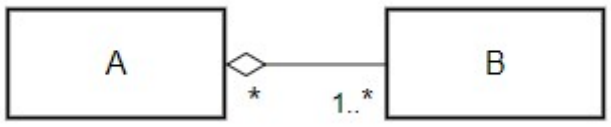
Início	Quinta, 7 de Maio de 2020 às 11:04
Estado	Prova submetida
Data de submissão:	Quinta, 7 de Maio de 2020 às 11:36
Tempo gasto	32 minutos 14 segundos
Nota	**5,3** de um máximo de 20,0 (**27**%)

Pergunta 1

Incorreta Pontuou -0,8 de 0,8

Select the correct answer(s) about the given diagram:



Selecione uma ou mais opções de resposta:

- [x] a. The same instance of B can only be part of one instance of A ✖
- [x] b. If an instance of A is deleted, the instances of B it contains are also deleted ✖
- [ ] c. B is part of A
- [ ] d. An instance of B can exist without the existence of any instance of A

As respostas corretas são: An instance of B can exist without the existence of any instance of A, B is part of A

Pergunta 2

Incorreta Pontuou -0,3 de 0,8

In an UML class diagram, atomic attributes are those which:

Selecione uma opção de resposta:

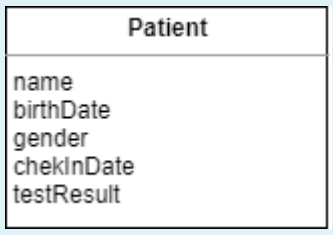
- a. I don't want to answer
- b. Can identify an object uniquely
- c. Have a domain containing only atomic values and the attribute contains only a single value from that domain
- d. Are part of a key ✖
- e. Can be determined from other attribute(s)

A resposta correta é: Have a domain containing only atomic values and the attribute contains only a single value from that domain

Pergunta 3

Incorreta Pontuou -0,3 de 0,8

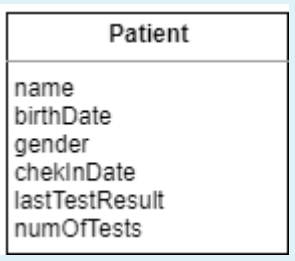
Consider the conceptual model of a hospital's database, where information on patients admitted with COVID-19 is stored. It is intended to change the model, represented below, to make it possible to store the evolution of the patients' situation regarding the infection (infected, recovered, reinfected). What is the best way to proceed?



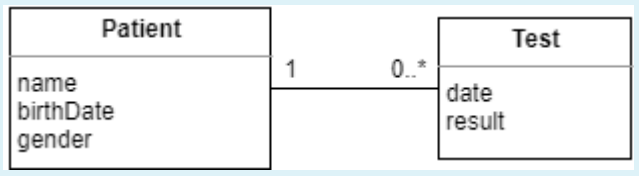
Selecione uma opção de resposta:

a. I don't want to answer

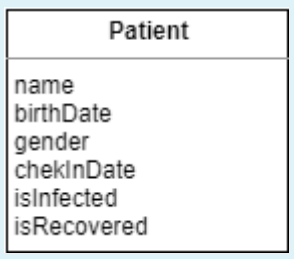
b.



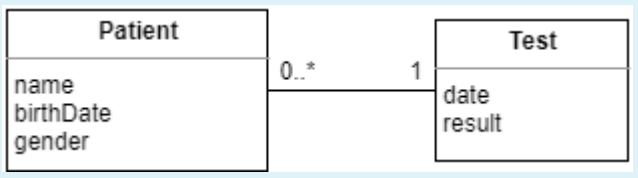
c.



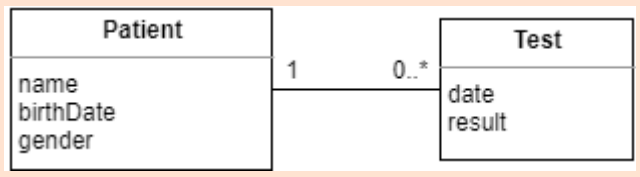
d.



e.



A resposta correta é:



Pergunta 4

Incorreta Pontuou -0,3 de 0,8

When should we use a generalization?

Selecione uma opção de resposta:

a. I don't want to answer

b. When subclass is a member of superclass

c. When both super and subclass have attributes in common ✖

d. When subclass is the whole and the superclass is the part

e. When subclass is the part and the superclass is the whole

A resposta correta é: When subclass is a member of superclass

Pergunta 5

Incorreta Pontuou 0,0 de 0,8

In UML class diagram, how does a derived attribute affect redundancy?

