The University of British Columbia

Computer Science 304

Midterm Examination

October 29, 2013

Time: 80 minutes Total marks: 30

Instructor: Rachel Pottinger

Name ANSWER KEY_____Student No_____

(PRINT) (Last) (First)

Signature_____

This examination has 4 doublesided pages.

Check that you have a complete paper.

This is a closed book, closed notes exam. No books or other material may be used.

Answer all the questions on this paper.

Give very **short but precise** answers.

State any assumptions you make

Work fast and do the easy questions first. Leave some time to review your exam at the end.

Good Luck

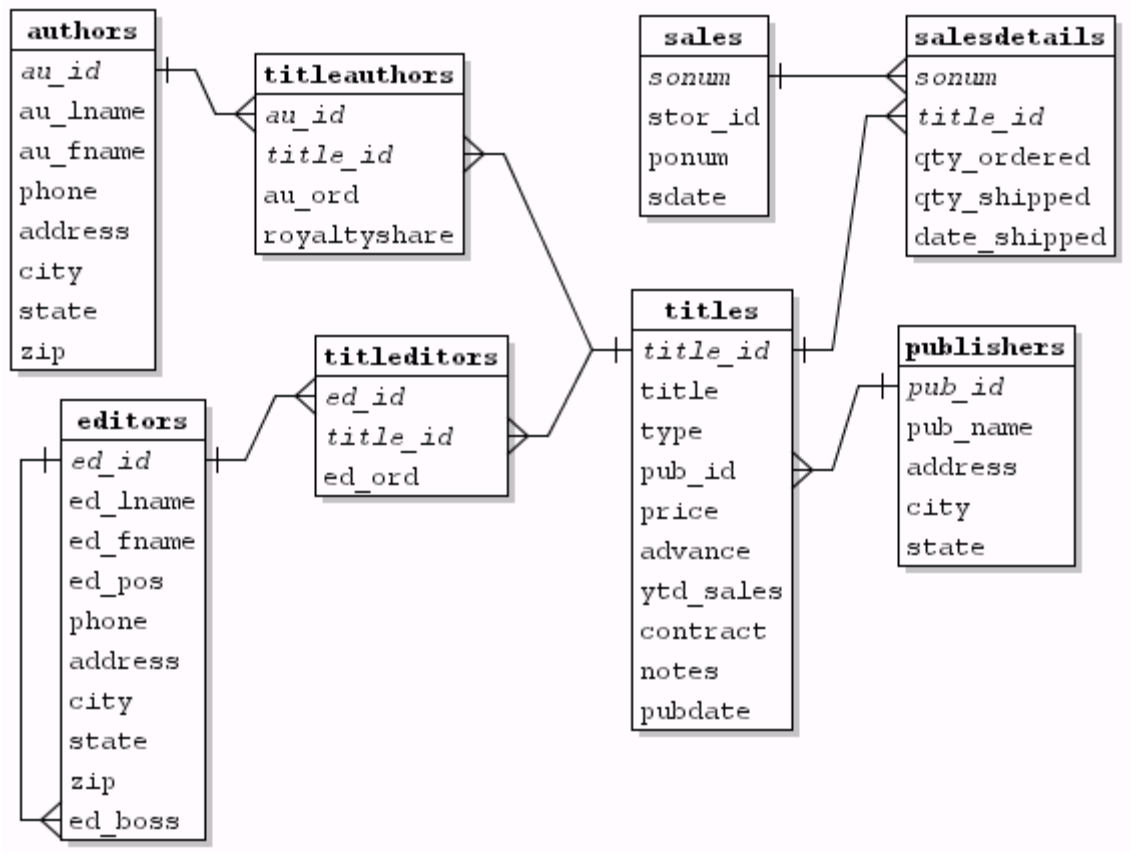
Question	Mark	Out of
1.a		5
1.b		5
1.c		5
1.d		5
2.a		5
2.b		5
TOTAL		Out of 30

All queries for this exam use the same schema as in some of the SQL tutorials:

authors(au_id, au_lname, au_fname, phone, address, city, state, zip)
titleauthors(au_id, title_id, au_ord, royaltyshare)
sales(sonum, stor_id, ponum, sdate)
salesdetails(sonum, qty_ordered, qty_shipped, title_id, date_shipped)
editors (ed_id, ed_lname, ed_fname, ed_pos, phone, address, city, state, zip,ed_boss)
titleditors(ed_id, title_id, ed_ord)
titles(title_id, title, type, pub_id, price, advance, ytd_sales, contract, notes, pubdate)
publishers(pub_id, pub_name, address, city, state)

The schema will be repeated on following pages for easy reference

Foreign Keys are shown in the following diagram, where the referring attribute is marked by a + and the referencing attribute is marked by a ∈ (e.g., au_id in titleauthors references au_id in authors)



