Due Date: Sunday 2013-07-21 11:00 p.m.
Points: 50 points max
Turn In: The zipped file containing the script and spool files.

General Directions

Use the books databases. Use the full table name for the tables including the database name- such as a_bkorders.order_headers

These tasks focus on the use of Advanced Queries programming techniques. These queries must use the techniques described in the analytical functions notes for this unit. Each task uses 1 query. Do not create views; use subqueries.

The notes for this week sometimes give you more than one way to accomplish a task; you can use any of these you wish. The data in the sample displays is to show aliases and format and layout only- it is not necessarily the correct answers. And the totals are not always numerically correct.

- **One more time:** The amount due on an order is not the sum of the prices; the amount due also reflects the quantity purchased. You need quantity * price. You will lose points on **each** query where you do not calculate this correctly. If you buy 25 books, it will cost more than if you buy 1 book. The price in the order details table is the price per book.
- Several questions in this assignment refer to total sales; this means that you multiply the quantity times the order price and total that value for the indicated group
- If the query determines total quantity, that is total number of books ordered for whatever grouping is required.
- Some of these tasks refer to the list price of the book- that is the attribute in the books table
- If you want to display data by book, you need to group by the book id. You might add additional attributes to the Group By clause for which there is only one value per book, such as title. But if you add the order_id attribute to the Group By clause, then you are no longer displaying data by book; you are instead getting one group for each book and order id combination.
- Consider the difference between count(x) and count(distinct x).
- Alignment of descriptive labels in the columns is not critical
- Some of these queries are quite long. If you do not format the sql appropriately and indent subqueries, then you will less partial credit if I cannot quickly read your sql logic.

Tasks

Task 01: Display the following for book orders; each row shows data for a single order date. Include only orders in the current year. Include only orders that have associated detail rows.
The first column is the order date; the second column is the number of orders on the given date; the third column is the amount due for those orders, the fourth column is the number of books ordered for those orders.
The last row shows the grand totals. The result is sorted by the order_date.

```
+------------+--------------+----------+----------------+
| OrderDate  | NumberOrders | AmntDue  | NumbBooksPurch |
+------------+--------------+----------+----------------+
| 2013-03-12 |           34 |   123.45 |            323 |
| 2013-03-18 |           19 |   456.78 |             45 |
. . . rows omitted to save space here
| 2013-06-22 |            3 |    99.00 |              6 |
| NULL       |           76 | 85200.22 |            788 |
+------------+--------------+----------+----------------+
```

Task 02: Display the book order data showing the year of the order in the first column, the month in the second. Display totals by month and by year and grand totals. The result is sorted by the year and month. Display the messages "Yearly Total" and "Grand Total" instead of the nulls that is the default display for these rows. Include only orders that have associated detail rows.

```
+-------------+--------------+----------+----------+-----------------+
|        Year |        Month | Order_ID |  AmntDue | NumbBooksPurch |
+-------------+--------------+----------+----------+-----------------+
. . . rows omitted to save space here
|        2012 |           11 |     2005 |    34.00 |               3 |
|        2012 |           11 |     2016 |    78.00 |               4 |
|        2012 |           11 |     3005 |    90.90 |               2 |
|        2012 |           11 |     NULL |   999.90 |              99 |
|        2012 |           12 |      895 |   150.00 |              20 |
|        2012 |           12 |      899 |    50.60 |               1 |
|        2012 |           12 |     NULL |   999.90 |              99 |
|        2012 | Yearly Total |     NULL | 44444.90 |             999 |
|        2013 |            1 |     1152 |    99.98 |               2 |
|        2013 |            1 |     1153 |    69.00 |               3 |
|        2013 |            1 |     1155 |   564.95 |              12 |
. . . rows omitted to save space here
|        2013 | Yearly Total |     NULL | 55555.09 |             888 |
| Grand Total | Yearly Total |     NULL | 99999.99 |            1887 |
+-------------+--------------+----------+----------+-----------------+
```

