

Reading Homework 14 (Due Wednesday, May 2, 3:20PM)

Due May 2, 2018 at 3:25pm**Points** 8**Questions** 10**Time Limit** None

Instructions

Review Section 2.6 from the textbook (we already read it earlier in the semester, but it's been a while since we've seen the relational algebra, so it's a good idea to re-read that section at this point given the usage of the relational algebra throughout Chapter 13 of the textbook. The relational algebra is also covered more deeply in Chapter 6.1, but you are only responsible for knowing what was covered in 2.6 and the one paragraph from 6.1 mentioned in the new reading below).

Assigned (new) reading: Last paragraph of 6.1.3.2 (where the theta join is defined). Chapter 13 from beginning through (and including) 13.3.3. In addition, read the first 4 paragraphs of chapter 13.4 (the bottom half of page 598 of the textbook)

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	2 minutes	7 out of 8

Score for this quiz: **7** out of 8

Submitted May 2, 2018 at 1:07pm

This attempt took 2 minutes.

Question 1

1 / 1 pts

Database systems always keep the statistics up-to-date as tuples are inserted or deleted from the database.

☐ True☒ False**Correct!**

The next set of questions refer to the following figure.

Consider three tables: $R(A, B, C)$, $S(C, D, E)$, $T(A, B, C)$

$$(i) \sigma_{A=10 \vee E=20}(R \bowtie S) = \sigma_{A=10}(R) \bowtie \sigma_{E=20}(S)$$

$$(ii) \sigma_{A=10}(R \cap T) = \sigma_{A=10}(R) \cap T$$

$$(iii) \sigma_{A=10 \wedge E=20}(R \bowtie S) = \sigma_{A=10 \wedge E=20}(R) \bowtie (S)$$

$$(iv) \pi_A(R - T) = \pi_A(R) - \pi_A(T)$$

Question 2

1 / 1 pts

Equivalence (i) shown above is correct.

☐ True

☒ False

Correct!

Question 3

1 / 1 pts

Equivalence (ii) shown above is correct.

☒ True

☐ False

Correct!

Question 4

1 / 1 pts

Equivalence (iii) shown above is correct.

Correct!☐ True☒ False**Question 5****0 / 1 pts**

Equivalence (iv) shown above is correct.

You Answered☒ True**Correct Answer**☐ False**Question 6****1 / 1 pts**

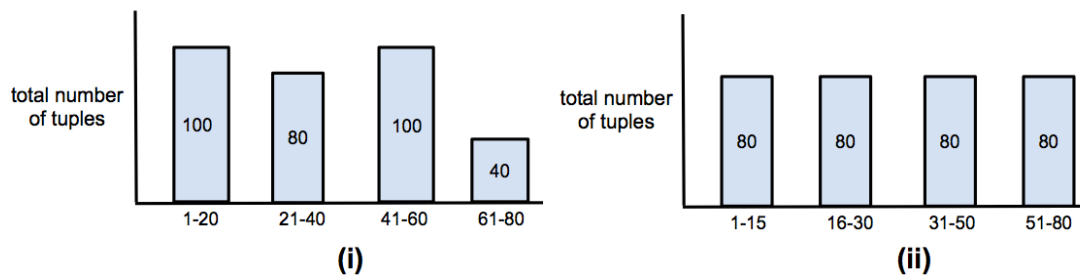
Let's say we have another table P(E,F,G) and the user issues a SQL query that performs a natural join between P, R, and S. (R and S have the same schema as above).

One option for doing this join is that we can do a natural join between P and S (since they share attribute E) and then natural join the result with R. Alternatively, we can do a natural join between R and S (since they share attribute C), and natural join the result with P.

True or false: The third option --- doing a natural join between P and R first and then natural joining the result with S --- is not possible and thus not considered by the query optimizer.

☐ True**Correct!**☒ False

The figure below shows (i) an "equi-width" and (ii) an "equi-depth" histograms on a relation R, on attribute a. The numbers in the bars indicate the total number of tuples that fall into that range. For (ii), each bucket contains exactly 80 tuples, but the ranges are different for each bucket (as shown).



Question 7

0.5 / 0.5 pts

Estimate the number of tuples in R that satisfy $26 \leq a \leq 45$ using histogram (i). Round up to the closest integer.

Correct!

Correct Answers

85.0 (with margin: 1.0)

Question 8

0.5 / 0.5 pts

Estimate the number of tuples in R that satisfy $11 \leq a \leq 50$ using histogram (i). Round up to the closest integer.

Correct!

Correct Answers

180.0 (with margin: 1.0)

Question 9**0.5 / 0.5 pts**

Estimate the number of tuples in R that satisfy $26 \leq a \leq 45$ using histogram (ii). Round up to the closest integer.

Correct!

87.0000

Correct Answers

87.0 (with margin: 1.0)

Question 10**0.5 / 0.5 pts**

Estimate the number of tuples in R that satisfy $11 \leq a \leq 50$ using histogram (ii). Round up to the closest integer.

Correct!

187.0000

Correct Answers

187.0 (with margin: 1.0)

Quiz Score: 7 out of 8