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CS143
HW#3

1)

a) CHECK(Weight <= 3)

b)
```
CREATE TRIGGER
AFTER INSERT on Laptop
        REFERENCING NEW ROW AS new
        FOR EACH ROW
WHEN new.weight > 3
BEGIN
        UPDATE LAPTOP
        SET weight = 2.99
        WHERE model = new.model
END
```

2)

A	B
1	8
0	100
0	100

3)

a)
```
CREATE VIEW EmployeeNames (ename)
        AS      SELECT E.ename
                FROM Employees E

CREATE VIEW DeptInfo (dept, avgsalary)
        AS      SELECT DISTINCT E.dept, AVG (E.salary) AS avgsalary
                FROM  Employees E
                GROUP BY E.dept
```

b)
```
GRANT
        SELECT ON DeptInfo
        TO Mike
GRANT
        SELECT, DELETE ON EmployeeNames
        TO Mike
```

c) No, Mike has access to DeptInfo, but not individual salary, so he will not be able to see individual salary.

d) An example is to change the average salary of each department. This is because we do not know whose salary from Employee to change.

e) GRANT
SELECT, INSERT, UPDATE ON Employees
TO Joe
WITH GRANT OPTION
GRANT
SELECT, INSERT, UPDATE ON EmployeeNames
TO Joe
WITH GRANT OPTION

Joe should not be able to see the DeptInfo view.

f) REVOKE
SELECT, INSERT, UPDATE ON Employees
FROM Joe
CASCADE
REVOKE
SELECT, INSERT, UPDATE ON EmployeeNames
FROM Joe
CASCADE

This should remove all privileges from Joe, James and Susan. However, they would still be able to see the AllNames view.

4)

It will create four groupings of
-(item_name,color,clothes_size)
-(item_name,color)
-(item_name)
-( )

It will create 53 Tuples

(item_name,color,clothes_size) = 9+9+9+9	= 36
(item_name,color) = 3+3+3+3	= 12
(item_name)	= 4
( )	= 1
	--------+
	53

5) SELECT Outlook, Temperature, Humidity, Wind, Play-Tennis
FROM Sales
GROUP BY Outlook, Temperature, Humidity, Wind, Play-Tennis WITH ROLLUP

Outlook	Temperature	Humidity	Wind	Play-Tennis
NULL	NULL	NULL	NULL	NULL
Sunny	NULL	NULL	NULL	NULL
Rain	NULL	NULL	NULL	NULL
Overcast	NULL	NULL	NULL	NULL
Sunny	Mild	NULL	NULL	NULL
Rain	Mild	NULL	NULL	NULL
Overcast	Mild	NULL	NULL	NULL
Sunny	Hot	NULL	NULL	NULL
Rain	Hot	NULL	NULL	NULL
Overcast	Hot	NULL	NULL	NULL
Sunny	Cool	NULL	NULL	NULL
Rain	Cool	NULL	NULL	NULL
Overcast	Cool	NULL	NULL	NULL
Sunny	Mild	Normal	NULL	NULL

6)

a) Capacity = 6 surfaces * 10,000 tracks/surface * 500 sects/track * 1024 bytes/sect
= 30,000,000 kB = 30 GB

b) Average time to read a random sector = 10ms + 5ms + 0.02ms
= 15.02 ms

c) Size of a tuple = 2 + 4*5 + 30 + 20 = 72 bytes
#Tuples = Floor(1024/72) = 14 -> A block can hold 14 tuples
1000/14 = 72 -> Need 72 disk blocks

d) Time = 10ms + 5ms + 72(0.02)ms
= 16.44 ms

e) Time = 24*(10ms + 5ms + 3(0.02)ms)
= 361.44 ms

f) Time = 10*(10ms + 5ms+ 0.02ms)
= 150.2 ms
We do 10 random searches because they have not been cached yet