Dashboard / My courses / CS204 / General / Mid Semester Online Part 2 (8 March 2022).

Started on Tuesday, 8 March 2022, 10:45 AM

State Finished

Completed on Tuesday, 8 March 2022, 11:25 AM

Time taken 40 mins 1 sec

Marks 31.00/50.00

Grade 6.20 out of 10.00 (62%)

Question 1

Complete

Mark 3.00 out of 3.00

The relation **studInfo**(<u>studId</u>, name, sex) keeps the information about the students. The relation **enroll**(<u>studId</u>, <u>courseId</u>) gives which student has enrolled for (or taken) what course(s). Assume that every course is taken by at least one male and at least one female student. What does the following relational algebra expression represent?

 $\textstyle \prod_{courseId} ((\prod_{studId} (\sigma_{sex="female"}(studInfo)) \times \prod_{courseId} (enroll)) - enroll)$

- Courses in which all the female students are enrolled.
- None of the mentioned
- Ocurses in which only male students are enrolled.
- Courses in which a proper subset of female students are enrolled.

Question 2
Complete
Mark 0.00 out of 4.00

Consider the following relations,

manage

name manage

- 'A' 'E'
- 'B' 'C'
- 'C' 'G'
- 'D' 'E'
- 'F' 'E'
- 'E' 'G'

Emp

name street city

- 'A' 'x' 1
- 'B' 'y' 2
- 'C' 'z' 3
- 'D' 'x' 1
- 'E' 'x' 4
- 'F' 'y' 2
- 'G' 'z' 3

 $\pi_{emp1.name} \ (\sigma_{manage.manage=emp2.name \ \land \ emp1.street \ = \ emp2.street} \ (\ (\sigma_{emp1.name \ = \ manage.name} \ (\rho_{emp1} \ (emp) \times manage)) \times \rho_{emp2} \ (emp)))$ Output of the above query will include the following names,

- O C only
- O A, B, D, G only
- B, F, C only
- O A, C, D only
- A, B, D, E, F only

Question **3**Complete
Mark 0.00 out of 4.00

Consider the following relations

employee

empld empName empAge

1	'AB'	25
2	'CD'	23
3	'EF'	31
4	'QW'	27
5	'BD'	30
6	'AD'	32
7	'EQ'	26

dependent

depld eld depName depAge

1	1	'ab'	29
2	1	'bd'	12
3	2	'eq'	15
4	3	'qr'	33
5	3	'tr'	30
6	4	'rt'	13
7	6	'we'	36
8	7	'ut'	35

 $\pi_{empld} (\sigma_{empld=eld} (employee \times \rho_A (\pi_{depld, eld, depName, depAge} (dependent) - \pi_{d1.depld, d1.eld, d1.depName, d1.depAge} (\sigma_{d1.depAge} \times \rho_{d2.depAge} (\rho_{d1} (employee \times \rho_{d2} (employee \times$

The above query will give the following employee ids.

- 0 1, 2
- 3
- 0 1
- O 2
- 0 2, 4

Question 4
Complete
Mark 3.00 out of 3.00

Let R and S be two relations with the following schema R ($\underline{P},\underline{Q},R1,R2,R3$) S ($\underline{P},\underline{Q},S1,S2$) Where $\{P,Q\}$ is the key for both schemas. Which of the following queries are equivalent? I. $\prod_p (R \bowtie S)$ II. $\prod_p (R) \bowtie \prod_p (S)$ III. $\prod_p (\prod_{p,Q} (R) \cap \prod_{p,Q} (S))$ IV. $\prod_p (\prod_{p,Q} (R) - (\prod_{p,Q} (R) - \prod_{p,Q} (S))$

- I, III and IV only
- III and IV only
- II, III and IV only
- I and III only
- I, II and III only

