0/12 Questions Answered

Vitamin 10

STUDENT NAME

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Q1 ER Syntax

6 Points

Check out page 1 of note 13 if you need help with this problem!

Q1.1 Entity

2 Points

In the ER model, what is an entity?

- [ ] A real-world object with some set of attributes
- [ ] A feature of a real world object
- [ ] Association among two or more real-world objects

What shape do we use to represent it?

- [ ] Oval
- [ ] Rectangle
- [ ] Diamond

Save Answer

Q1.2 Relationship

2 Points

In the ER model, what is a relationship?

- [ ] A real-world object with some set of attributes
- [ ] A feature of a real world object
- [ ] Association among two or more real-world objects

What shape do we use to represent it?

- [ ] Oval
- [ ] Rectangle
- [ ] Diamond

Save Answer

Q1.3 Attribute

2 Points

In the ER model, what is an attribute?

- [ ] A real-world object with some set of attributes
- [ ] A feature of a real world object
- [ ] Association among two or more real-world objects

What shape do we use to represent it?

- [ ] Oval
- [ ] Rectangle
- [ ] Diamond

Save Answer

Q2 True or False?

1 Point

Which of the following are true?

- [ ] Every candidate key is a super key
- [ ] Every super key is a candidate key
- [ ] Every relation has at least one candidate key

Save Answer

Q3

1 Point

In general, which of the following statements are true?

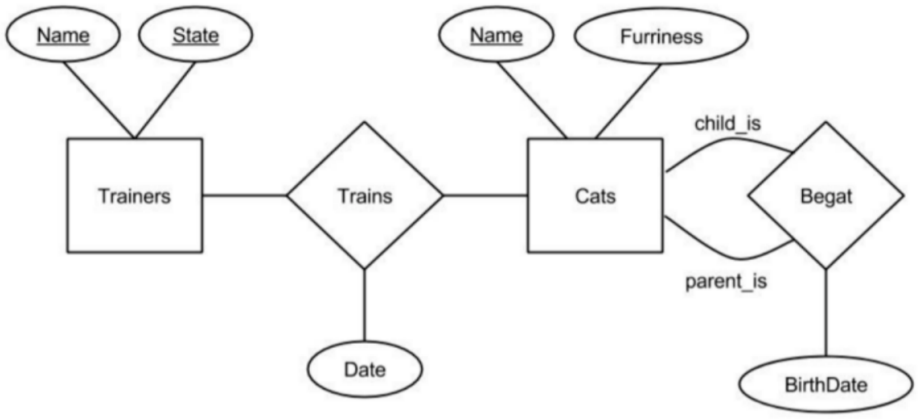
- [ ] A relationship involving a key constraint can be many-to-many.
- [ ] A 1-to-1 relationship must involve two key constraints.
- [ ] A 1-to-1 or 1-to-many relationship must involve at least one key constraint
- [ ] A many-to-1 or many-to-many relationship must involve at least one participation constraint.
- [ ] A many-to-many relationship must involve two participation constraints.
- [ ] A relationship involving a participation constraint can be 1-to-1.

Save Answer

Q4 The Cat ER

5 Points

Consider the following ER diagram, with keys underlined. Initially, there are no key constraints and no participation constraints.



Q4.1

2 Points

Q4.1.1

We want to model the relationship that every trainer must have trained at least one cat. What kind of constraint do we have to add between Trainers and Trains?

- ○ Key contraint with total participation
- ○ Key constraint with partial participation
- ○ No key constraint with total participation
- ○ No key constraint with partial participation

Q4.1.2

We want to model the relationship that every cat has exactly one trainer. What kind of constraint do we have to add between Cats and Trains?

- ○ Key contraint with total participation
- ○ Key constraint with partial participation
- ○ No key constraint with total participation
- ○ No key constraint with partial participation

Save Answer

Q4.2

3 Points

Q4.2.1

Every cat has exactly 2 parents. What type of constraint on "parent_is" best captures this relationship?

- ○ Key contraint with total participation
- ○ Key constraint with partial participation
- ○ No key constraint with total participation
- ○ No key constraint with partial participation

Q4.2.2

Every cat can beget 0 or more kittens. What type of constraint on "child is" best captures this relationship?

- ○ Key contraint with total participation
- ○ Key constraint with partial participation
- ○ No key constraint with total participation
- ○ No key constraint with partial participation

Q4.2.3

Every cat has exactly 2 parents. You decide to add an extra relationship "parent2_is" to capture this effect. What type of constraint should "parent_is" and "parent2_is" now be?

- ○ Key contraint with total participation
- ○ Key constraint with partial participation
- ○ No key constraint with total participation
- ○ No key constraint with partial participation

Save Answer

Q5 True/False

4 Points

Q5.1 FDs

2 Points

Which of the following are true?

- [ ] For every set of attributes A and B, A+ is a subset of AB+.
- [ ] There exists a set of attributes A such that A+ = A.
- [ ] For every set of functional dependencies F, F is a subset of F+. That is, closure is increasing.
- [ ] For every set of functional dependencies F and G, if F is a subset of G then F+ is a subset of G+. That is, closure is monotonic.

Save Answer

Q5.2 BCNF

2 Points

Which of the following are true?

- [ ] Two-attribute relations are not guaranteed to be in Boyce-Codd Normal Form.
- [ ] Decomposing a relation into Boyce-Codd Normal Form (using the algorithm from lecture) will always guarantee a lossless decomposition.
- [ ] The following decomposition is lossless: Relation R(A, B, C, D, E) is decomposed into R1(A, C, D) and R2(A, B, C, E) with the set of functional dependencies F = {BC → A, C → D}. Note: the decomposition might not follow the BCNF algorithm discussed in class.

Save Answer

Q6 Decomposing Congress and the Court

3 Points

Consider the **Congress** relation with the following attributes:

- Bill (B)
- Title (T)
- Sponsor (S)
- Party (P)
- District (D)
- Committee (C)
- Hearing_Date (H)
- Roll_Call (R)
- Amendment (A)

and associated functional dependencies:

- R → SP
- SP → DCH
- B → SCT
- DH → A
- TS → R
- SPR → B
- S → P

Q6.1

1 Point

Select, from the attributes sets listed below, the ones that are candidate keys for the **Congress** relation above.

- [ ] R
- [ ] S
- [ ] B
- [ ] TS

Save Answer

Q6.2

1 Point

Select the functional dependencies below (if any) that violate BCNF.

- [ ] R → SP
- [ ] SP → DCH
- [ ] B → SCT
- [ ] DH → A
- [ ] TS → R
- [ ] SPR → B
- [ ] S → P
- [ ] None of the above

Save Answer

Q6.3

1 Point

Consider the following relation and functional dependencies:

SupremeCourt

- Docket (D)
- Appellant (A)
- Respondent (R)
- Opinion_author (O)
- Party (P)
- Issue (I)
- Transcript (T)

1. PI → T

2. RP → I

3. O → ARP

4. D → O

5. OA → D

Decompose SupremeCourt into BCNF. What is the result?

- ○ RPITD, DOA, ARP
- ○ DAOP, PI, PITR
- ○ DAROP, RPI, PIT
- ○ DAROP, RTI, IT

Save Answer

Save All Answers

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