Assignment #2

CS 348 - Spring 2015

Due on Friday, June 19, 2015, 9 AM

For instructions on how to submit your assignment check the course website.

Question 1.

Consider the following database schema:

$Emp(\underline{eid}: integer, ename: string, age: integer, salary: real)$
$Works(\underline{eid}: integer, \underline{did}: integer, pct\_time: integer)$
$Dept(\underline{did}: integer, budget: real, managerid: integer)$

Write SQL statements to answer the tasks that follow:

1. Create the *Emp* table.

2. Insert the following instance into *Emp*.

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Emp

eid	ename	age	salary
1	Donald Duck	35	18,000
4	Minnie Mouse	19	9,000
2	Mickey Mouse	24	20,000
3	Goofy	20	13,000

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3. Try altering the *Emp* table to define a constraint that will ensure that every employee makes at least $10,000.

4. Give Minnie a salary increase of $2,000.

5. Alter the *Emp* table to define a constraint that will ensure that every employee makes at least $10,000.

6. Create the *Dept* table.

7. Alter the *Dept* table to define a foreign key constraint (with cascade delete) on *managerid*, referencing *Emp* table.

8. Insert a valid tuple in *Dept*.

9. Delete all tuples from *Emp*.

10. List all tuples from *Dept*.

11. Create the *Works* table and define foreign key constraints on *eid* and *did*, referencing *Emp* and *Dept* tables, respectively.

12. Populate all 3 relations with 3 to 6 valid tuples.

13. Delete all information about employees whose salaries exceed that of the manager of one or more departments that they work in. Ensure that all the relevant integrity constraints are satisfied after your updates.

Question 2.

Consider the following database schema:

$Product(Manufacturer, Model, Type)$
$Computer(Model, Speed, RAM, HD, CD, Screen, Price)$
$Printer(Model, Color, Type, Price)$

and its instance:

Product

Manufacturer	Model	Type
A	1001	pc
A	1002	pc
A	1003	pc
B	1004	pc
B	1006	pc
B	3002	printer
B	3004	printer
C	1005	pc
C	1007	pc
D	1008	pc
D	1009	pc
D	1010	pc
D	2001	laptop
D	2002	laptop
D	2003	laptop
D	3001	printer
D	3003	printer
E	2004	laptop
E	2008	laptop
F	2005	laptop
G	2006	laptop
G	2007	laptop
H	3005	printer
I	3006	printer

Computer

Model	Speed	RAM	HD	CD	Screen	Price
1001	3	256	120	48x	17	795
1002	2	256	120	48x	17	699
1003	3.5	512	180	48x	16	999
1004	3.5	1024	180	56x	16	1099
1005	3.5	256	160	56x	14	1099
1006	4.5	1024	200	56x	17	1199
1007	4.5	1024	300	56x	19	1249
1008	4	1024	160	56x	14	1699
1009	4.5	1024	180	56x	14	1299
1010	3.4	256	100	56x	17	700
2001	2	256	60	72x	14	1099
2002	2.1	192	40	48x	15.4	1298
2003	2.1	1024	50	56x	15	1499
2004	3	256	60	48x	15.5	1399
2005	3.5	256	50	48x	15.4	1299
2006	2	128	45	56x	17	1099
2007	2.5	256	80	56x	17	1999
2008	2	256	60	56x	17	1199

Printer

Model	Color	Type	Price
3001	true	ink−jet	99
3002	true	ink−jet	69
3003	false	laser	209
3004	true	laser	391
3005	false	ink−jet	59
3006	true	dry	129

Write SQL queries to answer the following:

1. Which laptop models are shown in the *Product* relation?

2. Find the set of all manufacturers ordered alphabetically.

3. Which computer models appear in the database?

4. Which computer models use 256 MB of RAM?

5. Which computer models cost less than $1100?

6. Which laptop models have a HD of at least 50 GB and cost less than $1400?

7. Which laser printer models can print color documents?

8. Which laptop models that have more than 256 MB of RAM are produced by manufacturer D?

9. Which computer models that have more than 256 MB of RAM are produced by manufacturer D?

10. Which laptop models cost less than $1200?

11. Which manufacturers produce personal computers and printers?

12. Which manufacturers produce all the product types?

13. Which manufacturers supply only personal computers?

14. Which manufacturers supply only one type of product?

15. You want to buy:

    - a personal computer with at least 1024 MB of RAM and a CD with $56x$, and
    - a laptop with a screen larger than $15''$, and
    - a printer cheaper than $300

    all produced by the same manufacturer. Which manufacturers should you consider?

16. What HD sizes are common to at least 2 computers?

17. Which manufacturers sell more than one computer that has a processor speed of less than 3 GHz?

18. Which manufacturers sell the fastest computers?

19. Which manufacturers do not sell laptops?

20. Which manufacturers offer at least 2 laptop models?

21. Which manufacturers offer exactly 3 types of personal computers?

22. You need to buy:

    - a computer that has
        - at least 1024 MB of RAM,
        - a processor speed of 3 GHz or 3.5 GHz,
        - a HD of at least 160 GB, and
    - a color printer.

    Which manufacturers can offer you this combination and at what total price?