10/10 Questions Answered

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Quiz 4

STUDENT NAME

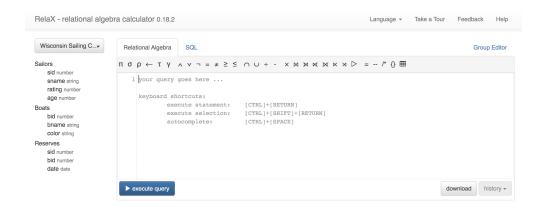
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Q1 Try to RelaX:-)

10 Points

This quiz is intended to be done (for fun!) before the pre-midterm discussion sections on the relational algebra. You will use the RelaX relational algebra calculator - the same one that you will be using for the next HW assignment - to answer a series of queries over the Sailors/Boats/Reserves data that have been used in the lectures. This will help ensure that you get off to a successful start with the algebra and get some pre-HW practice. (The URL for the online RelaX relational algebra calculator is https://dbis-

uibk.github.io/relax/calc/local/uibk/local/0 and the gist identifier to use in RelaX for the relevant data is 9aa882b7295d64737b8330978c3e0658).



Q1.1

1 Point

Find all the sailors whose name is Horatio.

 σ sname = 'Horatio' (Sailors)

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Q1.2

1 Point

Print (just) the sailor ids, ratings, and ages of sailors whose name is Horatio.

 π sid, rating, age (σ sname = 'Horatio' (Sailors))

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Q1.3

1 Point

Print the reservations for sailors whose name is Horatio.

 π sid, bid, date ((Reserves) \bowtie (σ sname = 'Horatio' (Sailors)))

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Q1.4

1 Point

Print the names and colors of boats reserved by a sailor whose name is Horatio.

 π bname, color (Boats \bowtie Boats.bid = horatio_reservations.bid (ρ horatio_reservations (π Reserves.sid, Reserves.bid, Reserves.date

((Reserves) \bowtie Reserves.sid = Horatio.sid ρ Horatio (σ sname = 'Horatio' (Sailors))))))

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Q1.5

1 Point

Print the ids of sailors who have reserved all of the non-red boats.

(π sid,bid (Reserves))÷(π bid σcolor≠'red' (Boats))

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Q1.6

1 Point

Print the names and ages of sailors who have reserved all of the nonred boats.

π sname, age (((πsid,bid (Reserves))÷(πbid σcolor≠'red' (Boats)))⋈Sailors)

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Q1.7

1 Point

Print the names of sailors who have a rating of three or less **or** who are over 40 years old. (Use **only** selection and projection.)

π sname (σ rating $≤ 3 \lor age <math>> 40$ (Sailors))

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Q1.8

1 Point

Print the names of sailors who have a rating of three or less **or** who are over 40 years old. (This time use only **simple predicates** and use union.)

```
low_rating = \sigma rating \leq 3 (Sailors)
older_sailors = \sigma age > 40 (Sailors)
\pi sname (low_rating \cup older_sailors)
```

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Q1.9

1 Point

Print the names of sailors who have a rating of three or less **and** who are over 40 years old. (Use only selection and projection.)

```
π sname (σ rating ≤ 3 ∧ age > 40 (Sailors))
```

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Q1.10

1 Point

Print the names of sailors who have a rating of 6 or more **and** who are over 40 years old **and** who have reserved all of the non-red boats. (Hints: You can use assignment to combine steps from earlier - being careful to operate on keys, i.e., sailor ids, to avoid false answers in the event of duplicate names. Name the final result's column name "busy_sailors".)

sailors_nonred = (πsid,bid (Reserves))÷(πbid σcolor≠'red' (Boats))
ρ busy_sailors ← sname (π sname ((σ rating ≥ 6 ∧ age > 40
(Sailors)) ⋈ sailors_nonred))

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