CS 775/875 Quiz 12 4/30/2021 Name ____________

Some of the constraints/triggers will not execute in MySQL, but they are part of the SQL standard.

1. Consider the following schema:

   CREATE TABLE R(a INT PRIMARY KEY, b INT);

   CREATE TABLE S(c INT PRIMARY KEY, d INT REFERENCES R(a) ON DELETE CASCADE);

   CREATE TABLE T(e INT PRIMARY KEY, f INT REFERENCES S(c) ON DELETE CASCADE);

   R contains (1,2), (3,4). S contains (10,1) (20,1), (30,3).

   T contains (100,10), (200,10), (300,20), (400, 30).

   (a) (2) Which of the following would cause an error: Check **all** correct options.

      i. insert into R value (10,2)
      ii. insert into T value (500, 40)
      iii. update S set c=40 where d=3
      iv. delete from S where d=3

2. (2) CREATE TABLE R (a INT, b INT, *CHECK(—-)*);

   Currently R contains (1,2) (1,4), (4,6). Suppose the command

   INSERT INTO R VALUES (7,8)

   is executed. Which of the following tuple-based CHECK constraints will cause the above insertion to be rejected? (Select **ONE** option.) NOTE: When a tuple-based check is invoked for an insert and includes a subquery over the same table, the subquery is evaluated after including the inserted tuple.

   (a) b > ALL(SELECT a FROM R)

   (b) a <= SELECT max(b) FROM R

   (c) b >= SELECT sum(a) FROM R

   (d) b > SELECT avg(a) FROM R

3. (2) Suppose table R(a,b) is empty.

```
CREATE TRIGGER lastQuiz
AFTER INSERT ON R
FOR EACH ROW
INSERT INTO R(a,b)
 (SELECT DISTINCT new.a, R.b+1
  FROM R
  WHERE R.a = new.b);
```

   We insert (5,6) first; next, we insert (3,5). R contains (5,6) and (3,5). List the other contents of R, if any, after this insertion of (3,5). ______________________

4. (2) Consider the following query:

```
Select * From EMPLOYEE, DEPARTMENT
Where EMPLOYEE.Dno = DEPARTMENT.Dnumber
And Dname = 'Research'' and Salary > 200000;
```

Which of the following indexes could NOT be useful in speeding up query execution?

(a) Hash index on Dname

(b) Hash index on Salary

(c) B-Tree index on EMPLOYEE.Dno

(d) Hash index on DEPARTMENT.Dno

5. (2) Consider the following query:

```
Select * From EMPLOYEE, DEPARTMENT, DEPENDENT
Where EMPLOYEE.Ssn = DEPENDENT.Essn and EMPLOYEE.Dno = DEPARTMENT.Dnumber
And DEPENDENT.Sex = 'F' And Dname = 'Research;
```

Which of the following two indexes would be most useful in speeding up query execution? (Assume B-Tree indexes.)

(a) Essn, Ssn

(b) DEPENDENT.Sex, DEPARTMENT.Dnumber

(c) Ssn, DEPENDENT.Sex

(d) Ssn, DEPARTMENT.Dnumber