OPTIONAL For more of a challenge, try this format;

```
+-------------+-------------+-------------+-----------+-----------------+
|        Year |       Month |    Order_ID |   AmntDue | NumbBooksPurch |
+-------------+-------------+-------------+-----------+-----------------+
. . . rows omitted to save space here
|        2012 |          11 |        2016 |     78.00 |               4 |
|        2012 |          11 |        3005 |     90.90 |               2 |
|        2012 |          11 | Month Total |    999.90 |              99 |
|        2012 |          12 |         895 |    150.00 |              20 |
|        2012 |          12 |         899 |     50.60 |               1 |
|        2012 |          12 | Month Total |    999.90 |              99 |
|        2012 |  Year Total | ........... |  44444.90 |             999 |
|        2013 |           1 |        1152 |     99.98 |               2 |
|        2013 |           1 |        1153 |     69.00 |               3 |
|        2013 |           1 |        1155 |    564.95 |              12 |
. . . rows omitted to save space here
|        2013 |           4 | Month Total | 222222.21 |            1000 |
|        2013 |  Year Total | ........... | 555555.15 |            3578 |
| Grand Total | ........... | ........... | 999999.90 |            9999 |
+-------------+-------------+-------------+-----------+-----------------+
```

Task 03: Continuing with the same calculations, display the total lines only for the year and month totals.

```
+-------------+--------------+--------------+-----------+-------------------+
| Year        | Month        | NumberOrders | AmntDue   | NumbBooksOrdered |
+-------------+--------------+--------------+-----------+-------------------+
| 2011        | 10           |            4 |  11224.95 |               283 |
| 2011        | 11           |            7 |   8050.08 |               164 |
| 2011        | 12           |            4 |  30489.53 |               954 |
| 2011        | Yearly Total |           15 |  49764.56 |              1401 |
| 2012        | 1            |            9 |  16865.88 |               553 |
| 2012        | 2            |            8 |  14736.61 |               960 |
| 2012        | 3            |            4 |   3021.40 |               112 |
. . .
| 2012        | 11           |            6 |  17496.80 |               400 |
| 2012        | 12           |            5 |    707.13 |                24 |
| 2012        | Yearly Total |          126 | 153701.23 |              5010 |
| 2013        | 1            |            5 |   5248.35 |               222 |
```

```
| 2013        | 2           |            7 |    618.82 |               35 |
. . .
| 2013        | 5           |            6 |   6622.50 |              172 |
| 2013        | Yearly Total |           45 |  26828.66 |              819 |
| Grand Total | Yearly Total |          186 | 230294.45 |             7230 |
+-------------+-------------+--------------+-----------+------------------+
```

This would look a bit better is the last line had no text in the second column

```
| Grand Total |             |          186 | 230294.45 |             7230 |
+-------------+-------------+--------------+-----------+------------------+
```

Task 04: This is an author sales report. Rollup total sales (total amount due) for each book by author. Include rows only for authors who have books and the author is the first listed author(author sequence = 1). Include books that were free. Books with no authors will not be included.
We have some books which have no orders; display the message "No Sales" in the last column if there were no orders for a book.
Note that there is a grand total line at the bottom with a label; also there are labels for the book total lines. This report is ordered by author id and book id.

```
+-------------+------------+---------------+--------------+
| AuthorID    | BookID     | TotalQuantity | TotalSales   |
+-------------+------------+---------------+--------------+
. . .
| F1233       |       1948 |            46 |       123.45 |
| F1233       | All books  |            46 |       123.45 |
| G6543       |        142 |             8 |       100.25 |
| G6543       |        143 |             5 |        50.25 |
| G6543       |        144 |             1 |        78.25 |
| G6543       | All books  |            14 |       228.75 |
| H5820       |       1478 |             0 |     No sales |
| H5820       | All books  |             0 |     No sales |
| H7512       |       2013 |            25 |         0.00 |
| H7512       |       3013 |           200 |         0.00 |
| H7512       | All Books  |           225 |         0.00 |
. . .

| All Authors | All Books  |          1205 |     78978.56 |
+-------------+------------+---------------+--------------+
```

