SDT1 – F2011

Written Exam

There are 5 questions. Each question has the same weight of 20%. For the first three questions, you should rely on the experience from assignments 1 or 2. You can reuse text you have written for the assignments.

Question 1 (20 %)

How would you compare the CS and RR isolation levels provided by DB2? You should rely on your experience from assignment 1 to answer this question.

Question 2 (20 %)

How would you describe the correctness and performance impact of the currently committed semantics feature introduced in DB2 v9.7? How does it compare the the snapshot isolation feature mentionned in the textbook? You should rely on your experience from assignment 1 to answer this question.

Question 3 (20%)

A - How would an extra server impact the results that you obtained in Assignment 2?
B - How would an extra disk impact the results that you obtained in Assignment 2?
To answer these questions, you should rely on your experience from assignment 2 to answer this question.

Question 4 (20%)

Consider the following schema:
accounts(number int primary key, branch varchar(30), balance float)

Initially, the only index which is created is
non clustered index on accounts(number)

Once the schema and the index are created, 1 mio tuples are inserted.

Now consider the following query:

```
select distinct number, branch
from accounts a1
where balance = (select avg(balance)
                 from accounts a2
                 where a2.branch = a1.branch)
```

A – What is the meaning of the given query

B – Is the distinct keyword needed?

C – The execution of this query is slow. What could be the reasons? What tuning actions would you take?

Question 5 (20%)

Consider the following schema:

```
Person (id integer primary key, Name varchar(15),
        Address varchar(15) not null, Phone varchar(12))
Employee(person_id integer,
          manager_id integer,
          foreign key (person_id) references Person (id),
          foreign key (manager_id) references Person(id));
```

Initially, the only index which is created is:
non clustered index on Person(id)

The Person table contains 10 million rows.
The Employee table contains 10 000 rows.

A – Deletions in the Person table given a person_id are slow. What could be the problem(s)? How could you fix it?

B – Consider the following query:

```
select p.name, m.name
from person p, employee e, person m
where p.id = e.person_id
      m.id = e.manager_id
group by manager_id
having count(*) >= 100
order by m.name asc;
```

This query is slow. What could be the problems? How could you make this query run faster?