the boat id for boats all red boats.

$$\prod_{\text{BID}}((\sigma_{\text{color} = \text{'red'}} (\text{Boats})$$

4. List the boat id for all red boats and all green boats.

$$\prod_{\text{BID}} ((\sigma_{\text{color} = \text{'red', 'green'}} \text{Boats})$$

5. List the name of every sailor who is aged 16 or under.

$$\prod_{\text{sname}} ((\sigma_{\text{age} \leq 16} (\text{Sailors})$$

6. List the name and rating for all sailors who have a rating of 7 and below.

$$\prod_{\text{sname,rating}} ((\sigma_{\text{rating} \leq 7'} (\text{Sailors})$$

7. Count the number of reservations for boat number 4.

$$\rho(\text{myCount}) \, Z_{\text{COUNT RESERVES}} (\sigma_{\text{BID} = \text{'4'}} \text{Reserves}))$$

8. Find the names of sailors who have reserved boat 103.

$$\prod_{\text{sname}} (\sigma_{\text{BID} = \text{'103'}} \text{Reserves} \bowtie \text{Sailors}))$$

9. Find the names of sailors who have reserved a red boat.

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

10. Find the colors of the boats reserved by Lubber.

$$\prod_{\text{color}} ((\sigma_{\text{sname = 'Lubber'}} \text{Sailor}) \bowtie \text{Reserves} \bowtie \text{Boats})$$

11. Find the names of sailors who have reserved a red and green boat.

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

$$\cap$$

$$\prod_{\text{sname}} (\sigma_{\text{color}} = \text{'green'}^{\text{Boats}} \bowtie \text{Reserves} \bowtie \text{Sailors})$$

12. Find the names of sailors with age over 20 who have not reserved a red boat.

$$\prod_{\text{SID}} (\sigma_{\text{age}} > 20^{\text{Sailors}}) - \prod_{\text{SID}} ((\sigma_{\text{color}} = \text{'red'}^{\text{Boats}}) \bowtie \text{Reserves})$$