X

swayam **(https://swayam.gov.in)**   **(https://swayam.gov.in/nc_details/NPTEL)**

yashraj.devrat.aids.2020@vpkbiet.org ⌄

NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » **Data Base Management System (course)**

≡

Course outline

How does an NPTEL online course work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 4 ()

○ Lecture 16 : Relational Database Design (unit? unit=45&lesson=46)

● Lecture 17 : Relational Database Design (Contd.) (unit? unit=45&lesson=47)

○ Lecture 18 : Relational Database Design

Week 4 : Assignment 4

The due date for submitting this assignment has passed.

Due on 2022-09-21, 23:59 IST.

Assignment submitted on 2022-09-19, 15:46 IST

1)   *2 points*

Consider a relational schema OnlineClass(classID, classLink, Subject, Mentor, Duration). Which of the following set of functional dependencies should be chosen so that OnlineClass can be in 2NF but not in 3NF?

a) classID → {classLink,Subject}
   classLink → Duration
   Mentor → Subject

b) {classID,classLink} → {Subject,Mentor,Duration}
   {Mentor,Subject} → {classLink,Duration,classID}

c) {classID,Mentor} → {classLink,Subject}
   classLink → Duration

d) {classID,classLink} → {Subject,Mentor,Duration}
   Mentor → classLink

○ a)

○ b)

○ c)

○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)

2)   *2 points*

The following dependencies hold in a relation Placement (JobID ,Company, Position, Salary):
JobID → Company
{Position, Company} → Salary
According to which of the following rules, {JobID, Position} → Salary holds?

a) Decomposition

b) Augmentation

c) Pseudo-transitivity

d) Transitivity

○ a)

○ b)

◉ c)

○ d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
c)

3)   *2 points*

Consider the following instance of Market relation:

Market		
MarketName	Product	Stock
SpendWise	Shampoo	12
SpendWise	Spicemix	6
SpendWise	Cookies	6
ShopLuck	Shampoo	20
MarkIt	Cakemix	60
MarkIt	Chocolate	12

Which of the following functional dependencies hold on Market?

a) MarketName → {Product, Stock}

b) {Stock, MarketName} → Product

c) {Product} → MarketName

d) {MarketName, Product} → Stock

○ a)

○ b)

○ c)

◉ d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
d)

4)   *2 points*

Consider the following relation:
Measurement (sensor, device, dataform, uprange, lowrange, delay, status)
with the following functional dependency set (F):
FD1: {sensor, device, status} → {dataform, uprange, lowrange}
FD2: sensor → {delay, status}
FD3: {status, delay, dataform} → {sensor, device}

Measurement has 3 candidate keys. Keys K1, K2, and K3 have 2, 2, and 3 attributes re-
spectively. The database admin issues the following order:
*X needs to be appended to the R.H.S of FDi so that only K3 and (K1 ∩ K2) become the can-
didate keys of Measurement.* Find X and i.

a) X=device, i=1

b) X=delay, i=1

c) X=dataform, i=2

d) X=status, i=2

○ a)
◉ b)
○ c)
○ d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c)

5)   *2 points*

Consider the following relation:
Measurement(sensor, device, dataform, uprange, lowrange, delay, status)
with the following functional dependency set (F):
{sensor, device, status} → {dataform, uprange, lowrange}
sensor → {delay, status}
{status, delay, dataform} → {sensor, device}
Which of the following functional dependencies will not be present in the Canonical Cover of
F after the application of Union Rule on the final functional dependencies?

a) {sensor, device, status} → {dataform, uprange, lowrange}

b) sensor → {delay,status}

c) {status, delay, dataform} → {sensor, device}

d) {sensor, device} → {dataform, uprange, lowrange}

○ a)
○ b)
○ c)
◉ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
a)

6)   **2 points**

In a relation Weather(Country, City, DayNo, TimeHr, ProbRain, ProbWind, ProbTemp) {Country, City, DayNo} uniquely identifies the {ProbRain, ProbWind, ProbTemp}. TimeHr is identified by DayNo. Country is determined by {ProbRain, ProbTemp}. What are the non-prime attributes of Weather?

a) Both City & DayNo

b) Both Country & ProbTemp

c) Both ProbWind & TimeHr

d) Both ProbRain & ProbWind

○ a)
○ b)
○ c)
◉ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)

7)   **2 points**

In a relation Weather(Country, City, DayNo, TimeHr, ProbRain, ProbWind, ProbTemp) {Country, City, DayNo} uniquely identifies the {ProbRain, ProbWind, ProbTemp}. TimeHr is identified by DayNo. Country is determined by {ProbRain, ProbTemp}. If Weather has to be normalized to 2NF, which of the attributes will be present in both the decompositions of Weather?

a) Country

b) TimeHr

c) ProbRain

d) DayNo

○ a)
○ b)
○ c)
◉ d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
d)

8)   **2 points**

Consider the following relation VehService(Vehicle, Color, Capacity, Wheels, Owner) with the following functional dependency sets:
S1={
FD1: {Vehicle, Color} → Capacity
FD2: Wheels → {Vehicle, Capacity, Owner}
}
S2={
FD1: Vehicle → {Color, Capacity}
FD2: Wheels → {Vehicle, Owner}
}
Which of the following statements is true?

a) Neither S1 covers S2 nor S2 covers S1

b) S2 covers S1 but S1 does not cover S2

c) S1 covers S2 but S2 does not cover S1

d) Both S1 covers S2 and S2 covers S1

- ○ a)
- ◉ b)
- ○ c)
- ○ d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
b)

9)   **2 points**

Consider the relation PollutionControl (PolType, Cause, Severity, Effect, Measure, TargetZone) with the following functional dependencies:
FD1: PolType → Cause
FD2: Severity → Effect
FD3: {PolType, Measure} → TargetZone
FD4: {Cause, Effect} → {Measure, Severity}
Which of the following options is true?

a) PollutionControl has 1 candidate key and is in 1NF.

b) PollutionControl has 2 candidate keys and is in 1NF.

c) PollutionControl has 1 candidate key and is in 2NF.

d) PollutionControl has 2 candidate keys and is in 2NF.

- ○ a)
- ○ b)
- ○ c)
- ◉ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

10)   **2 points**

PollutionControl (PolType, Cause, Severity, Effect, Measure, TargetZone) with the
following functional dependencies:
FD1:   PolType → Cause
FD2:   Severity → Effect
FD3:   {PolType, Measure} → TargetZone
FD4:   {Cause, Effect} → {Measure, Severity}
The relation is decomposed into the following:
PollutionControl1 (PolType, Cause, Severity, Effect)
PollutionControl2 (PolType, Severity, Measure, TargetZone)
Which of the following is true about the decomposition?

a) Both lossless and dependency preserving.

b) Neither lossless nor dependency preserving.

c) Lossless but not dependency preserving.

d) Lossy but dependency preserving.

    ◉ a)
    ○ b)
    ○ c)
    ○ d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
c)