Selecione uma opção de resposta:

- a. Stored derived attributes are always redundant
- b. Stored derived attributes are not redundant
- c. Due to the high possibility of gaining additional knowledge from a derived attribute, they are always redundant
- d. I don't want to answer ✖
- e. Since you store the derived attribute and all data necessary to derive it, derived attributes cannot affect redundancy.

A resposta correta é: Stored derived attributes are always redundant

Pergunta 6

Parcialmente correta Pontuou 0,4 de 0,8

When we want to convert many-to-one associations to the relational model by adding an additional relation with a key from the many side, what advantages will it bring to the schema?

Selecione uma ou mais opções de resposta:

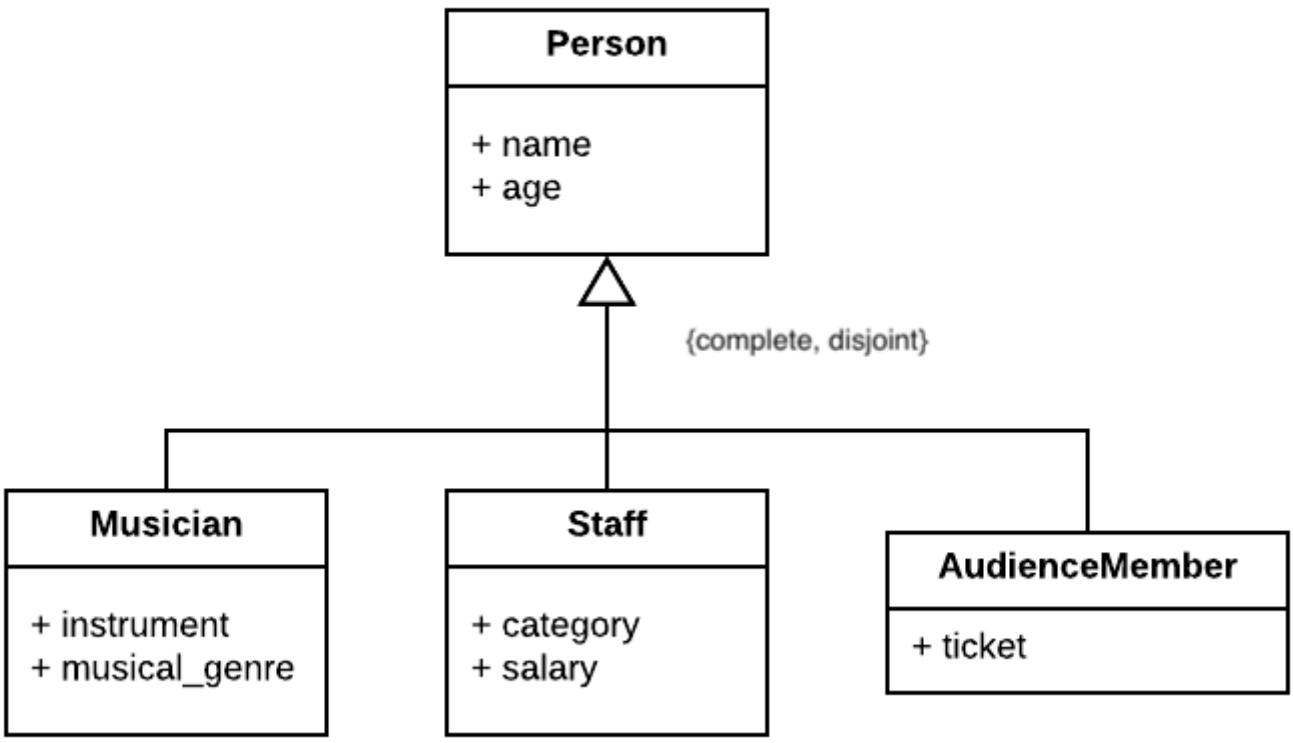
- [x] a. Increased extensibility ✔
- [ ] b. Increased performance due to a larger number of relations
- [ ] c. Increased performance due to a smaller number of relations
- [ ] d. Increased rigour of the schema

As respostas corretas são: Increased rigour of the schema, Increased extensibility

Pergunta 7

Correta Pontuou 0,8 de 0,8

Consider the following UML diagram and its conversion to the relational model. Which are the two most adequate conversions?



