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yashraj.devrat.aids.2020@vpkbiet.org

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

Week 3 : Assignment 3

The due date for submitting this assignment has passed.

Due on 2022-09-14, 23:59 IST.

Assignment submitted on 2022-09-14, 22:48 IST

1) ***2 points***

Consider the following instance of the relation Gardens(Name, Location, OpensAt, ClosesAt, KnownFor)

Gardens				
Name	Location	OpensAt	ClosesAt	KnownFor
Bageecha	Delhi	10am	6pm	Orchids
FloralParadise	Delhi	10am	7.30pm	Sunflower
TreeLand	Mumbai	1pm	10pm	Anthuriums
TreeLand	Mumbai	1pm	10pm	Hyacinths
FloralParadise	Pune	8am	11pm	Celosia

Suppose, R1 and R2 are defined as follows:
$R1=\Pi_{X,Y}(\sigma_{OpensAt='10am'}(Gardens))$
$R2=\Pi_{M,N}(\sigma_{Location='Pune'}(Gardens))$
What attributes should replace X, Y, M, N such that R1 ⋈ R2 produces the tuple

FloralParadise	Delhi	Celosia

as output?

a) X=Name, Y=Location, M=Location, N=KnownFor

b) X=Name, Y=Location, M=Name, N=KnownFor

c) X=Name, Y=KnownFor, M=Location, N=KnownFor

d) X=Name, Y=KnownFor, M=Name, N=Location

- a)
- b)
- c)

d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

2) ***2 points***

Consider the following instance of the relation Gardens(Name, Location, OpensAt, ClosesAt, KnownFor)

Gardens				
Name	Location	OpensAt	ClosesAt	KnownFor
Bageecha	Delhi	10am	6pm	Orchids
FloralParadise	Delhi	10am	7.30pm	Sunflower
TreeLand	Mumbai	1pm	10pm	Anthuriums
TreeLand	Mumbai	1pm	10pm	Hyacinths
FloralParadise	Pune	8am	11pm	Celosia

Suppose, R1 and R2 are defined as follows.

$R1=\Pi_{Name,Location}(Gardens)$
$R2=((\Pi_{Location}(\sigma_{ClosesAt='7.30pm'}(Gardens)))\cup(\Pi_{Location}(\sigma_{OpensAt='8am'}(Gardens))))$

Which of the following Names will be produced by R1 ÷ R2?

a) TreeLand

b) TreeLand, Bageecha

c) Bageecha, FloralParadise

d) FloralParadise

a)
b)
c)
d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
d)

3) ***2 points***

A C program, with embedded SQL allows the users to enter their ticket number which is stored in the variables `tno`. With the help of an embedded SQL query, the program then displays the corresponding travel date and destination from a database with the following schema: `TravelReg(TicketNo, Destination, TravelDate, ReservationName)`. Select the correct Embedded SQL query that should be present in this C program.

a)
```
EXEC SQL
declare c cursor for
SELECT *
FROM TravelReg
WHERE tno=TicketNo
END_EXEC
```

b)
```
EXEC SQL
declare c cursor for
SELECT TravelDate, Destination
FROM TravelReg
WHERE tno=:TicketNo
END_EXEC
```

c)
```
EXEC SQL
declare c cursor for
SELECT *
FROM TravelReg
WHERE TicketNo=tno
END_EXEC
```

d)
```
EXEC SQL
declare c cursor for
SELECT TravelDate, Destination
FROM TravelReg
WHERE TicketNo=:tno
END_EXEC
```

- a)
- b)
- c)
- d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
d)

4) ***2 points***

Consider the following instance of the relation Gardens(Name, Location, OpensAt, ClosesAt, KnownFor)

Gardens				
Name	Location	OpensAt	ClosesAt	KnownFor
Bageecha	Delhi	10am	6pm	Orchids
FloralParadise	Delhi	10am	7.30pm	Sunflower
TreeLand	Mumbai	1pm	10pm	Anthuriums
TreeLand	Mumbai	1pm	10pm	Hyacinths
FloralParadise	Pune	8am	11pm	Celosia