Question **5**Complete
Mark 4.00 out of 4.00

Consider the following relations

employee

empld empName empAge

	-	
1	'AB'	25
2	'CD'	23
3	'EF'	31
4	'QW'	27
5	'BD'	30
6	'AD'	32
7	'EQ'	26

dependent

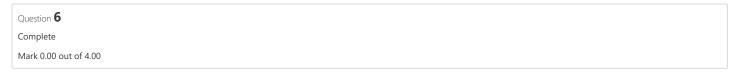
depld eld depName depAge

		-	
1	1	'ab'	29
2	1	'bd'	12
3	2	'eq'	15
4	3	'qr'	33
5	3	'tr'	30
6	4	'rt'	13
7	6	'we'	36
8	7	'ut'	35

 $\pi_{empld} \text{ (employee)} - \pi_{empld} \text{ (} \sigma_{employee.empld} \text{ = dependent.eld} \land employee.empAge} \land \text{depAge} \text{ (employee} \times \text{dependent)})$

The above query will give the following employee ids.

- 0 1, 4, 6
- 0 1, 3, 5
- 0 2, 3, 4
- 0 2, 4, 5
- 6, 7



manage

name manage

- 'A' 'E'
- 'B' 'C'
- 'C' 'G'
- 'D' 'E'
- 'F' 'E'
- 'E' 'G'

Emp

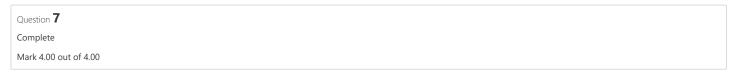
name street city

- 'A' 'x' 1
- 'B' 'y' 2
- 'C' 'z' 3
- 'D' 'x' 1
- 'E' 'x' 4
- 'F' 'y' 2
- 'G' 'z' 3

 $\sigma_{manage.manage=emp2.name} \ (\ (\ \sigma_{emp1.name\ =\ manage.name} \ (\rho_{emp1}\ (emp)\ \times\ manage)) \ \times\ \rho_{emp2}\ (emp))$

How many tuples will be there in the output of the above query?

- O 7
- 0 4
- None of the mentioned
- 6
- O 5



manage

name manage

- 'A' 'E'
- 'B' 'C'
- 'C' 'G'
- 'D' 'E'
- 'F' 'E'
- 'E' 'G'

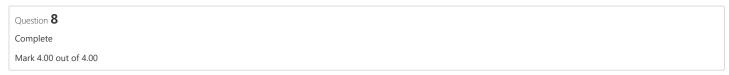
Emp

name street city

- 'A' 'x' 1
- 'B' 'y' 2
- 'C' 'z' 3
- 'D' 'x' 1
- 'E' 'x' 4
- 'F' 'y' 2
- 'G' 'z' 3

 $\pi_{manage.name} \ (\sigma_{emp1.city = emp2.city \ \land \ manage.manage=emp2.name} \ (\ (\ \sigma_{emp1.name = manage.name} \ (\rho_{emp1} \ (emp) \times manage)) \times \rho_{emp2} \ (emp)))$ Output of the above query will include the following names,

- A, D only
- C only
- A, C, D only
- A, C only
- A only



employee

empld empName empAge

1	'AB'	25
2	'CD'	23
3	'EF'	31
4	'QW'	27
5	'BD'	30
6	'AD'	32
7	'EQ'	26

dependent

depld eld depName depAge

1	1	'ab'	29
2	1	'bd'	12
3	2	'eq'	15
4	3	'qr'	33
5	3	'tr'	30
6	4	'rt'	13
7	6	'we'	36
8	7	'ut'	35

 $\pi_{depld, \, eld, \, depName, \, depAge} \, (dependent) - \pi_{d1.depld, \, d1.eld, \, d1.depName, \, d1.depAge} \, (\sigma_{d1.depAge} + \sigma_{d2.depAge}) \, (\rho_{d1} \, dependent) + \sigma_{d2} \, dependent))$ How many number of tuples will be there in the output of the above query?

