Practice Questions **SQL (Week-9 Oct 15)** **CZ2007**

SQL Data Manipulation Language (DML) Questions

1. Let R=(A, B, C), S=(C, D, E) be two relational schema. Let q and r be relations (i.e., tables) on schema R; and s be a relation (i.e., a table) on schema S. Convert the following relational algebra queries to SQL.

(i) $q - r$

(ii) $\Pi_{A, C}(r) \bowtie \Pi_{C, D}(s)$

2. Consider the following schema containing airport flight information. Primary Keys are in bold.

FLIGHTS(**flno:integer**, from:string, to:string, distance:integer, departs:time, arrives:time)

AIRCRAFT(**aid:integer**, aname:string, cruisingrange:integer)

CERTIFIED(**eid:integer**, **aid:integer**)

EMPLOYEES(**eid:integer**, ename:string, salary:integer)

Note that the Employees relation describes pilots and other kinds of employees as well; every pilot is certified for some aircraft (otherwise, he or she would not qualify as a pilot), and only pilots are certified to fly.

Give an SQL expression for the following query. Your solution should be only one SQL statement.

Find the eids of employees who make the second highest salary.

3. Consider the following schema representing a database (primary keys are underlined).

PRODUCT(<u>model</u>, manufacturer, type)

PC(<u>model</u>, speed, ram, hd, price)

LAPTOP(<u>model</u>, speed, ram, hd, screen, price)

PRINTER(<u>model</u>, color, type, price)

A PRODUCT is either a PC, a LAPTOP or a PRINTER and must have a tuple in the corresponding table. There is a foreign key constraint on the model of PCs, Laptops and Printers referencing the primary key model of PRODUCT.

Express the following queries in SQL. Your solution should be only one SQL statement.

Find the manufacturer(s) of computer (PC or laptop) with the highest available speed.

SQL Questions obtained via Email

During the revision, I came up with one question:
what is the difference between operators IN and Some?
In my perspective, they both determine whether the tuple or rec in contained in relation.

Sorry for sending the second email. Is it that SOME support comparison operation > or <, but not IN? e.g. price>SOME(....)

And one more question, Inner Join and Theta Join, do they have difference in SQL? Since Theta Join is Crossing product of all the tables, then all the attributes seem to be maintained, it sounds like it is the same as Inner Join.

1. Does it matter in which order we put the clauses? Example putting HAVING before WHERE or putting WHERE before GROUP BY.