Concept Quiz for Module 5:

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Graded Quiz • 1h • 18 total points

Due May 7, 11:59 PM IST

1. To convert a database representation into a SELECT statement, one should use

1 point

○ the critical questions.

○ the conceptual evaluation process.

○ natural language analysis.

● SELECT statement patterns.

2. Using the critical questions provides a guideline

1 point

○ to convert a database representation into a database language statement.

○ to convert a problem statement directly into a database language statement.

● to convert a problem statement into a database representation.

○ to convert a database language statement into a problem statement.

3. A database representation requires a table when

1 point

○ the table provides a column in the result.

○ the table provides a column used in a condition.

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3. A database representation requires a table when

1 point

○ the table provides a column in the result.

○ the table provides a column used in a condition.

○ the table provides a join condition connecting other necessary tables.

● all of the above.

4. Duplicate rows typically occur in the result of a SELECT statement when

1 point

○ joining a parent and child table with columns from both tables in the result.

● joining a parent and child table with columns from the parent table only in the result.

○ joining a parent and child table with columns from child table only in the result.

○ joining a table to itself.

5. A prominent type of problem without PK-FK matching is known as

1 point

○ the cyclic join problem.

● the entity matching problem.

○ the self join.

○ the outer join.

6. Examples of poor coding practices are (multiple answers possible)   **1 point**

   ☑ mixed join styles

   ☑ incompatible constant in a condition

   ☑ poor clause alignment

   ☑ LIKE operator without a pattern matching character

7. In the query formulation process, a problem statement can be   **1 point**

   ○ ambiguous.

   ○ incomplete.

   ○ using a vocabulary different from database objects.

   ⦿ all of the above.

8. Examples of redundancy errors are (multiple answers possible)   **1 point**

   ☑ extra table.

   ☐ missing join condition.

   ☐ missing necessary parentheses when combining AND and OR conditions.

   ☑ unnecessary GROUP BY clause.

9. Examples of semantic query errors are (multiple answers possible)   **1 point**

   ☐ extra table.

   ☑ missing join condition.

   ☑ missing necessary parentheses when combining AND and OR conditions.

   ☐ unnecessary GROUP BY clause.

10. What SQL statement uses a SET clause?   **1 point**

    ○ DELETE

    ⦿ UPDATE

    ○ INSERT

    ○ COMMIT

11. In a typical join pattern, (multiple answers possible)   **1 point**

    ☑ join conditions involve comparisons of primary keys to foreign keys.

    ☐ combining n tables involves n join conditions.

    ☐ join conditions involve comparisons of primary keys to primary keys.

    ☑ combining n tables involves n-1 join conditions or join operations.

12. What SQL modification statements use a WHERE clause (multiple answers possible)?   1 point

- ☑ DELETE
- ☑ UPDATE
- ☐ INSERT
- ☐ COMMIT

13. In an UPDATE statement, only one column can be changed. To update multiple columns of the same row, two UPDATE statements are necessary.   1 point

- ○ True
- ● False

14. Indicate the requirements for union compatibility for two tables. More than one answer is possible.   1 point

- ☑ Same number of columns
- ☑ Each corresponding column has a compatible data type
- ☑ Positional correspondence among columns
- ☐ Same column names

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15. Matching for SQL set operators involves equality comparison of each corresponding column from two input tables.   1 point

- ● True
- ○ False

16. The difference operator (MINUS or EXCEPT) is not communtative meaning the A MINUS B is usually different the B MINUS A.   1 point

- ● True
- ○ False

17. The union operator (UNION) is not communtative meaning the A UNION B is usually different the B UNION A.   1 point

- ○ True
- ● False

18. The intersection operator (INTERSECT) is communtative meaning the A INTERSECT B is always the same as B INTERSECT A.   1 point

- ● True
- ○ False

Module 5 assignment:

SELECT Statement Problems

1. For event requests, list the event number, event date (eventrequest.dateheld), and count of the event plans. Only include event requests in the result if the event request has more than one related event plan with a work date in December 2022

SELECT eventno, dateheld, COUNT(*) AS "Number of Plans"
FROM eventrequest, eventplan
WHERE eventrequest.eventno = eventplan.eventno
AND eventplan.workdate BETWEEN '1-Dec-2022' AND '31-Dec-2022'
GROUP BY eventrequest.eventno, dateheld
HAVING COUNT(*) > 1;

2.List the plan number, event number, work date, and activity of event plans meeting the following two conditions: (1) the work date is in December 2022 and (2) the event is held in the "Basketball arena". Your query must not use the facility number ("F101") of the basketball arena in the WHERE clause. Instead, you should use a condition on the FacName column for the value of "Basketball arena".