- **3**
- 1
- O 2
- **5**
- **4**

Question 9	
Complete	
Mark 0.00 out of 4.00	

manage

name manage

- 'A' 'E'
- 'B' 'C'
- 'C' 'G'
- 'D' 'E'
- 'F' 'E'
- 'E' 'G'

Emp

name street city

- 'A' 'x' 1
- 'B' 'y' 2
- 'C' 'z' 3
- 'D' 'x' 1
- 'E' 'x' 4
- 'F' 'y' 2
- 'G' 'z' 3

 $\pi_{\text{manage.manage}}$ ($\sigma_{\text{manage.manage}=\text{emp2.name}}$ (($\sigma_{\text{emp1.name}}\neq\text{emp2.name} \land \text{emp1.street}=\text{emp2.street} \land \text{emp1.city}=\text{emp2.city}$ (ρ_{emp1} (emp) × ρ_{emp2} (emp))) × manage))

How many tuples will be there in the output of the above query?

- 0 4
- O 2
- None of the mentioned
- O 3
- 1

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Question 10
Complete
Mark 3.00 out of 3.00
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Student

StID StName Major Age

'Smith' 'cs' 23 3 'Anil' 'ee' 21 4 'Amit' 'cs' 21 5 'Aakash' 'ee' 24 'ece' 'Vikas' 22 'Pahal' 'ece' 23

Course

Course_code Course_name Credit

'CS401'	'DC'	3
'CS204'	'DBMS'	3
'CS301'	'CN'	3
'IT101'	'CP'	3

Student_course

StID Course_code

- 3 'CS301'
- 4 'CS401'
- 5 'IT101'
- 3 'CS401'
- 2 'CS204'
- 4 'CS301'
- 5 'CS204'
- 'IT101' 3 'CS204'

4

- 5 'CS301'
- 2 'IT101'
- 4 'CS204'
- 3 'IT101'

 π StID (Student) - (Student_course \div π Course_code (Course))

Output of the above query will include the following StID,

- 2, 3, 5, 7 only
- 6 only
- 3, 4, 5, 6, 7 only

- 2, 5, 6, 7 only
- 2, 4, 5, 6 only
- 3, 4, 5, 6 only

Question 11

Complete

Mark 4.00 out of 4.00

Consider the following relation,

R

Name Number

- Amit 2
- Akash 4
- Arif 3
- Akhil 5

 $\pi_{r1.Number, r2.Name}$ ($\sigma_{r1.Number < r2.Number}$ ((ρ_{r1} (R)) × (ρ_{r2} (R))))

The output of the above query will include the following names,

- Akash and Arif
- Only Amit
- Akash, Arif, Akhil
- Amit, Akash, Arif
- Only Akhil

Question 12
Complete
Mark 3.00 out of 3.00

If we apply the following relational algebra query in the given relation A. Then, how many tuples will be there in the answer.

 $\pi_{A1.col1}$ (sigma $_{A1.col2>A2.col2}$ (ρ_{A1} A × ρ_{A2} A))

Α

A.col1	A.col2
'a'	4
'r'	7
'e'	9
'q'	10
'u'	5
'w'	8
'u'	2

- **5**
- 6
- **7**
- 0 8
- 0 4

Question 13
Complete Mark 0.00 out of 3.00
Consider the following relation,
R
Name Number
Amit 2
Akash 4
Arif 3 Akhil 5
$\pi_{r1.Number, r2.Name}$ ($\sigma_{r1.Number > r2.Number}$ ((ρ_{r1} (R)) × (ρ_{r2} (R))))
In the output of the above query the missing numbers are,
Number 2 and 3 only
Number 5 only
O Number 4 and 5 only
O Number 3 only
O Number 2 only
Question 14 Complete
Mark 3.00 out of 3.00
Select the relational algebra expression which matches with the relational algebra expression $\pi_{A1}(\pi_{A2}(\sigma_{F1}(\sigma_{F2}(r))))$, where A1, A2 are sets of attributes in r with A1 \subset A2 and F1, F2 are Boolean expressions based on the attributes in r ?
\bigcirc $\pi_{A2}(\sigma_{(F1\vee F2)}(r))$
\bigcirc $\pi_{A2}(\sigma_{(F1\Lambda F2)}(r))$
\bigcirc $\pi_{A1}(\sigma_{(F1\vee F2)}(r))$
$\stackrel{\textcircled{\tiny \blacksquare}}{}$ $\pi_{A1}(\sigma_{(F1\Lambda F2)}(r))$
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