What is the result of the following Tuple Relational Calculus expression?
$\{t \mid \exists p \in \text{Gardens}\ (t[\text{KnownFor}]=p[\text{KnownFor}] \wedge p[\text{Location}]=\text{'Mumbai'})\}$

a)

TreeLand

b)

Mumbai	Anthuriums
Mumbai	Hyacinths

c)

TreeLand	Mumbai	1pm	10pm	Anthuriums
TreeLand	Mumbai	1pm	10pm	Hyacinths

d)

Anthuriums
Hyacinths

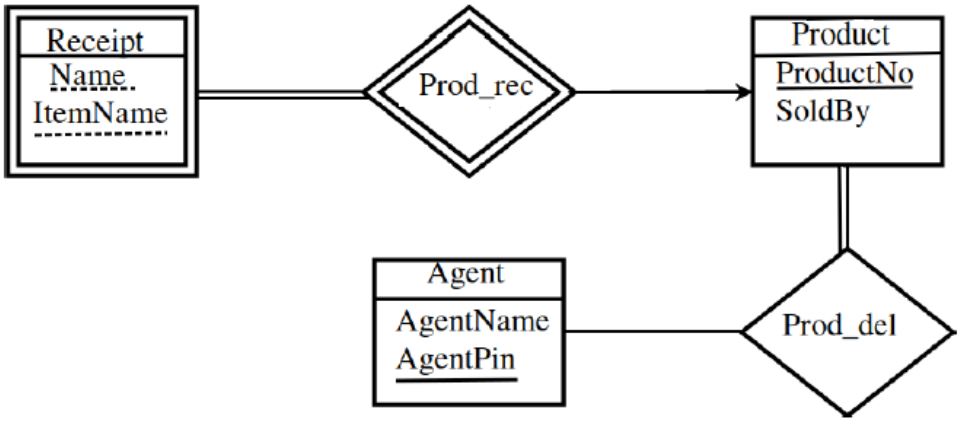
- a)
- b)
- c)
- d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
d)

5) ***2 points***

Consider the following Entity Relationship Diagram:



Which of the following options is (are) true?

a) Participation of `Product` is total is `Prod_del`.

b) The primary key in the relational schema for `Receipt` is {`Name, ItemName, ProductNo`}.

c) The primary key in the relational schema for `Receipt` will be {`Name, ItemName, AgentPin`}.

d) Participation of `Product` is total in `Prod_rec`.

- [x] a)
- [x] b)
- [ ] c)
- [ ] d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
a)
b)

6) ***2 points***

Consider the relation `Planets(pname, rank, satellites, diameter)`
What is the Domain Relational Calculus expression equivalent to the statement
"Select the names of those Planets which have a diameter of more than 50,000 kms"?

a) {p|∃<r,s,d> (p,r,s,d ∈ Planets ∧ p>50000)}

b) {<p>|∃r,s,d (<p,r,s,d> ∈ Planets ∧ d>50000)}

c) {<p>|∃<r,s,d (p,r,s,d> ∈ [Planets] ∧ d>50000)}

d) {p|∃[p, 50000] (<p,50000> ∈ Planets ∧ p>50000)}

- [ ] a)
- [x] b)
- [ ] c)

d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
b)

7) ***2 points***

Consider the following scenario:
A Natural resource management company keeps a record of different forests, identified by their names. A forest is associated with its location that contains the Country and area in which the forest is present. In each forest, there are different types of trees that are also recorded by the company.
Which of the following schema correctly represents the `Forest` entity set?

a) Forest (Name, Location, Trees)

b) Forest (Name, Country, Area), Forest_trees (Name, Trees)

c) Forest (Name, Trees), Forest_Location (Name, Location, Country, Area)

d) Forest (Name, Country, Area), Forest_trees (Name, Trees)