Selecione uma ou mais opções de resposta:

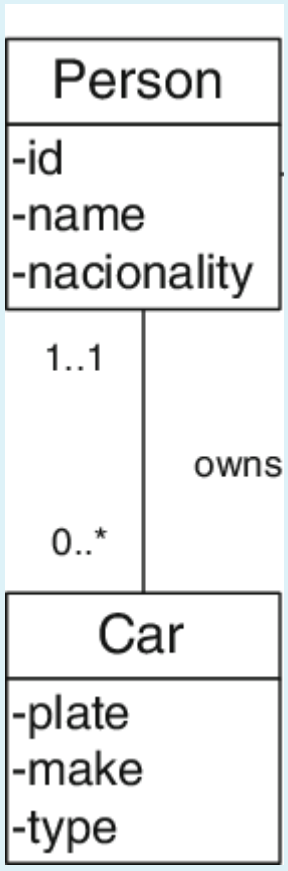
- [x] a. Musician(id, name, age, instrument, musical_genre)
  Staff(id, name, age, category, salary)
  AudienceMember(id, name, age, ticket) ✔
- [x] b. Person(id, name, age)
  Musician(id→Person, name, instrument, musical_genre)
  Staff(id→Person, name, category, salary)
  AudienceMember(id→Person, name, ticket) ✔
- [ ] c. Musician(name, instrument, musical_genre)
  Staff(name, category, salary
  AudienceMember(name, ticket)
- [ ] d. Person(id, name, age, instrument, musical_genre, category, salary, ticket)

As respostas corretas são: Person(id, name, age)
Musician(id→Person, name, instrument, musical_genre)
Staff(id→Person, name, category, salary)
AudienceMember(id→Person, name, ticket), Musician(id, name, age, instrument, musical_genre)
Staff(id, name, age, category, salary)
AudienceMember(id, name, age, ticket)

Pergunta 8

Parcialmente correta Pontuou 0,4 de 0,8

Consider the following conceptual model. Mapping it to the relational model



Selecione uma ou mais opções de resposta:

- [ ] a. Can result in 2 relations with a foreign key in Person
- [ ] b. Can result in 3 relations, two of them without foreign keys
- [ ] c. Can result in 3 relations, one of them with a compound primary key
- [x] d. Can result in 2 relations with a foreign key in Car ✔

As respostas corretas são: Can result in 2 relations with a foreign key in Car, Can result in 3 relations, two of them without foreign keys

Pergunta 9

Parcialmente correta Pontuou 0,4 de 0,8

There are three main methods that convert an UML into a Relation regarding Generalizations. Which one(s) is/are commonly used for overlapping generalizations?

Selecione uma ou mais opções de resposta:

- [x] a. E/R style ✔
- [ ] b. Use of NULLs
- [ ] c. Object-oriented

As respostas corretas são: E/R style, Use of NULLs

Pergunta 10

Parcialmente correta Pontuou 0,4 de 0,8

Mapping a ternary association and its associated classes

Selecione uma ou mais opções de resposta:

- [ ] a. Can be converted to 3 relations
- [ ] b. Is affected by the multiplicity
- [ ] c. Is affected by the number of associated classes
- [x] d. Always results in 4 relations ✔

As respostas corretas são: Always results in 4 relations, Is affected by the multiplicity

Pergunta 11

Incorreta Pontuou -0,3 de 0,8

A table in Boyce Codd Normal Form:

Selecione uma ou mais opções de resposta:

- [ ] a. Can have redundancy in some cases.
- [ ] b. Cannot be subject of deletion anomalies.
- [ ] c. May be subject of update anomalies.
- [x] d. Cannot assure dependency preservation. ✔

As respostas corretas são: Cannot assure dependency preservation., Cannot be subject of deletion anomalies.

Pergunta 12

Correta Pontuou 0,8 de 0,8

Consider the relation R (A, B, C, D, E, F, G, H, I) with the following functional dependencies:

A -> D;

B -> I;

B, D -> H;

A, E -> C;

F, G -> E.

Which attributes belong to the closure of {A, F, G}?

Selecione uma ou mais opções de resposta:

- [x] a. A ✔
- [ ] b. B
- [x] c. C ✔
- [x] d. D ✔
- [x] e. E ✔
- [x] f. F ✔
- [x] g. G ✔
- [ ] h. H
- [ ] i. I

As respostas corretas são: A, C, D, E, F, G

Pergunta 13

Incorreta Pontuou -0,3 de 0,8

Regarding decompositions, identify the correct statements.

