| <u>Dashboard</u> / My courses / <u>CS204</u> / <u>General</u> / <u>Mid Semester Online Part 2 (8 March 2022)</u> | | |
|--|---------------------------------|--|
| | | |
| Started on | Tuesday, 8 March 2022, 10:48 AM | |
| State | Finished | |
| Completed on | Tuesday, 8 March 2022, 11:27 AM | |
| Time taken | 38 mins 32 secs | |
| Question 1 | | |
| Complete | | |
| Marked out of 3.00 | | |
| | | |
| | | |

Let R and S be two relations with the following schema R (P, Q, R1, R2, R3) S (P, 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 and III only

I, II and III only

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

| Question 2 | |
|--------------------|--|
| Complete | |
| Marked 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.

 π $_{A1.col1}$ (sigma $_{A1.col2>A2.col2}$ (p $_{A1}$ A × p $_{A2}$ A))

Α

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

- 0 8
- 0 4
- 6
- O 5
- O 7



manage

name manage

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

Emp

name street city

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

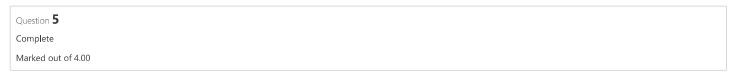
 $\pi_{manage,manage}$ ($\sigma_{manage,manage=emp2.name}$ (($\sigma_{emp1.name} \neq emp2.name \land emp1.street = emp2.street \land emp1.city=emp2.city}$ (ρ_{emp1} (emp) × ρ_{emp2} (emp))) × manage))

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

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

 $\bigcirc \quad \pi_{\mathsf{A2}}(\sigma_{(\mathsf{F1}\vee\mathsf{F2})}(r))$

| | ma comeder on the fact (o major 2022). Attempt for the |
|---|--|
| Question 4 | |
| Complete | |
| Marked out of 3.00 | |
| | |
| Select the relational algebra expression which mat attributes in r with $A1 \subset A2$ and $F1$, $F2$ are Boolean | sches with the relational algebra expression $\pi_{A1}(\pi_{A2}(\sigma_{F1}(\sigma_{F2}(r))))$, where A1, A2 are sets of a expressions based on the attributes in r ? |
| \bigcirc $\pi_{A2}(\sigma_{(F1\Lambda F2)}(r))$ | |
| $ \bigcap_{MA1} \pi_{A1}(\sigma_{(F1AF2)}(r)) $ | |
| | |
| $\bigcirc \ \pi_{A1}(\sigma_{(F1\veeF2)}(r))$ | |



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

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

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

```
Question 6
Complete
Marked out of 3.00
```

Student

StID StName Major Age 2 'Smith' 'cs' 23 3 'Anil' 'ee' 21 4 'Amit' 'cs' 21 5 'Aakash' 'ee' 24

'Pahal' 'ece'

'ece'

22

23

'Vikas'

Course

6

Course_code Course_name Credit

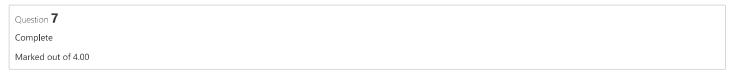
| 'CS401' | 'DC' | 3 |
|---------|--------|---|
| 'CS204' | 'DBMS' | 3 |
| 'CS301' | 'CN' | 3 |
| 'IT101' | 'CP' | 3 |

Student_course

2, 5, 6, 7 only

```
StID Course_code
3
      'CS301'
4
      'CS401'
5
      'IT101'
3
      'CS401'
2
      'CS204'
4
      'CS301'
5
      'CS204'
4
      'IT101'
3
       'CS204'
5
      'CS301'
2
       'IT101'
4
       'CS204'
3
       'IT101'
\pi StID (Student) - (Student_course \div \pi Course_code (Course))
Output of the above query will include the following StID,
 2, 3, 5, 7 only
 6 only
```

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

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

The above query will give the following employee ids.