SELECT planno, eventno, workdate, activity
FROM eventrequest, eventplan, facility
WHERE eventrequest.eventno = eventplan.eventno
AND eventrequest.facno = facility.facno
AND eventplan.workdate BETWEEN '1-Dec-2022' AND '31-Dec-2022'
AND facname = 'Basketball arena';

3.List the event number, event date, status, and estimated cost of events where there is an event plan managed by Mary Manager and the event is held in the basketball arena in the period October 1 to December 31, 2022. Your query must not use the facility number ("F101") of the basketball arena or the employee number ("E101") of "Mary Manager" in the WHERE clause. Thus, the WHERE clause should not have conditions involving the facility number or employee number compared to constant values.

SELECT eventno, dateheld, status, estcost
FROM eventrequest, employee, facility, eventplan
WHERE eventplan.empno = employee.empno
AND eventrequest.facno = facility.facno

AND eventrequest.eventno = eventplan.eventno
AND eventplan.workdate BETWEEN '1-Oct-2022' AND '31-Dec-2022'
AND facname = 'Basketball arena' AND empname = 'Mary Manager';

4.. List the plan number, line number, resource name, count of resources (EventPlanLine.ResourceCnt), location name, time start, and time end where the event is held at the basketball arena, the event plan has activity of activity of "Operation", and the event plan has a work date in the period October 1 to December 31, 2022. Your query must not use the facility number ("F101") of the basketball arena in the WHERE clause. Instead, you should use a condition on the FacName column for the value of "Basketball arena".

SELECT planno, lineno, locname, resname, resourcecnt, timestart, timeend
FROM facility, eventplan, eventplanline, resourcetbl, location
WHERE eventplan.planno = eventplanline.planno
AND location.facno = facility.facno
AND location.locno = eventplanline.locno
AND eventplan.workdate BETWEEN '1-Oct-2022' AND '31-Dec-2022'
AND facname = 'Basketball arena' AND eventplanline.resno = resourcetbl.resno
AND eventplan.activity = 'Operation';

5. List the event plan number and sum of the resource cost for event plans. Only summarize event plans with a work date in December 2022. The resource cost is computed as the resource count (ResourceCnt) times the rate of the resource. The result should only include event plans with the sum of the resource cost greater than 50.

SELECT Planno, SUM(ResourceCnt * Rate) AS SumResCost
FROM EventPlan, EventPlanLine, ResourceTbl
WHERE EventPlan.PlanNo = EventPlanLine.PlanNo
AND EventPlanLine.ResNo = ResourceTbl.ResNo
AND WorkDate BETWEEN '01-Dec-2022' AND '31-Dec-2022'
GROUP BY Planno
HAVING SUM(ResourceCnt * Rate) > 50;

Database Modification Problems

1. Insert a new row into the Facility table with facility name "Swimming Pool".

INSERT INTO Facility (FacNo, FacName)
VALUES ('F107', 'Swimming Pool');

2. Insert a new row in the Location table related to the Facility row in modification problem 1. The new row should have "Door" for the location name.

INSERT INTO Location (LocNo, FacNo, LocName)
VALUES ('L107', 'F107', 'Door');

3. Insert a new row in the Location table related to the Facility row in modification problem 1. The new row should have "Locker Room" for the location name.

