

Examination

Instructions

This is an open-book, open-note examination. You are free to use the web (especially the class web pages and Oracle documentation) to help you. Like any examination, however, we expect your submission to reflect your work exclusively. Hence any communication via any means (e.g., voice, paper, e-mail, zephyr) with anyone other than the class instructors is prohibited.

The exam duration is 90 minutes but you can take 2 hours so that there is less time pressure. All the tables needed for the exam questions are accessible in Oracle via SQL*Plus using your personal Oracle account that we have been using for lab exercises and homework.

The exam is worth a total of 100 points.

An effective way for you to prepare your exam answers is to use the same familiar methods you have used for the lab assignments and homework. Create an ASCII text or HTML file in your CRL or Athena locker to contain your answers. Name your exam **username_exam.txt** if you use text format or **username_exam.html** if you use HTML format. For your own security, we suggest that you save it in the "Private" subdirectory of your locker (i.e., the user **smith** might create the text file on her H:\ drive from a PC and name it **H:\Private\smith_exam.txt**. If she stored the file in her CRL locker, it would be **S:\smith\private\smith_exam.txt**). We strongly recommend that you retain the file containing your answers until we return the graded exams to you.

- *Remember to turn in your exam (in plain ASCII text or HTML format) before leaving the room.*
- *Make sure to include your name and Athena user ID near the beginning of your file (failure to include this will cost you 5 points; you lose 2 points if you supply only one piece of information)!*
- *Please confirm with an instructor that your exam has been received.*

Finally, don't spend all your time on one or two questions. Start by looking over all the questions to get a general sense of what, and how much, is being asked, and the grade points associated with each question. Then start work on your answers but move on to the next question if you've spent more than 10 minutes on any one of them.

Good luck!

Part I: Conceptual and 'Fix SQL' Questions (40 points)

Question I-1.

The query below is intended to find the average price per square foot of each parcel that was sold. For any parcel that was sold more than once, we would like to compute the average price per square foot. However, the query generates an error message.

```
SELECT p.parcelid, count(*), s.sprice/sum(p.sqft)
FROM parcels p, sales s
WHERE p.parcelid = s.parcelid
GROUP BY p.parcelid
ORDER BY count(*) DESC;
```

Question I-1a (4 points): Why does the query generate an error message?

Question I-1b (8 points): Rewrite this query to produce the correct result. Show your SQL and its output.

Question I-2 (10 points)

Describe in a few sentences (using illustrative examples from class data tables) the main differences among one-to-one, one-to-many, and many-to-many relationships. How are many-to-many relationships typically handled when designing relational databases?

Question I-3

Based on the parcels database described in [the parcels database](#)^{*}, answer the following questions:

Question I-3a (10 points): Draw an E-R diagram for the parcels, owners, and sales tables.

Question I-3b (8 points): Suggest a query involving both a 'group by' and a three-way-join of these three tables. Show your SQL query and the table that it returns.

^{*} Kindly refer to the Exams Section

Part II: Writing SQL Statements (60 points)

For all the questions in this part, show us the SQL and SQL*Plus statement(s) you used and their results. We cannot give you partial credit if we are unable to follow your work. (Note, there is *no* requirement to answer all questions with a single SQL statement. If you find it convenient to break up a complex query into more than one SQL statement, that is okay. Just be clear about what you did.)

Question II-1

Question II-1a (5 points): Based on the parcels database, which parcel has the highest per sqft property value (land value + building value)?

Question II-1b (4 points): Who owns this parcel?

Question II-1c (4 points): Has there been a fire on this parcel?

Question II-2

Question II-2a (6 points): How many URISA papers use keywords that have "DATA" as part of the keywords? For each of the keywords, count the paper numbers and sort it by the counts.

Question II-2b (10 points): Using the URISA database, develop a SQL query that lists all the keyword codes along with the number of times they were used for all the papers authored by NICHOLAS R. CHRISMAN.

Question II-3: This query identifies all the zoning variances that involved a board decision that agreed with the BRA recommendation:

```
select CASENUMBER, brarecom, boarddecis
  from zoning
 where brarecom > 0 and boarddecis > 0
    and brarecom = boarddecis
 order by brarecom;
```

Question II-3 (6 points): Rewrite the query to count how many of these cases had each possible result for the **brarecom** (and **boarddecis**) variables.

Question II-3b (10 points): For each **brarecom** value, determine the number of these cases that requested requested converting vacant land into housing?

Question II-4: Consider the SALES table in the parcels database.

Question II-4(a) (5 points): Write a query that lists all parcels in the SALES table that sold more than once.

Question II-4(b) (10 points): Write a query to determine the time (in days) between the earliest and latest sale date for all parcels that sold more than once. *[Note that you can subtract two dates in order to get the number of intervening days.]*

Exam Turnin Checklist

- Is your **name** and **Athena ID** at the top of your exam? If not, you'll lose 5 points (2 points if you include one but not the other)!
- Is your completed test saved in a plain text (ASCII) file named **username_exam.txt** or HTML (web page) file named **username_exam.html**?
- Did you confirm with an instructor that your exam was received?