The schema again:

authors(au_id, au_lname, au_fname, phone, address, city, state, zip)
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1. a.**SQL:** Find the first name of all authors who are not editors. Remove duplicates and alphabetize.

```
SELECT DISTINCT au_fname
FROM authors a
WHERE a.au_id NOT IN (
                        SELECT e.ed_id
                       FROM editors e)
ORDER BY au_fname
```

```
AU_FNAME
--------------------
Abraham
Akiko
Albert
Ann
Anne
Burt
Chastity
Cheryl
Dick
Dirk
Heather
Innes
Johnson
Livia
Marjorie
Meander
Michael
Michel
Morningstar
Reginald
Sheryl
Stearns
Sylvia
23 rows selected.
```

Common errors:

- *Comparing only first name or last name or something else of authors with that of editors (You were given marks if you compared both names or IDs)*
- *Forgetting "order by" or writing it incorrectly such as "Sort by" or not writing the attribute*
- *Forgetting distinct*
- *Trying to find editor_id through joining authors, titleauthors, titles and editors, by titleditors and titles*
- *Not using NOT EXIST or NOT IN and comparing them simply comparing two tuples*

The schema again:

authors(au_id, au_lname, au_fname, phone, address, city, state, zip)
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publishers(pub_id, pub_name, address, city, state)

b. **SQL:** "List the last names of all authors who have a letter 'k' in their last name?" If a last name occurs more than once, only list it once

Answer:

SELECT DISTINCT au_lname
FROM authors
WHERE au_lname LIKE '%k%' or au_lname LIKE '%K%'
Tuples:
Karsen
Locksley
Yokomoto
This is a question from the practice midterm from Spring 2010. It is also question 8j from the first SQL tutorial
Common error: You have to check for both the capital and lowercase K.
Also need to have distinct

The schema again:

authors(au_id, au_lname, au_fname, phone, address, city, state, zip)
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publishers(pub_id, pub_name, address, city, state)

c: **SQL**. For each editor who has edited more than two books, return the last name of the editor and how many books she/he has edited

```
SELECT e.ed_lname, count(t.title_id)
FROM editors e, titleditors t
WHERE e.ed_id = t.ed_id
GROUP BY e.ed_id, e.ed_lname
HAVING count(title_id) > 2
```

Tuples:

ED_LNAME	COUNT(T.TITLE_ID)
DeLongue	6
Himmel	6
Rutherford-Hayes	5
Kaspchek	6
McCann	10

Common errors:

- *You can't just group by ed_id and then select the last name. Another way to do this is do a view/sub query to get the ed_id and then join to get the authors*
- *You need to specify which ed_id to group by. Yes, they're the same, but SQL isn't that smart*
- *You can't just group by ed_lname because there may be more than one editor with the same last name.*
- *Renaming in select and using that within itself*
- *No group by*

The schema again:
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publishers(pub_id, pub_name, address, city, state)

d. Find the last name of the first author(s) of the book(s) that has had the most number of copies ordered. Remove duplicates.

```
CREATE VIEW total_sold(title_id, total_quantity) AS
SELECT title_id, SUM(qty_ordered)
FROM  salesdetails
GROUP BY title_id

CREATE VIEW max_sold(title_id) AS
SELECT title_id
FROM total_sold t
WHERE t.total_quantity >= ALL (
        SELECT t2.total_quantity
        FROM total_sold t2
        )



SELECT  distinct (a.au_lname)
FROM    authors a, max_sold m, titleauthors ta
WHERE  a.au_id = ta.au_id AND  ta.au_ord = 1 AND ta.title_id = m.title_id
```

Tuples:

```
AU_LNAME
----------------------------------------
Ringer
```

Common Errors:

- *No grouping whatsoever (you need to add up all the orders – it's not enough to find the number of books ordered in a single order)*
- *Wrong group by (e.g., author_id, other)*
- *Using aggregate functions in 'where' or 'having' clauses without their being part of a Boolean condition.*
- *Not using distinct*

The schema again:

authors(au_id, au_lname, au_fname, phone, address, city, state, zip)
titleauthors(au_id, title_id, au_ord, royaltyshare)
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publishers(pub_id, pub_name, address, city, state)

2. THIS QUESTION IS FOR DATALOG

a. Find the first name of all people who have been either editors *or* authors

Q2a(fn):-authors(_, _, fn, _, _, _, _, _)
Q2a(fn):-editors(_, _, fn, _, _, _, _, _ , _)

Common errors:

- *Trying to join instead of taking union*
- *Forgetting to make the heads of the queries the same name*
- *Note: not an error if you assumed that people needed to be in the titleauthor table and titleditor table to be an actual author or editor.*

b. Find the titles of all books by an author with the last name ‘Smith’ where the author’s zip is greater than 15232

Q2b(title) :- authors(aid, ‘Smith’, _, _, _, _, _, zip), titleauthors(aid, tid, _, _),
titles(tid, title, _, _, _, _, _, _, _, _), zip > 15232

Common errors:

- *Putting lname = ‘Smith’ in a separate clause at the end*
- *Forgetting to use the titles table to get the title rather than just the titleID*

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