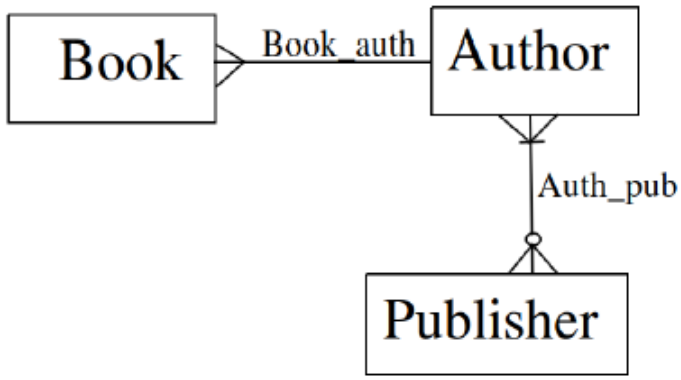
a)
b)
c)
d)

No, the answer is incorrect.
Score: 0

Accepted Answers:
b)

8) ***2 points***

Consider the following Entity Relationship Diagram:



Which of the following is (are) true?

a) Participation of `Author` in `Auth_pub` is total.

b) Participation of `Publisher` in `Auth_pub` is total.

c) A `Book` can be written by multiple `Authors`.

d) An `Author` can be associated with at most one `Book`.

- a)
- b)
- c)
- d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
b)

9) ***2 points***

Consider the instance of the relational schema Gallery(PaintingID, Artist, Theme) and Price(PaintingID, Cost):

Gallery		
PaintingID	Artist	Theme
A12	J.Ray	Landscape
A187	J.Ray	Portrait
B3	KatieP	Abstract
H23	L.Houston	Landscape

Price	
PaintingID	Cost
A12	124000
A187	239876
B3	1000000
H23	50000

How many tuples will be generated by the following Tuple Relational Calculus expression?
$\{t|\exists p \in \texttt{Gallery}\ \exists q \in \texttt{Price}(t[\texttt{PaintingID}] = p[\texttt{PaintingID}] \wedge t[\texttt{Artist}] = p[\texttt{Artist}] \wedge t[\texttt{Theme}] = p[\texttt{Theme}] \wedge t[\texttt{Cost}] = q[\texttt{Cost}] \wedge p[\texttt{PaintingID}] = q[\texttt{PaintingID}])\}$

a) 3

b) 4

c) 8

d) 10

- [ ] a)
- [x] b)
- [ ] c)
- [ ] d)

Yes, the answer is correct.
Score: 2

Accepted Answers:
b)

10) ***2 points***

Consider the instance of the relational schema Gallery(PaintingID, Artist, Theme):

Gallery		
PaintingID	Artist	Theme
A12	J.Ray	Landscape
A187	J.Ray	Portrait
B3	KatieP	Abstract
H23	L.Houston	Landscape

Which of the following Relational Algebra expressions produce(s) exactly the same tuples as present in this instance of Gallery?

a) $\Pi_{\texttt{PaintingID},\texttt{Artist}}(\texttt{Gallery}) \bowtie \Pi_{\texttt{PaintingID},\texttt{Theme}}(\texttt{Gallery})$

b) $\Pi_{\texttt{PaintingID},\texttt{Artist}}(\texttt{Gallery}) \bowtie \Pi_{\texttt{Artist},\texttt{Theme}}(\texttt{Gallery})$

c) $\Pi_{\texttt{PaintingID},\texttt{Theme}}(\texttt{Gallery}) \bowtie \Pi_{\texttt{PaintingID},\texttt{Theme}}(\texttt{Gallery})$

d) $\Pi_{\texttt{PaintingID},\texttt{Theme},\texttt{Artist}}(\texttt{Gallery}) \bowtie \Pi_{\texttt{Theme}}(\texttt{Gallery})$

- [x] a)
- [ ] b)
- [ ] c)

d)

Partially Correct.
Score: 1

Accepted Answers:
a)
d)