姓名 学号 年级 专业 学院 密 封 线

重庆大学　数据库系统　课程试卷

◉ A卷
○ B卷

2012 ~2013 学年 第二学期

开课学院：计算机学院　　考试日期：2013-05-28

考试方式：◉ 开卷 ○ 闭卷 ○ 其他　　考试时间：120 分钟

题 号	一	二	三	四	五	六	七	八	九	总 分
得 分										

注：1. 大标题用四号宋体、小标题及正文用小四号宋体；2. 按 A4 纸缩小打印

NOTES:The exam is open book and notes. Please write your solutions in the spaces provided on the exam. Make sure your solutions are neat and clearly marked. You may use the blank areas and backs of the exam pages for scratch work. Please do not use any additional scratch paper.

Problem 1: (10 points)

As is well known, A DBMS suppots concurrent access to data. It can be accessed simultaneously by many distinct processes which are called transactions. 1.Which of the following is not a property of ACID TRANSACTION?

a) Atomicity
b) Concurrency
c) Isolation
d) Durability

answer is (B)

2.Please descript the four properties (ACID) of Transaction

1．原子性：事务所有操作要么全部提交到数据库，全部执行成功，要么都不提交，全部失败回滚。
2．一致性：事务执行前后，数据库从一个一致的状态转换到另一个一致的状态。事务在执行过程中对数据库所作的修改必须符合预定义的规则和约束，以保证数据的完整性和正确性。
3．隔离性：事务的执行是相互隔离的，即每个事务在执行过程中的中间结果对其他事务是不可见的。并发执行的事务，避免了数据争用和不一致的问题。
4．持久性：一旦事务提交，其所做的修改将永久保存在数据库中，即使在系统故障或崩溃的情况下也不会丢失，以确保数据的可靠性和持久性。

Problem 2: (15 points)

We have the statements of Q1 and Q2:

Q1:
```
SELECT DISTINCT a
FROM R
WHERE b > 10;
```
Q2:
```
SELECT a
FROM R
WHERE b > 10
GROUP BY a;
```
Which of the following answer is correct? C
(a) Q1 and Q2 produce the same answer.
(b) The answer to Q1 is always contained in the answer to Q2.
(c) The answer to Q2 is always contained in the answer to Q1.
(d) Q1 and Q2 produce different answers.

命题人：罗军　组题人：罗军　审题人：朱征宇　命题时间：2013-05-15

Problem 3. (15 points)

Relation R(a, b, c) currently has the following instance:
{(1; 2; 3), (3; 4; 2), (2; 6; 1)}
We make the following view definitions:

```
CREATE VIEW V AS
SELECT a*b AS d, c FROM R;

CREATE VIEW W AS
SELECT d, SUM(c) AS e FROM V GROUP BY d;
```

What is the sum of all the components of all the tuples of the following query?

```
SELECT AVG(d), e FROM W GROUP BY e;
```

A

(a) 10
(b) 7
(c) 23
(d) 28

Problem 4: (15 points).

Consider the following table Games(name, price) and assume that these values already exist in the database: ('game1', 40), ('game2', 50), ('game3', 60). We have the following two transactions:

```
T1: BEGIN TRANSACTION
        S1: UPDATE   Games SET price=10 WHERE name='game1'
        S2: INSERT INTO Games VALUES ('Game4', 0)
       S3: UPDATE Games SET price=30 WHERE name='game1'
   COMMIT;

T2: BEGIN TRANSACTION
      S4: SELECT AVG(price) AS average_price FROM Games
   COMMIT;
```

Above two transactions are hitting the DBMS roughly at the same time.
Suppose T2 must appear to be executed either completely before or completely after T1 ,
What are the possible values for average_price?

I. 50
II. 44
III. 30

a) I only.
b) II only.
c) I & II.
d) I & III.

answer is ( )

Problem 5. (15 points)

Consider the following database schema:
Paintings(artist, work, date, museumname)
Museums(museumname, city, curator)
Consider the following database schema:
We have the statement:

```
SELECT curator
FROM Paintings, Museums
WHERE  Paintings.Museumname= Museums.museumname      AND
       Paintings.artist=' LeonardodaVinci'   (达。芬奇)
```

Please give the process of the query optimization for the statement above

Problem 6. (15 points)

Let R(A, B, C) satisfy the following functional dependencies (FDs): AB -> C, BC -> A, and AC -> B. The closure of A (i.e., A^+) is **A**

a) A
b) AB
c) AC
d) ABC

Problem 7. (15 points)

Suppose we have a relation R(A,B,C) and the FD's
AB-> C, A-> B, B-> C
1.(5 points) What is true about the key(s) for R? B

(a) Only A is a key
(b) Only AB is a key
(c) Only AB and AC are keys.
(d) Only AB, AC, and BC are keys

2.(10 points) To decompose R into 3NF

删除[雨林木风]: