CS245 - Exam 02

Database Management Systems

1

Let R1(a, b, c) be a table;
Let R2(b, c, d) be another table;

Let R1R2 be a view created as:

CREATE VIEW R1R2 as (select R1.a, R1.b, R1.c, R2.d from R1 join R2 on R1.a = R2.a and R1.b = R2.b and R1.c = R2.c);

What is the result of the following SQL statement

INSERT INTO R1R2(b, c, d) values (10, 11, 12);
(2 Points)

○ Insert (10, 11, 12) into R1R2

○ Insert (10, 11, 12) into R2

○ Insert (NULL 10, 11) into R1 and (10, 11, 12) into R2

◉ None of the above

2

CREATE TABLE R1(a int, b int, c int);

DELIMITER |

CREATE TRIGGER t1 BEFORE INSERT ON R1
FOR EACH ROW
BEGIN
        INSERT into R1(a, b, c) values (1, 2, 3);
END|

DELIMITER ;

INSERT INTO R1(a, b, c) VALUES (4, 5, 6);

What are the contents of R1 after the above insert statement?
(2 Points)

○ ((1, 2, 3), (4, 5, 6))

○ ((1, 2, 3), (1, 2, 3), ...);

○ Insertion within the trigger is not allowed; R1 contains (4, 5, 6)

◉ INSERTION outside the trigger fails; R1 is empty

3

Consider the following SQL code:
CREATE TABLE R1(a int, b int, c int);

CREATE TABLE R2(b int, c int, d int);

DELIMITER |

CREATE TRIGGER t1 BEFORE INSERT ON R1
FOR EACH ROW
FOLLOWS t3
BEGIN
     INSERT into R2(b, c, d) values (11, 12, 13);
END|

CREATE TRIGGER t2 BEFORE INSERT ON R1
FOR EACH ROW
FOLLOWS t1
BEGIN
     INSERT into R2(b, c, d) values (21, 22, 23);
END|

CREATE TRIGGER t3 BEFORE INSERT ON R1
FOR EACH ROW
FOLLOWS t2
BEGIN
     INSERT into R2(b, c, d) values (31, 32, 33);
END|

DELIMITER ;

What happens at the time of trigger creation?
(3 Points)

◯ A cycle involving triggers will be created as follows: t1 -> t2 -> t3 -> t1

◯ Cycle involving triggers will be detected at the time of creating triggers and DBMS will create the
    following sequencing of trigger: t1 -> t2 -> t3

◉ The SQL code will result in an error

◯ None of the above

4

Given the following procedure:

DELIMITER |
CREATE PROCEDURE p1(inout var1 int)
BEGIN
        CREATE TABLE IF NOT EXISTS R3(a int);
        SET var1 = var1 - 1;
        SELECT var1;
        INSERT INTO R3(var1) VALUES (var1);
        call p1(var1);
END|

DELIMITER ;

Assume that you have set the recursion depth to 10 by invoking:
SET max_sp_recursion_depth=10;

you have declared a variable set @var = 10;
What happens when you perform the following:
call p1(@var1);
(2 Points)

○ DBMS does not allow recursion inside stored procedure

○ You have 11 rows in R3 with values (9, 8, ..., 0, -1)

○ You have 10 rows in R3 with values (9, 8, ..., 0);

◉ None of the above.

5

Given the following procedure:

DELIMITER |
CREATE PROCEDURE p1(inout var1 int)
BEGIN
        CREATE TABLE IF NOT EXISTS R3(a int);
        SET var1 = var1 - 1;
        SELECT var1;
        INSERT INTO R3(var1) VALUES (var1);
        call p1(var1);
END|

DELIMITER ;

Assume that you have set the recursion depth to 10 by invoking:
SET max_sp_recursion_depth=10;

you have declared a variable set @var = 10;
After performing the following statement
call p1(@var1);

what is the value of @var1
(3 Points)

○ 10

○ 0

○ -1

◉ None of the above.

6

Given the cs245_marks table below, to obtain the output roll number, marks and grades (as given in output table) as per the following criteria:
       marks between 90 and 100 grade AA
       marks between 80 and 89 grade AB
       marks between 0 and 79 grade BB

cs245_marks		output		
roll_number	marks	roll_number	marks	grade
1234	66.00	1234	66.00	BB
1235	74.00	1235	74.00	BB
1236	85.00	1236	85.00	AB
1237	70.00	1237	70.00	BB
1238	89.00	1238	89.00	AB
1239	44.00	1239	44.00	BB
1240	50.00	1240	50.00	BB
1241	51.00	1241	51.00	BB
1242	92.00	1242	10.00	AA
1243	44.00	1243	44.00	BB

Assume appropriate delimiters are set.
(2 Points)

○ create a stored procedure "grade" which takes marks as input parameter and returns the required character string

○ create a stored function "grade" which takes marks as input parameter and returns the required character string

○ create a trigger on cs245_marks to achieve the above task

◉ All of the above

7

What is the termination criteria of a common table expressions (CTE) program in SQL?
(2 Points)

○ Programmer has to specify the termination condition

◉ When there are no new records that are obtained from the recursive SQL statement

○ When an empty set is the result of the recursive SQL statement involving recursion

○ All of the above

8

Where is the error on slide number 6 of the Tuesday-16-feb-2021.pdf lecture?
(1 Point)

◉ Second row of the table

○ Sixth row of the table

○ Both second row and sixth row of the table

○ There is no error in the slide.

9

Where is the error on slide number 44 of the Tuesday-16-feb-2021.pdf lecture?
(1 Point)

○ Base SQL query is incorrect

◉ Recursive SQL query must involve Reaches table

○ There is a syntax error; UNION keyword must not be present

○ There is no error.

10

Which records get added to Reaches table on slide 22 of the Tuesday-16-feb-2021.pdf lecture?
(2 Points)

○ (DEN, DAL)

○ (DEN, CHI)

○ (DAL, NY)

○ (CHI, NY)

◉ None

11

(3 Points)

Consider the relations R(A, B) and S(B, C). S.B is a primary key and R.B is a foreign key referencing S.B. R and S do not contain NULL values.

The query $R \bowtie (\sigma_{B<5}(S))$. Which one is NOT equivalent to the above query?

1. $\sigma_{B<5}(R \bowtie S)$

2. $\sigma_{B<5}(R \overset{\circ}{\underset{L}{\bowtie}} S)$

3. $R \overset{\circ}{\underset{L}{\bowtie}} (\sigma_{B<5}(S))$

4. $\sigma_{B<5}(R) \overset{\circ}{\underset{L}{\bowtie}} S$

⚪ 1

⚪ 2

🔘 3

⚪ 4

12

(2 Points)

Consider the following two tables:

Table1			Table2		
sno	sname		sno	scode	m
1	AA		1	A	86
2	PP		1	B	95
3	VV		1	C	90
4	RR		2	A	89
5	SS		2	C	92
			3	C	80

The primary key of Table1 is sno. Primary key of Table2 is (sno, scode). Consider the SQL query

```
1  SELECT  T1.sname,  SUM(T2.m)
2  FROM    Table1 AS T1,  Table2 AS T2
3  WHERE   T2.m > 84
4  GROUP BY  T1.sname;
5
```

The number of rows in the result set is:

- ○ 2
- ○ 3
- ○ 4
- ● 5

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