- 11, 2
- O 2
- 0 2, 4
- 3

| 2 | 22/22, 4:03 PM | Mid Se |
|---|--|--------|
| | Question 8 Complete Marked out of 3.00 | |
| | Consider the following relation, | |
| | R | |
| | Name Number | |
| | Amit 2 | |
| | Akash 4 | |
| | Arif 3 | |
| | Akhil 5 | |
| | $\pi_{r1.Number, r2.Name}$ ($\sigma_{r1.Number}$ > $\sigma_{r2.Number}$ ((ρ_{r1} (R)) × In the output of the above query the missing numl | |
| | Number 4 and 5 only | |
| | O Number 3 only | |
| | O Number 2 and 3 only | |
| | O Number 5 only | |
| | Number 2 only | |

| 22/22, 4:03 PM | Mid Semester Online Part 2 (8 March 2022): Attempt review |
|---|--|
| Question 9 | |
| Complete | |
| Marked out of 4.00 | |
| | |
| Consider the following relation, | |
| | |
| | |
| R | |
| | |
| Name Number | |
| Amit 2 Akash 4 | |
| Arif 3 | |
| Akhil 5 | |
| | |
| π $_{r1.Number,\ r2.Name}$ (0 $_{r1.Number}$ < $_{r2.Number}$ ((p $_{r1}$ (R)) × | $(\rho_{r2}(R))))$ |
| The output of the above query will include the follo | wing names, |
| Amit, Akash, Arif | |
| Same, Addit, Atti | |
| Akash, Arif, Akhil | |
| Only Amit | |
| Only Akhil | |
| Only Akhil | |
| Akash and Arif | |
| | |
| | |
| Question 10 | |
| Complete | |
| Marked out of 3.00 | |
| | |
| The relation studings (studid name sex) keeps the | information about the students. The relation enroll (<u>studId, courseId</u>) gives which student |
| | that every course is taken by at least one male and at least one female student. What does |
| the following relational algebra expression represer | |
| ${\textstyle \textstyle \bigcap_{courseld}}(({\textstyle \bigcap_{studld}}(\sigma_{sex="female"}(studlnfo)) \times {\textstyle \bigcap_{courseld}}(e)}$ | nroll))–enroll) |
| | |
| | |
| | |
| Courses in which a proper subset of female students | udents are enrolled. |

None of the mentioned

Ourses in which only male students are enrolled.

Ourses in which all the female students are enrolled.

```
Question 11
Complete
Marked out of 4.00
```

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

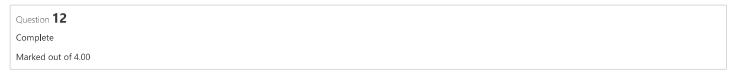
depld eld depName depAge

| 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 |
| | | | |

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

The above query will give the following employee ids.

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



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

Question 13
Complete
Marked out of 4.00

Consider the following relations,

manage

name manage

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

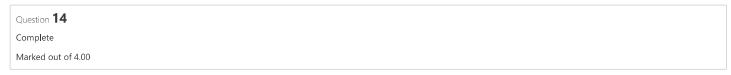
Emp

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,

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

 $\pi_{\text{ depId, eId, depName, depAge}} \left(\text{dependent} \right) - \pi_{\text{ d1.depId, d1.eId, d1.depName, d1.depAge}} \left(\sigma_{\text{ d1.depAge}} \right) + \sigma_{\text{ d2.depAge}} \left(\sigma_{\text d1.depAge} \right) + \sigma_{\text{ d2.depAge}} \left(\sigma_{\text d1.depAge} \right) + \sigma_{\text d2.depAge} \left(\sigma_{\text d1.depAge} \right) + \sigma_{\text d2.depAg$

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

| | 2 |
|--|---|
| | |

5

4

O 3

1

◄ Mid Semester Online Part 1 (8 March 2022)

Jump to...

Quiz3 (Section 2) ►