Score for this quiz: **95** out of 100
Submitted May 11 at 7:26pm
This attempt took 114 minutes.

Question 1 1 / 1 pts

The difference between data and information is:

- A. there is no difference
- Correct! B. functional
- C. hard to establish

Question 2 1 / 1 pts

A relational schema

- Correct! is the same for every tuple in a relation
- must be lossless
- can be different for different tuples
- includes functional dependencies

Question 3 1 / 1 pts

"Concurrent transactions must not interact" is

- Independence
- Durability
- Correct! Isolation
- Atomicity

Question 4 1 / 1 pts

Phantom Read Anomaly is avoided

- Correct! by the "serializable" isolation level
- by the "repeatable read" isolation level
- by the "unrepeatable read" isolation level
- by the "read committed" isolation level

Question 5 1 / 1 pts

The strongest normal form that R=AB is in is:

- A. Not known since we don't know the set of functional dependencies
- 3NF
- 2NF
- Correct! BCNF

Question 6 1 / 1 pts

In semi-structured databases

- Correct! the schema is part of each document
- there is no schema
- the schema is provided together with each document
- the schema is given as part of the collection

Question 7 1 / 1 pts

`SELECT R.a,R.b from R join S using (c)` assumes that

- c is a field of S but not R
- c is a filed of R but not of S
- c is not a commond field
- Correct! c is a field of R and S

Question 8 0 / 1 pts

Relationships in an ER diagram:

- must always have exactly two foreign keys
- sometimes have their own primary key
- Correct Answer does not have a primary key
- You Answered must always have exactly one foreign key

Question 9 1 / 1 pts

If the application programmer is not careful, the application could violate the following properties:

- Correct! Isolation and Consistency
- Consistency and Atomicity
- Durability and Atomicity

Question 10 0 / 1 pts

An instance of a relation

- Correct Answer is dynamic
- You Answered is static
- is serializable
- is never empty

Question 11 0 / 1 pts

Relational algebra

- Is declarative
- Correct Answer Is functional
- Is object oriented
- You Answered Is procedural

Question 12 1 / 1 pts

If a Xact is partially executed, then the following property is not satisfied

- Durability
- Completeness
- Correct! Atomicity
- Independence

Question 13

1 / 1 pts

If during the execution of a transaction, the database enters an inconsistent state then

- the offending transaction will be rolled back
- the offending transaction will not satisfy the Isolation property.
- Correct! the DBMS will ignore it
- the offending transaction will be aborted

Question 14

1 / 1 pts

The strongest normal form that (R,Ø) is in is:

- 3NF
- 2NF
- Correct! BCNF
- 1NF

Question 15

1 / 1 pts

Interleaved serializable schedules

- Need the current Xact to finish before another one starts
- Are just theoretical and cannot be implemented in real life
- Correct! Avoid all anomalies
- Are always sorted sequentially in ascending order by transaction ID

Question 16

0 / 1 pts

Merge rule

Correct Answer

- Is applied before the tables are instantiated.
- Is always applied when tables have data.
- Can only be applied when the relationship is many to many

You Answered

- Is used to reduce anomalies

Question 17

0 / 1 pts

The moment that X-locks are released will determine

You Answered

- The anomalies present

Correct Answer

- Nothing
- The granularity of locks
- The compliance with ACID

Question 18

1 / 1 pts

A foreign key must reference

- just one field of another table, even if it is not the complete primary key
- any field combination of another table

Correct!

- all the primary key fields of another table
- some of the primary key fields of another table

Question 19

1 / 1 pts

To avoid a deadlock

- Isolation must be enforced
- Correct! A graph can be used
- WAL is used
- A log is used

Question 20

1 / 1 pts

Every candidate key

- is the primary key
- B. is a subset of F+
- Correct! is a superkey
- must be a singleton

Question 21

5 / 5 pts

Given R=ABCD
and F = {AB→C, C→D, D→A}

Which of the following is a BCNF violation?

- ABC→D
- C→B
- AB→CD
- Correct! C→AD

Question 22

5 / 5 pts

Given R={A,B,C,D}
and F={A→B, BC→D, AD→C, AC→D, BD→A}
When computing a minimal cover, if you process the functional dependencies in order, which is the first one that is found to be redundant?

- AD→C
- A→B
- Correct! AC→D
- BC→D
- BD→A

Question 23

5 / 5 pts

Given R=ABCDEFG
and F = {GC→B, B→G, CB→A, GBA→C, A→DE, CD→B,BE→CA, BD→GE}

The following is a minimal cover:

- {GCF, CBF, BAF, BDF, BFE}
- GC→B, CB→A, A→DE, CD→B, BD→E
- Correct! GC→B, B→G, CB→A, A→DE, CD→B, BE→C, BD→E
- GCF→BADE

Question 24

5 / 5 pts

Given R=ABCDEFG
and F = {CF→B, B→C, FB→E, CBE→F, E→AG, FA→B,BG→FE, BA→CG}
Which attribute can be removed from the left hand side of a functional dependency?