Selecione uma ou mais opções de resposta:

- [ ] a. If R1⋈R2=R, R1 and R2 make a decomposition of R
- [ ] b. If R1 and R2 are a decomposition of R, the functional dependencies of R are always preserved in R1 or R2
- [x] c. If R1 and R2 are a decomposition of R, the functional dependencies of R are preserved in R1 and R2 ✖
- [ ] d. If we decompose to BCNF, the final schema will also be in 3NF

As respostas corretas são: If R1⋈R2=R, R1 and R2 make a decomposition of R, If we decompose to BCNF, the final schema will also be in 3NF

Pergunta 14

Incorreta Pontuou -0,3 de 0,8

Consider the relation R (A, B, C, D, E, F, G, H, I) with the following functional dependencies:

A -> D;

B -> I;

B, D -> H;

A, E -> C;

F, G -> E.

What are the functional dependencies of the relation S (A, B, H), a projection of R in 3 attributes?

Selecione uma opção de resposta:

- a. A->D; B->I; A, B -> D, H, I; A, H->D; B, H->I
- b. A->D; B->I; B, D-> H; A, E->C ✖
- c. S has the same functional dependencies as R
- d. A, B -> H
- e. I don't want to answer.

A resposta correta é: A, B -> H

Pergunta 15

Incorreta Pontuou -0,3 de 0,8

What is a minimal superkey?

Selecione uma ou mais opções de resposta:

- a. Primary key ✖
- b. Candidate key
- c. Secondary key
- d. Foreign key

A resposta correta é: Candidate key

Pergunta 16

Incorreta Pontuou -0,3 de 0,8

Consider you select a single numeric attribute as the primary key of a table. What is the most suitable data type for the primary key column in SQLITE?

Selecione uma opção de resposta:

- a. I don't want to answer.
- b. REAL if a big range of values is needed and INTEGER otherwise.
- c. INTEGER OR REAL depending on the characteristics of the value.
- d. INTEGER if autoincrement is needed and REAL otherwise.
- e. INTEGER because SQLite will automatically create an implicit column called rowid. ✖

A resposta correta é: INTEGER OR REAL depending on the characteristics of the value.

Pergunta 17

Correta Pontuou 0,8 de 0,8

We wish to add a foreign key to the table T that references table A (the primary key of A is an int called AID).

We also wish to update the foreign key when the primary key of A is updated.

Selecione uma opção de resposta:

- a. MODIFY TABLE T ADD AID int REFERENCES A(AID) ON UPDATE PROPAGATE;
- b. ALTER TABLE T ADD AID int REFERENCES A(AID) ON UPDATE CASCADE; ✔
- c. I don't want to answer
- d. ALTER TABLE T ADD AID int REFERENCES A(AID) ON UPDATE PROPAGATE;
- e. MODIFY TABLE T ADD AID int REFERENCES A(AID) ON UPDATE CASCADE;

A resposta correta é: ALTER TABLE T ADD AID int REFERENCES A(AID) ON UPDATE CASCADE;

Pergunta 18

Correta Pontuou 0,8 de 0,8

Analyse the following SQL script:

pragma foreign_keys=ON;

drop table if exists Product;

drop table if exists Package;

create table Product (id integer, price real);

create table Package (id integer, idProd integer, amount integer);

Assume you are asked to modify the script so that the attribute "idProd" is a foreign key that corresponds to the "id" attribute in the Product relation. Additionally, the "idProd" attribute should never have a NULL value and when its value is updated we want the "cascade" behaviour to be used. A database engineer was given this task and came up with the answers shown below (assume the rest of the script remains identical to the one shown above). Which of the answers is correct?

Selecione uma opção de resposta:

- a. CREATE TABLE Package (id INTEGER PRIMARY KEY, idProd INTEGER REFERENCES Product NOT NULL ON UPDATE CASCADE, amount INTEGER);
- b. CREATE TABLE Package (id INTEGER, idProd INTEGER REFERENCES Product NOT NULL ON UPDATE CASCADE, amount INTEGER);
- c. I don't want to answer
- d. CREATE TABLE Package (id INTEGER, idProd INTEGER REFERENCES Product ON UPDATE CASCADE NOT NULL, amount INTEGER);
- e. CREATE TABLE Package (id integer PRIMARY KEY, idProd INTEGER REFERENCES Product(id) on UPDATE CASCADE NOT NULL, amount INTEGER); ✔

A resposta correta é: CREATE TABLE Package (id integer PRIMARY KEY, idProd INTEGER REFERENCES Product(id) on UPDATE CASCADE NOT NULL, amount INTEGER);

Pergunta 19

Correta Pontuou 0,8 de 0,8

Which statement is wrong about the PRIMARY KEY constraint in SQL?

