Due Date: Monday, December 09, 2013 11:00 PM
Points: 45 points max
Turn In: The script and spool files turned in via the assignment drop box

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 week. 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.

Review of basic concepts re sales and grouping REREAD THE BOOKS DOCUMENT AS NEEDED.

- Some of these tasks refer to the list price of the book- that is the attribute in the books table
- 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. **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.
- If the query determines total quantity, that is total number of books ordered for whatever grouping is required.
- 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.
- These queries may produce many rows. Do not limit the rows.
- Consider the difference between count(x) and count(distinct x).
- Sorting the result set is important for this assignment
- Do not create views for this assignment; you can put a subquery in the From clause instead
- 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. 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 |
+------------+--------------+----------+----------------+
| 2012-06-12 |           34 |   123.45 |            323 |
| 2012-07-18 |           19 |   456.78 |             45 |
. . . rows omitted to save space here
| 2013-11-22 |            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.

```
+------------+------------+----------+----------+----------------+
|       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 |     NULL |   999.90 |             99 |
|       2012 |         12 |      895 |   150.00 |             20 |
|       2012 |         12 |      899 |    50.60 |              1 |
|       2012 |         12 |     NULL |   999.90 |             99 |
|       2012 |       NULL |     NULL | 44444.90 |            999 |
|       2012 |          1 |     1152 |    99.98 |              2 |
|       2012 |          1 |     1153 |    69.00 |              3 |
|       2012 |          1 |     1155 |   564.95 |             12 |
. . . rows omitted to save space here
|       2012 |       NULL |     NULL | 55555.09 |            888 |
|       NULL |       NULL |     NULL | 99999.99 |           1887 |
+------------+------------+----------+----------+----------------+
```

Task 03: Improve the display of task 2 by displaying the messages "Yearly Total" and "Grand Total" instead of the nulls that is the default display for these 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 |
|         2012 |            1 |     1152 |    99.98 |              2 |
|         2012 |            1 |     1153 |    69.00 |              3 |
|         2012 |            1 |     1155 |   564.95 |             12 |
. . . rows omitted to save space here
|         2012 | Yearly Total |     NULL | 55555.09 |            888 |
|  Grand Total | Yearly Total |     NULL | 99999.99 |           1887 |
+--------------+--------------+----------+----------+----------------+
```

OPTIONAL For more of a challenge try this format;(If you do this use the comment Task 03 format 2)

```
+------------+------------+-------------+-----------+----------------+
|        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 |
|         2012 |           1 |        1152 |     99.98 |              2 |
|         2012 |           1 |        1153 |     69.00 |              3 |
|         2012 |           1 |        1155 |    564.95 |             12 |
. . . rows omitted to save space here
|        2011 |           4 | Month Total | 222222.21 |           1000 |
```

```
|        2011 |  Year Total | .......... | 555555.15 |           3578 |
| Grand Total | .......... | .......... | 999999.90 |           9999 |
+-------------+-------------+------------+-----------+----------------+
```

Task 04: Continuing with the same calculations, display the total lines only for the year totals.

```
+-------------+-------------+--------------+----------+----------------+
|             |             | NumberOrders | AmntDue  | NumbBooksPurch |
+-------------+-------------+--------------+----------+----------------+
|  2010       | Yearly Total |          123 |   444.00 |            300 |
|  2011       | Yearly Total |          456 |   666.00 |            400 |
|  2012       | Yearly Total |          500 |   800.00 |            600 |
|  2013       | Yearly Total |          620 |   900.00 |            700 |
| Grand Total | Yearly Total |         1699 |  2910.00 |           2000 |
+-------------+-------------+--------------+----------+----------------+
```

Task 05: 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. Include books that were free. 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 06: Modify the query for task 05. This is still a rollup total sales report.
Now we want to include authors who have no books and books with no authors (use '_anon' as the author id in that case*)* Iinclude the other rows as in task 05

```
| P3002         |     no books |             0  |    No Sales  |
| P3002         |   All Books  |             0  |    No Sales  |
. . .

| _anon         |         5854 |             9  |       524.00 |
| _anon         |         5855 |             0  |    No Sales  |
| _anon         |   All Books  |           258  |     10000.06 |
| All Authors   |   All Books  |          5252  |    123123.45 |
+---------------+--------------+----------------+--------------+
```

Task 07: Display the books we have, ranked by their page count. We want to use a 50-page range for ranking the page counts. This means that any book with page counts 500-549 have the same rank; page counts 550-599 have the same rank; page counts 600-649 have the same rank; page counts 650-699 have the same rank, etc. In the sample display, we have four books which are all at rank 3. Note that we are not skipping rank numbers- examine the first two sample rows.

Do not make assumptions about the maximum page count value. 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
1001	2000	1
1587	1300	2
8546	982	3
8415	980	3
1474	976	3
1444	970	3
1524	918	4
2005	894	5
200	879	5
201	850	5
4574	825	6
6584	825	6

Task 08: Display the three shortest books for each publisher. Do not report any books for which we have no page count; do not report any publisher for which we have no books. Some publishers may have only 1 or 2 books. Display the first 25 characters of the book title. Finding the ties for third place is optional but more fun. The report is displayed in publisher id and rank order.

Publ_ID	Title	Page_Count	Rank
8000	June 5	782	1
8000	The Final Exam Queries an	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	50	2
8012	Turtles and Lizards of th	503	3
8012	Snakes and Aligators of t	503	3

WITHOUT TIES

publ_id	title	page_count	rank
8012	The Book of Birds	50	1
8012	The Bigger Book of Birds	50	2
8012	Snakes	503	3

3 rows in set (0.00 sec)

WITH THIRD PLACE TIES

publ_id	title	page_count	Ranking
8012	The Book of Birds	50	1
8012	The Bigger Book of Birds	50	1
8012	Snakes	503	3
8012	Turtles	503	3

Task 09: 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 will have one row for each order date

where we have sales. 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 that there is no row for 9/4- that would mean we had no sales that day.

```
+------------+--------------------+----------------------+
| OrderDate  | 3 Day Order  Count  | 3 Day Total Quantity |
+------------+--------------------+----------------------+
| 2012-09-01 |                 99 |                  999 |
| 2012-09-02 |                 99 |                  999 |
| 2012-09-03 |                 99 |                  999 |
| 2012-09-05 |                 99 |                  999 |
| 2012-09-06 |                 99 |                  999 |
| 2012-09-07 |                 99 |                  999 |
```

Task 10: 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. You will have 30 rows in the result set.
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 |             150 |    1234.20 |
| 2012-09-06 |               0 |       0.00 |
| 2012-09-07 |              10 |     567.00 |
```