- F
- Correct! C
- E
- B
- A

Question 25

5 / 5 pts

Given R(A,B,C,D,E) and E→AB, A→B, C→D.
Which of the following is a correct 3NF decomposition of R based on a minimal cover?

- EAB, AB, CD
- EA, BC, CD, ED
- Correct! EA, AB, CD, EC
- EAB, EC, CD

Given R=ABCDEFG
and F = {CF→B, B→C, FB→E, CBE→F, E→AG, FA→B,BG→FE, BA→CG}
The following is a candidate key:

- CFB
- EAD
- Correct! FBD
- FB
- FEA

Question 27

5 / 5 pts

Given R=ABCDEFG
and F = {CF→B, B→C, FB→E, CBE→F, E→AG, FA→B,BG→FE, BA→CG}

The following is redundant:

- E→G
- Correct! BE→F
- FB→E
- BA→G

Question 28

5 / 5 pts

Suppose that relations R and S have n tuples and m tuples respectively. What is the **maximum** number of tuples that the results of the following expression can have?

$\pi_L(R) - S$, for some list of attributes L

- 0
- Correct! n
- m
- max{n,m}
- n+m
- n*m
- min{n,m}
- n-m

Question 29

5 / 5 pts

Suppose that relations R and S have n tuples and m tuples respectively. What is the **minimum** number of tuples that the results of the following expression can have?

$\pi_L(R) - S$, for some list of attributes L

- n*m
- n
- m
- n-m

Correct!

- 0
- max{n,m}
- n+m
- min{n,m}

Question 30

5 / 5 pts

Given *R=(x,y,z), S=(u,v,w,t)* The following is a valid Relational Algebra expression:

- A. $\Pi_x(R \bowtie S)$
- B. $\Pi_{x,w}(R \cup S)$

Correct!

- C. $\Pi_x(R \times S)$
- D. $\sigma_{R.x=S.u}(R \bowtie S)$

Question 31

5 / 5 pts

Given the following database:

```
PC(maker,model,price)
Laptop(maker,model,price)
Printer(maker,model,ppm,price)
```

Which of the following relational algebra expressions returns the model and price of all products (of any type) made by HP?

- $\Pi_{model,price}(\sigma_{maker='HP'}(\Pi_{maker,model,price}(Printer) \bowtie PC)) \bowtie \Pi_{model,price}(Laptop)$
- $\Pi_{\text{maker,model,price}}(\sigma_{\text{maker='HP'}}(\text{PC} \cup \text{Laptop}) \cup \Pi_{\text{maker,model,price}}(\text{Printer}))$

Correct!

- $\Pi_{model,price}(\sigma_{\text{maker='HP'}}(\text{PC} \cup \Pi_{\text{maker,model,price}}(\text{Printer}) \cup \text{Laptop}))$
- $\Pi_{\text{model,price}}(\sigma_{\text{maker='HP'}}(\text{PC} \bowtie \text{Laptop} \bowtie \text{Printer}))$

Question 32

5 / 5 pts

Which of the following is not a correct schedule?

```
T1: R(A)W(A)              R(B)W(B)      R(B)W(C)
T2:         R(A) W(A+10)           R(B)
```

```
T1:      R(A) W(A)         R(B)      W(B)R(B)W(C)
T2: R(A)           W(A+10)      R(B)
```

Correct!

```
T1: R(A)W(A)          R(B)W(B)      R(B)W(C)
T2: R(A)     W(A+10)          R(B)
```

```
T1:                    R(A)W(A) R(B)W(B) R(B)W(C)
T2: R(A) W(A+10) R(B)
```

Question 33

5 / 5 pts

Given R(A, B, C, D, E) and D→BE, C→D, AB→C
Which attribute is not prime?

- A
- B
- D
- Correct! E
- C

Question 34

5 / 5 pts

Given R(A, B, C, D, E) and D→BE, C→D, AB→C
The closure of C is

- BDE
- ABCD
- C
- CB
- Correct! CBDE

Question 35

5 / 5 pts

Given R(A, B, C, D, E) and D→BE, C→D, AB→C
The following fd is not in F^+

- CDE → B
- ABE → CD
- Correct! DE → C
- ACE → BD
- BCD → E

Question 36

5 / 5 pts

Given R(A, B, C, D, E) and D→BE, C→D, AB→C
The following fd is a 3NF violation

- ABD → CE
- Correct! D → E
- AB → E
- AD → B
- C → B

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