Task 05: Display the books which have a topic of SQL, ranked by their page count. We want to use a 250-page range for ranking the page counts. This means that any book with page counts -0 up to 249 have the same rank; page counts 250-499 have the same rank; page counts 500-749 have the same rank, etc. In the sample display, we have two books which are all at rank 3. Note that we are not skipping rank numbers.
Do not make assumptions about the maximum page count value. (This means that a case expression will not work because you do not have an upper range to code.) When designing the logic of the query, do not use the current set of data in the table to make decision about the logic.

```
+---------+------------+------+
| Book_ID | Page_count | Rank |
+---------+------------+------+
|    1524 |       2500 |    1 |
|    1444 |        600 |    2 |
|    1474 |        501 |    2 |
|    1488 |        300 |    3 |
|    8415 |        250 |    3 |
|    8546 |        200 |    4 |
|    1587 |        130 |    4 |
|    1001 |        105 |    4 |
```

Task 06: Display the three shortest books for each publisher. Some publishers may have only 1 or 2 books. Display the first 25 characters of the book title The report is displayed in publisher id and rank order.
Do not report any books for which we have no page count; do not report any publisher for which we have no books.
Find the ties for last place.
I added extra lines between publishers here- the blank lines will not appear in the result set produced by your query.
Note that publisher 8022 may have longer books, but we already have three short books from this publisher.

```
+---------+--------------------------+------------+------+
| Publ_ID | Title                    | Page_Count | Rank |
+---------+--------------------------+------------+------+
|    8000 | June 5                   |        782 |    1 |
|    8000 | The Final Exam Queries   |        876 |    2 |
|    8000 | The Jolly Olive          |        894 |    3 |

|    8005 | The Bear Came Hunting    |        879 |    1 |

|    8012 | The Book of Birds        |         50 |    1 |
|    8012 | The Bigger Book of Birds |         60 |    2 |
|    8012 | Turtles and Lizards      |        503 |    3 |
|    8012 | Snakes and Aligators     |        503 |    3 |

|    8022 | A Little SQL             |         50 |    1 |
|    8022 | A Little MySQL           |        255 |    2 |
|    8022 | More SQL                 |        255 |    2 |
|    8022 | Enough with SQL          |        255 |    2 |
```

Task 07: Display a three day sum that shows the number of orders and the total books sold over a three day order date span. The range is the day preceding and the day following the order date. Limit the analysis to orders in September 2012. The report is displayed in order _date order.
Suppose we have the following orders only in September 2012

```
Date          invoice #
Sep  1, 2012  101
Sep  1, 2012  102
Sep  2, 2012  103
Sep  3, 2012  104
Sep  5, 2012  105
Sep  5, 2012  106
Sep 18, 2012  107
```

Display would reflect the following analysis

```
Date          Count      based on orders #   order dates
Sep 1,  2012  3          101, 102, 103       [Sep  1, Sep  2 ]
Sep 2,  2012  4          101, 102, 103, 104  [Sep  1, Sep  2, Sep  3 ]
Sep 3,  2012  2          103, 104            [Sep  2, Sep  3, Sep  4 ]
Sep 5,  2012  2          105, 106            [Sep  4, Sep  5, Sep 6 ]
Sep 18, 2012  1          107                 [Sep 17, Sep 18, Sep 19 ]
```

Sample output layout; note there is no row for 9/4 or 9/5 because we have no orders on those days

```
+------------+--------------------+----------------------+
| OrderDate  | 3 Day Order Count  | 3 Day Total Quantity |
+------------+--------------------+----------------------+
| 2012-09-01 |                 99 |                  999 |
| 2012-09-02 |                 99 |                  999 |
| 2012-09-03 |                 99 |                  999 |
| 2012-09-06 |                 99 |                  999 |
| 2012-09-07 |                 99 |                  999 |
```

Task 08: For each day in the month September 2012, display the date, the total quantity of books ordered and the total sales. If there are no sales on a particular date, then display 0 and 0.00 in the second and third columns.
Sample display layout for the first week. The report is displayed in order _date order.

```
+------------+-----------------+------------+
| OrderDate  | QuantityOrdered | TotalSales |
+------------+-----------------+------------+
| 2012-09-01 |              75 |    2233.00 |
| 2012-09-02 |               2 |      84.40 |
| 2012-09-03 |               3 |     100.25 |
| 2012-09-04 |               0 |       0.00 |
| 2012-09-05 |               0 |       0.00 |
| 2012-09-06 |              50 |     256.00 |
| 2012-09-07 |              10 |     567.00 |
```