Quiz 5: Relational Algebra Quiz

Due Feb 19 at 2:59am **Points** 100 **Questions** 18
Available Feb 7 at 2:59am - Feb 25 at 2:59am 18 days **Time Limit** None
Allowed Attempts Unlimited

Instructions

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A self check on basic relational algebra concepts.

Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 7	6 minutes	95 out of 100
LATEST	Attempt 7	6 minutes	95 out of 100
	Attempt 6	10 minutes	80 out of 100
	Attempt 5	5 minutes	85 out of 100
	Attempt 4	13 minutes	85 out of 100
	Attempt 3	96 minutes	65 out of 100
	Attempt 2	4 minutes	20 out of 100
	Attempt 1	299 minutes	15 out of 100

ⓘ Correct answers are hidden.

Score for this attempt: **95** out of 100
Submitted Feb 18 at 4:19pm
This attempt took 6 minutes.

Question 1 **15 / 15 pts**

Identify these Relational Algebra operators

σ	SELECT
π	PROJECT
⋈	JOIN

Question 2

5 / 5 pts

Which query best represents this relational algebra statement:

$$\Pi_{d,f}(\sigma_{Foo.x="Bear"}((Foo \bowtie_{Foo.x=Bar.z} Bar) \bowtie_{Foo.x=Baz.z} Baz))$$

```
SELECT Foo.d, Foo.f FROM Foo

INNER JOIN Bar ON Foo.x = Bar.z
INNER JOIN Baz ON Foo.x = Baz.z
WHERE Foo.x = "Bear";
```

```
SELECT d, f FROM Bar

INNER JOIN Baz ON Foo.x = Baz.z
INNER JOIN Foo ON Foo.x = Bar.z
WHERE Foo.x = "Bear";
```

```
SELECT d, f FROM Foo

INNER JOIN Bar ON Foo.x = Bar.z
INNER JOIN Baz ON Foo.x = Baz.z
WHERE Foo.x = "Bear";
```

SELECT * FROM Bar

INNER JOIN Baz ON Foo.x = Baz.z
INNER JOIN Foo ON Foo.x = Bar.z
WHERE Foo.x = "Bear";

Question 3

5 / 5 pts

Which query best represents this relational algebra statement:

$\sigma_{Foo.a<100}(Foo \bowtie_{Foo.b=Bar.c} Bar)$

SELECT Foo.a FROM Foo

INNER JOIN Bar ON Foo.b = Bar.c
WHERE Foo.a < 100;

SELECT a FROM Foo

INNER JOIN Bar
WHERE Foo.a < 100;

SELECT Foo.a FROM Foo

INNER JOIN Bar
WHERE Foo.a < 100;

SELECT * FROM Foo

INNER JOIN Bar ON Foo.b = Bar.c
WHERE Foo.a < 100;

Question 4

5 / 5 pts

Which relational algebra command creates a new table where only certain columns are to be included?

- (●) PROJECT
- ( ) SELECT
- ( ) DELETE
- ( ) PROGRAM

Question 5

5 / 5 pts

Which command contains all rows that are similar in two different tables?

- (●) INTERSECT
- ( ) JOIN
- ( ) DIFFERENCE
- ( ) UNION

Question 6

5 / 5 pts

Two tables are _____ compatible if they have the same number of columns with the same types of corresponding data?

- ( ) INTERSECTION
- ( ) JOIN
- ( ) DIFFERENCE
- (●) UNION

Unanswered

Question 7

0 / 5 pts

Based on this table:

```
Vehicle(vehicle_id, year, make_id, model_id)
```

Which command will list all information from Vehicle with the vehicle_id of the value ‘3’?

- SELECT Vehicle ‘3’ GIVING Answer
- SELECT Vehicle WHERE vehicle_id=3 GIVING Answer
- SELECT Vehicle GIVING Answer WHERE vehicle_id=’3’
- SELECT Vehicle WHERE vehicle_id=’3’ RESULTS Answer

Question 8

5 / 5 pts

Based on the table:

```
Vehicle(vehicle_id, year, make_id, model_id)
```

Which command creates a new table named ‘Make’ that contains the fields ‘make_id’ and ‘year’?

- JOIN Vehicle WITH (make_id, year) GIVING Make
- INNER JOIN Vehicle FROM Make WITH (make_id, year)
- PROJECT Vehicle OVER (make_id, year) GIVING Make
- SELECT Vehicle OVER (make_id, year) GIVING Make

Question 9

5 / 5 pts

Based on the following tables:

```
Vehicle(vehicle_id, year, make_id, year, model_id)
```

```
Make(make_id, make_name, country)
```

Which command creates a new table named Inventory that combines Vehicle and Make tables based on make_id?