INSERT INTO Location (LocNo, FacNo, LocName)
VALUES ('L108', 'F107', 'Locker Room');

 4. Change the location name of "Door" to "Gate" for the row inserted in modification problem 2.

UPDATE Location SET LocName = 'Gate'
WHERE LocNo = 'L107';

5. Delete the rows inserted in modification problems 2 and 3.

DELETE Location
WHERE LocNo = 'L107';
DELETE Location
WHERE LocNo = 'L108';

SQL Statements with Errors and Poor Formatting

1. Identify errors in the following SQL statement and label errors with error type (syntax, redundancy, or semantic). To simplify your work, the statement has only one type of error. Rewrite the statement to remove the error. SELECT eventrequest.eventno, dateheld, status, estcost FROM eventrequest, employee, facility, eventplan WHERE estaudience > 5000 AND eventplan.empno = employee.empno AND eventrequest.facno = facility.facno AND facname = 'Football stadium' AND empname = 'Mary Manager'

(missing join condition)

```
SELECT eventrequest.eventno, dateheld, status, estcost
FROM eventrequest, employee, facility, eventplan
WHERE estaudience > 5000
  AND eventplan.empno = employee.empno
  AND eventrequest.facno = facility.facno
  AND eventrequest.eventno = eventplan.eventno
  AND facname = 'Football stadium'
  AND empname = 'Mary Manager';
```

2. Identify errors in the following SQL statement and label errors with error type (syntax, redundancy, or semantic). To simplify your work, the statement has only one type of error. Rewrite the statement to remove the error. SELECT DISTINCT eventrequest.eventno, dateheld, status, estcost FROM eventrequest, eventplan WHERE estaudience > 4000 AND eventplan.eventno = eventrequest.eventno GROUP BY eventrequest.eventno, dateheld, status, estcost

(group by not required)

```
SELECT DISTINCT eventrequest.eventno, dateheld, status, estcost
FROM eventrequest, eventplan
WHERE estaudience > 4000
  AND eventplan.eventno = eventrequest.eventno;
```

3. Identify errors in the following SQL statement and label errors with error type (syntax, redundancy, or semantic). To simplify your work, the statement has only one type of error. Rewrite the statement to remove the error. SELECT DISTINCT eventrequest.eventno, dateheld, status, estcost FROM eventrequest, employee, facility, eventplan WHERE estaudience > 5000 AND eventplan.empno = employee.empno AND eventrequest.facno = facility.facno AND eventplan.eventno = eventrequest.eventno AND facname = 'Football stadium'

(extra table employee)

```
SELECT DISTINCT eventrequest.eventno, dateheld, status, estcost
FROM eventrequest, facility, eventplan
WHERE estaudience > 5000
```

AND eventrequest.facno = facility.facno
    AND eventplan.eventno = eventrequest.eventno
    AND facname = 'Football stadium';

4. Identify errors in the following SQL statement and label errors with error type (syntax, redundancy, or semantic). To simplify your work, the statement has only one type of error. Rewrite the statement to remove the errors. SELECT DISTINCT eventno, dateheld, status, estcost FROM eventrequest, employee, eventplan WHERE estaudience BETWEN 5000 AND 10000 AND eventplan.empno = employee.empno AND eventrequest.eventno = eventplan.eventno AND empname = 'Mary Manager'

(misspelled keyword BETWEN)

SELECT DISTINCT eventno, dateheld, status, estcost
FROM eventrequest, employee, eventplan
WHERE estaudience BETWEEN 5000 AND 10000
  AND eventplan.empno = employee.empno
  AND eventrequest.eventno = eventplan.eventno
  AND empname = 'Mary Manager';

5. Identify areas in which the SQL statement has poor coding practices and rewrite the statement to improve the coding practices. You do not need to search for syntax errors. SELECT eventplan.planno, lineno, resname, numberfld, timestart, timeend FROM eventrequest, facility, eventplan, eventplanline, resourcetbl WHERE estaudience = '10000' AND eventplan.planno = eventplanline.planno AND eventrequest.facno = facility.facno AND facname = 'Basketball arena' AND eventplanline.resno = resourcetbl.resno AND eventrequest.eventno = eventplan.eventno

(Incompatible constant => WHERE estaudience = '10000')

 SELECT eventplan.planno, lineno, resname, resourcecnt, timestart, timeend
   FROM eventrequest, facility, eventplan, eventplanline, resourcetbl
   WHERE estaudience = 10000
     AND eventplan.planno = eventplanline.planno
     AND eventrequest.facno = facility.facno
     AND eventplanline.resno = resourcetbl.resno
     AND eventrequest.eventno = eventplan.eventno
     AND facname = 'Basketball arena';