Selecione uma opção de resposta:

- a. I don't want to answer
- b. A PRIMARY KEY uniquely identifies each record in a table
- c. Primary key can be made of multiple attributes
- d. Primary keys must contain UNIQUE values
- e. Primary key can be made of any single attributes ✔

A resposta correta é: Primary key can be made of any single attributes

Pergunta 20

Incorreta Pontuou -0,3 de 0,8

A video streaming service has its database related to films and actors. A film consists of one or more actors. Each film has an identification number, a title and a duration. Each actor has a name and a nationality. Each actor is present at least in one film inserted in the database. The role of the actor in the film is classified by a name and a description. Both film and an actor may have received one or more awards. An award is determined by its name and description.

Considering the following sentences:

I - Film, actor and award are classes

II - The multiplicity between film and actor is many to many

III - Role is a attribute

Which ones are correct given the video streaming problem?

Selecione uma opção de resposta:

- a. Only I ✖
- b. I don't want to answer.
- c. I, II and III
- d. I and II
- e. II and III

A resposta correta é: I and II

Pergunta 21

Incorreta Pontuou -0,3 de 0,8

Consider the following relations:

Car

carmodel	**price**
320	15000
340	17500
420	25000

Color

color
White
Black
Blue

Interior

interiortype
Leather
Nylon
Polyester

In this system, Cars can be sold with all available interior colors, interior materials and outside paint.

Which of the following queries represents all possible combinations of cars, with varying interior types, interior colors and outside paint, but the colors of the interior and the car are different?

Selecione uma opção de resposta:

- a. $\sigma_{\text{Interior.color <> Car.color}}$ (Car × Color × Interior × Color)
- b. $\sigma_{\text{Interior.color <> Car.color}}$ (Car × Color × Interior × ($\rho_{\text{interiorColor(color)}}$ Color)) ✖
- c. I do not wish to answer
- d. Car × Color × Interior × ($\rho_{\text{interiorColor(color)}}$ Color))
- e. $\sigma_{\text{interiorcolor <> color}}$ (Car × Color × Interior × ($\rho_{\text{interiorColor(color)}}$ Color))

A resposta correta é: $\sigma_{\text{interiorcolor <> color}}$ (Car × Color × Interior × ($\rho_{\text{interiorColor(color)}}$ Color))

Pergunta 22

Correta Pontuou 0,8 de 0,8

What's the equivalent of the following SQL query in Relational Algebra:

SELECT a,b FROM T1 NATURAL JOIN (SELECT * FROM T2 WHERE c='John');

Selecione uma opção de resposta:

a.
$\sigma_{a,b}\ (T1 \bowtie \pi_{c='John'}\ (T2))$

b.
$\pi_{a,b}\ (T1 \bowtie \sigma_{c='John'}\ (T2))$
✔

c.
$\pi_{c='John'}\ (T1 \bowtie \sigma_{a,b}\ (T2))$

d.
$\sigma_{a,b,c}\ (T1 \bowtie T2)$

e. I do not wish to answer

A resposta correta é:
$\pi_{a,b}\ (T1 \bowtie \sigma_{c='John'}\ (T2))$

Pergunta 23

Correta Pontuou 0,8 de 0,8

If two relations R and S are joined, then the non-matching tuples of both R and S are ignored in which type of join?

(select correct option)

Selecione uma opção de resposta:

a. Inner Join ✔

b. I do not wish to answer

c. Full Outer Join

d. Right Inner Join

e. Left Outer Join

A resposta correta é: Inner Join

Pergunta 24

Correta Pontuou 0,8 de 0,8

Given R(A, B, C, D), S(A, C, E), what is the schema of R ⋈ S ?

Selecione uma opção de resposta:

a. I do not wish to answer

b. ABCD

c. ACE

d. ACBDE ✔

e. BDE

A resposta correta é: ACBDE

Pergunta 25

Correta Pontuou 0,8 de 0,8

Apply

sID	cName	major	dec
12	Stanford	CS	Y
23	MIT	CS	N
12	MIT	CS	N

sID	dec
12	Y
23	N
12	N

Selecione uma opção de resposta:

a.
$\pi_{(sID,dec)}\ (\sigma_{(sID = '12')}\ Apply)$

b. I do not wish to answer

c.
$\sigma_{(sID = '12'\ v\ sID = '23')}\ Apply$

d.
$\pi(sID,dec)\ Apply$

✔

e.
$\sigma_{(dec = 'Y'\ v\ dec = 'N')}\ Apply$

A resposta correta é:
$\pi(sID,dec)\ Apply$

◄ P - RES - LMD SQL Ir para... PerguntasEM ►