- JOIN Vehicle Make WHERE Vehicle.make_id=Make.make_id GIVING Inventory
- SELECT Vehicle Make WHERE Vehicle.make_id=Make.make_id MAKING Inventory

UNION Vehicle Make JOIN Vehicle.make_id=Make.make_id GIVING Inventory

PROJECT Vehicle Make WHERE Vehicle.make_id=Make.make_id MAKING Inventory

Question 10

5 / 5 pts

Which query below will return a number of row(s) where make_id field contains ‘1’ from Vehicle and provides a total of the price field?

- SELECT COUNT(*), SUM(price) FROM Vehicle WHERE make_id=’1’;
- SELECT FROM Vehicle SUM(price) WHERE make_id=’1’ COUNT(*);
- SELECT FROM Vehicle COUNT(price) SUM(*) WHERE make_id=’1’;
- SELECT COUNT(*) WHERE make_id=’1’ SUM(price) FROM Vehicle;

Question 11

5 / 5 pts

Which query will return the row(s) with the make_id field containing ‘1’ from the table Vehicle?

- SELECT FROM Vehicle COUNT(*) WHERE make_id=’1’;

- SELECT COUNT(*) WHERE make_id='1' FROM Vehicle;
- SELECT COUNT(*) FROM Vehicle WHERE make_id='1';
- SELECT FROM Vehicle WHERE make_id='1' COUNT(*);

Question 12

5 / 5 pts

When using SQL, the SELECT condition is typically specified in which clause of a query?

- WHERE
- IF
- FROM
- NOT

Question 13

5 / 5 pts

Relational Algebra Identification Equations: Identify the best equation

```
PROJECT Vehicle OVER (make_id, year)
```

- $\pi_{Vehicle}$ (make_id, year)
- $\pi_{make\_id,\ year}$ (Vehicle)
- $\pi_{make\_id,\ year}\ \sigma_{Vehicle}$

$\sigma_{make\_id,\ year}\ \pi_{Vehicle}$

Question 14

5 / 5 pts

Relational Algebra Identification Equations: Identify the best equation

```
SELECT Vehicle WHERE vehicle_id=3
```

- $\sigma_{make\_id,\ 3}$ (Vehicle)
- $\bowtie_{vehicle\_id}$ = "3"(Vehicle)
- $\sigma_{Vehicle}$ = 3(vehicle_id)
- **$\sigma_{vehicle\_id}$ = "3"(Vehicle)**

Question 15

5 / 5 pts

Relational Algebra Identification Equations: Identify the best equation

```
SELECT Make WHERE make_id=2
```

- **σ_{make_id} = "2"(Make)**
- σ_{Make} = 2 (make_id)
- π_{make_id} = "2"(σ_{Make})

- $\sigma_{make\_id} \bowtie 2(Make)$

Question 16

5 / 5 pts

Relational Algebra Identification Equations: Identify the best equation

```
PROJECT Inventory WHERE price is less than 8500
```

- π ((price < 8500)σInventory)
- π (σ (price < 8500)Inventory)
- π (σInventory (price < 8500))
- $\pi_{Inventory}$ (σprice < 8500)

Question 17

5 / 5 pts

Relational Algebra Identification Equations: Identify the best equation

```
JOIN make_id (Vehicle, Make) NEW MakeInfo
```

- MakeInfo = σVehicle ⋈ σMake
- Vehicle ⋈ Make πMakeInfo
- Vehicle ⋈ Make $\pi_{MakeInfo}$

MakeInfo:= Vehicle ⋈ Make

Question 18

5 / 5 pts

If we wanted to retrieve data from an employee database for all employees that work in department # 5.

Which single relational algebra expression would be best matched to display the employees first name, last name, and total salary using the following EMPLOYEE table headings?

empid	lastname	firstname	department	salaryrate	salary

$\sigma\ firstname,\ lastname,\ salary\,(\pi\ department = 5\,(EMPLOYEE))$

$\pi\ firstname,\ lastname,\ salary\,(\sigma\ department = 5\,(EMPLOYEE))$

$\Theta\ firstname,\ lastname,\ salary\,(\sigma\ department = 5\,(EMPLOYEE))$

$\pi\ firstname,\ lastname,\ salary\,(\sigma\ EMPLOYEE,\ department\ = 5)$

Quiz Score: **95** out of 100