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CMPT355

**********Part1**********

1.

Hierarchical data models and Network models.

2.

Superior in several respects:

(1)It provides a means of describing data with its natural structure only(Page377)

(2)A further advantage of the relational view is that it forms a sound basis for treating derivability, redundancy, and consistency of relations(Page377)

(3)Finally, the relational view permits a clearer evaluation of the scope and logical limitations of present formatted data systems, and also the relative merits (from a logical standpoint) of competing representations of data within a single system. (Page377)

Limitation of hierarchical data models is hard for user to use because each child node has several parent nodes.

Limitation of network models: DDL and DML are relative complicated, so these are hard to use.

3.(a)

A domain is a set of allowable values for one or more attributes.

(b)

A relation is a table with columns and rows.

(c)

The degree of a relation is the number of attributes it contains. The degree of Figure 2 is 6.

(d)

This can make the system reasonable when it undertakes the execution of a relational operation, and operations that are semantically incorrect can be avoided.

4.(a)

A primary key is a field in a table. The primary key is used to identify unique records in a table.

(b)

a column, or set of columns, within a table that matches the candidate key of a table. The purpose of foreign key is that used to join multiple tables together when querying our database.

(c)

Postcode is one possible candidate key if more rows could be added. Street and postcode are possible candidate keys if the domain for each attribute consists only of the data shown.

(d)

If assuming the data shown is the complete domain for each attribute, fName, lName and DOB can be candidate keys.

5.(a)

Course	sections	studentRegistratons	instructorAssignment
courseNumber	sectionNumber	studentD	instructorID
subjectNumber	term	name	name
description	studentRegistrations		
sections	instructorAssignment		

(b)

sectionNumber	term	studentID	studentName	instructorID	instructorName
65844	2381 Fall	6890456	John Smith	9054	Patrick Stewart

65844	2381 Fall	5464565	Sarah Morris	9054	Patrick Stewart
65844	2381 Fall	7678688	Dorothy Ross	9054	Patrick Stewart
65844	2381 Fall	4589043	Sandra Ramirez	9054	Patrick Stewart
43250	2265 Fall	6540912	Robert Phillips	435	William Shatner
43250	2265 Fall	5439035	Margaret Watson	435	William Shatner
43250	2265 Fall	8659087	Susan Diaz	435	William Shatner
89543	2384 Winter	8092349	Nancy Diaz	756	Kate Mulgrew
89543	2384 Winter	6546456	John Howard	756	Kate Mulgrew
78943	2385 Winter	8904325	Robert Brown	546	Avery Brooks
78943	2385 Winter	8909084	Richard Nelson	546	Avery Brooks
78943	2385 Winter	4589060	John Gonzalez	546	Avery Brooks
78943	2385 Winter	1232132	Karen Sanchez	546	Avery Brooks
78943	2385 Winter	4242444	Ruth Patterson	546	Avery Brooks

**********Part2**********

1.(a)

```
SELECT DISTINCT * FROM Supplier;
```

(b)

```
SELECT ProductName FROM Product WHERE UnitsInStock > 0;
```

(c)

```
SELECT * FROM Product ORDER BY ProductName;
```

(d)

```
SELECT * FROM Product,Supplier;
```

The output of the query is an ordered table, which is order by productid first, and then the same products from different suppliers are ordered by supplierId.

(e)

The result with GROUP BY is sorted by supplierID. After removed GROUP BY the output is sorted by id.

(f)

SELECT * FROM Product WHERE UnitPrice > 10 AND UnitsOnOrder > 0;

2.(a)

SELECT ProductName, SUM(UnitPrice * UnitsInStock) as Cost FROM Product GROUP BY ProductName;

(b)

SELECT SupplierId, ProductName, SUM(UnitPrice * UnitsOnOrder) as Cost FROM Product WHERE UnitsOnOrder > 0 GROUP BY SupplierId;