Assignment1-text

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1. Find the sid and age of each sailor.

Ans: {(s.sid, s.rating)| Sailor(s)}

2. Find the sid, name, and rating of each sailor whose rating is in the range [2; 11] but not in the range [8; 10].

Ans: {(s.sid, s.sname, s.rating) | Sailor(s) $\wedge$ ((s.rating $\geq$ 2 $\wedge$ s.rating $<$ 8) $\vee$ (s.rating $>$ 10 $\wedge$ s.rating $\leq$ 11)) }

3. Find the bid, name, and color of each non-red boat that was reserved by some sailor whose rating is more than 7.

Ans : {(b.bid, b.bname, b.color) | Boat(b) $\wedge$ $\exists$r$\exists$s(Reserves(r) $\wedge$ Sailor(s) $\wedge$ b.bid = r.bid $\wedge$ s.sid = r.sid $\wedge$ s.rating $>$ 7 $\wedge$ b.color $\neq$ 'red')}

4. Find the bid and name of each boat that was reserved by a sailor on a weekend day but that was not reserved by a sailor on a Tuesday.

Ans : {(b.bid, b.bname) | Boat(b) $\wedge$ $\exists r_1$(Reserves(r_1) $\wedge$ r_1.bid = b.bid $\wedge$ (r_1.day = 'Saturday' $\vee$ r_1.day = 'Sunday')) $\wedge$ $\neg(\exists r_2$(Reserves(r_2) $\wedge$ r_2.bid = b.bid $\wedge$ r_2.day = 'Tuesday')) }

5. Find the sid of each sailor who reserved both a red boat and a green boat.

Ans:$\{(r_1.sid)|Reserves(r_1) \wedge \exists b_1(Boat(b_1) \wedge b_1.bid = r_1.bid \wedge b1.color =' red') \wedge \exists r_2(Reserves(r_2) \wedge \exists b_2(Boat(b_2) \wedge b2.bid = r2.bid \wedge r1.bid = r2.bid \wedge b2.color =' green'))\}$

6. Find the sid and name of each sailor who reserved at least two different boats. (You should write this query without using the COUNT aggregate function.)

Ans: $\{(s.sid, s.name)|sailor(s) \wedge \exists r_1(Reserves(r_1) \wedge \exists r_2(Reserves(r_2) \wedge s.sid = r1.sid \wedge s.sid = r2.sid \wedge r1.bid \neq r2.bid))\}$

7. Find the pairs of sids (s1; s2) of different sailors who both reserved a same boat.

Ans: $\{(r_1.sid, r_2.sid)|Reserves(r_1) \wedge Reserves(r_2) \wedge r_1.sid \neq r_2.sid \wedge r_1.bid = r_2.bid\}$

8. Find the sid of each sailor who did not reserve any boats on a Monday or on a Tuesday.

Ans: $\{(s.sid)|sailor(s) \wedge \neg(\exists r(Reserves(r) \wedge r.sid = s.sid \wedge (r.day =' Monday' \vee r.day =' Tuesday')))\}$

9. Find the pairs (s; b) such that the sailor with sid s reserved the boat with bid b, provided that the sailor s has a rating greater than 6 and the color of boat b is not red.

$\{(s.sid, b.bid)|Sailor(s) \wedge Boat(b) \wedge \exists r(Reserves(r) \wedge r.sid = s.sid \wedge b.bid = r.bid \wedge s.rating > 6 \wedge b.color \neq' red')\}$

10. Find the bid of each boat that where reserved by just one sailor. (You should write this query without using the COUNT aggregate function.)

Ans:
$\{(r_1.bid)|Reserves(r_1) \wedge \neg(\exists r_2(Reserves(r_2) \wedge r_1.bid = r_2.bid \wedge r_1.sid \neq r_2.sid)))\}$

11. Find the sid of each sailor who reserved fewer than 3 boats. (You should write this query without using the COUNT aggregate function.)

Ans:

$\{(s.sid)|Sailor(s) \wedge \neg(\exists r_1(Reserves(r_1) \wedge \exists r_2(Reserves(r_2) \wedge \exists r_3(Reserves(r_3) \wedge r_1.sid = s.sid \wedge r_2.sid = s.sid \wedge s.sid = r_3.sid \wedge r_1.bid \neq r_2.bid \wedge r_2.bid \neq r_3.bid \wedge r_1.bid \neq r_3.bid))))\}$