Lab 3 2 %
Due October 12, 2017 midnight via Blearn

Using ORACLE server 12c SQL*Developer (client)

Use your Oracle USER ID on BTACS database.

Introduction

Oracle supports two main types of built-in functions:

1. Single-row functions (character functions, numeric functions, conversion functions, date functions, regular expressions functions)
2. Aggregate functions (**MIN, MAX, SUM, AVG, COUNT**, MEDIAN, STDDEV, VARIANCE .. and some more statistical functions)

Note: MIN, MAX, COUNT can be used with numbers, strings, and datetimes. The other functions are used with numbers. NULL values are ignored. DISTINCT keyword operates on distinct values.

We will use the Oracle 11g book's script for the JustLee books company (see Lab 2). The following is the database model.

Materials:

- Database Systems text book **Chapter 6 on ISO SQL** (note the differences between ISO SQL and Oracle SQL)
- **Aggregate functions** and **GROUP BY… HAVING** clause are covered in Chapter 11 (Oracle 11g SQL book) *** skip GROUPING SETS, CUBE, and ROLLUP.

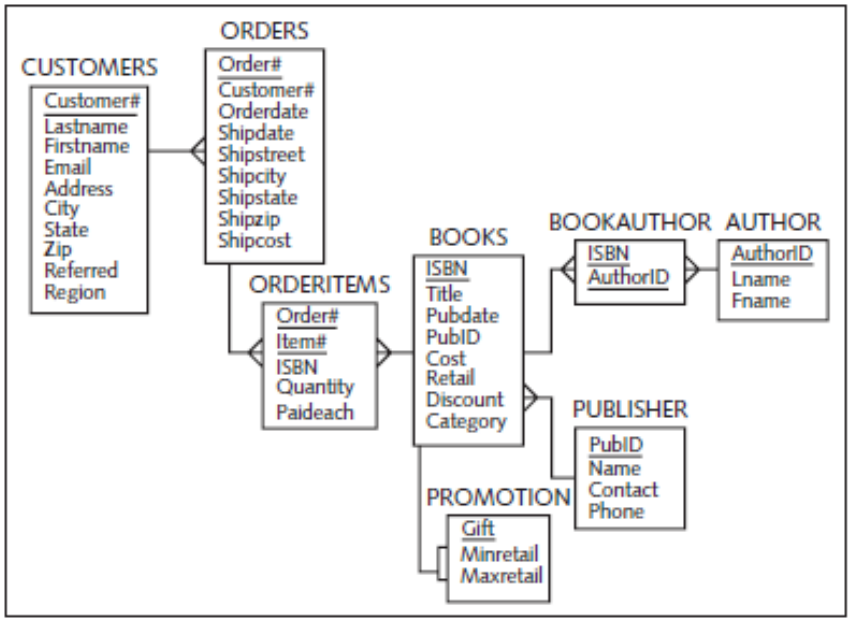


FIGURE 1-5 JustLee Books's table structures after normalization

In-class exercise

- Count the number of orders with shipping state Washington (WA).

```
SELECT COUNT (order#) "Number of Orders" FROM ORDERS WHERE
UPPER (SHIPSTATE) = 'WA';
```

- Count the total number of orders waiting for the shipment (NULL as shipping date).

```
SELECT COUNT (order#) "Number of Orders Not shipped" FROM
ORDERS WHERE SHIPDATE IS NULL;
```

- List each shipping state and the total number of orders in each state. GROUP BY….

```
SELECT SHIPSTATE, COUNT (*) "ORDER COUNT" FROM ORDERS GROUP BY
SHIPSTATE ORDER BY SHIPSTATE;
```

- How many different states are listed in the orders table? DISTINCT

```
SELECT COUNT (DISTINCT SHIPSTATE) "States" FROM ORDERS;
```

Individual work

1. Calculate the total revenue from all ordered books. Note: ORDERITEMS table holds data about each Order Item (book ISBN), quantity, and the price paid for each book.

```
SELECT SUM (QUANTITY*PAIDEACH)"Total Revenue" FROM ORDERITEMS;
```

	Total Re...
1	1688.05

2. What is the average retail price (from BOOKS table) for the "computer" (category) books?

```
SELECT AVG (RETAIL)"Average Retail Price" FROM BOOKS WHERE
UPPER (CATEGORY) = 'COMPUTER';
```

	Average Retail Price
1	52.85

3. List all book categories from the books table. For each category list min, max, and average price (cost column in BOOKS).

```
SELECT CATEGORY, MIN (COST)"MIN COST", MAX (COST)"MAX COST",
AVG (COST)"AVERAGE COST" FROM BOOKS GROUP BY CATEGORY;
```

	CATEGORY	MIN COST	MAX COST	AVERAGE COST
1	COMPUTER	21.8	47.25	34.5875
2	COOKING	12.5	19	15.75
3	CHILDREN	5.32	37.8	21.56
4	LITERATURE	21.85	21.85	21.85
5	BUSINESS	15.4	15.4	15.4
6	FITNESS	18.75	18.75	18.75
7	FAMILY LIFE	14.2	48	31.1
8	SELF HELP	17.85	17.85	17.85

4. List the publishing years (from BOOKS) and the number of books published in each year.

```
SELECT
        EXTRACT (YEAR FROM PUBDATE)"PUBLISH YEAR",
             COUNT (ISBN)"NUMBER OF BOOKS"
FROM books
GROUP BY EXTRACT (YEAR FROM PUBDATE);
```

	PUBLISH YEAR	NUMBER OF BOOKS
1	2005	6
2	2006	3
3	2003	2
4	2004	3

5. How many different books have not been ordered?

```
SELECT ISBN, TITLE FROM BOOKS WHERE ISBN NOT IN (SELECT
DISTINCT ISBN FROM ORDERITEMS);
```

	ISBN	TITLE
1	0132149871	HOW TO GET FASTER PIZZA
2	0299282519	THE WOK WAY TO COOK
3	4981341710	BUILDING A CAR WITH TOOTHPICKS

```
SELECT COUNT (ISBN) FROM BOOKS WHERE ISBN NOT IN (SELECT
DISTINCT ISBN FROM ORDERITEMS);
```

	COUNT(ISBN)
1	3

6. How many books (in total) authored by Jones Janice have been ordered?

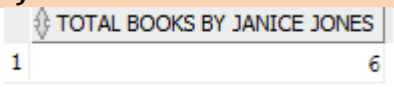
```
SELECT SUM (QUANTITY)"TOTAL BOOKS"
FROM BOOKS
JOIN BOOKAUTHOR ON BOOKS.ISBN = BOOKAUTHOR.ISBN
JOIN ORDERITEMS ON BOOKS.ISBN = BOOKAUTHOR.ISBN
WHERE AUTHORID = (SELECT authorid
FROM author
WHERE UPPER (LNAME) = 'JONES' AND UPPER (FNAME) = 'JANICE')
AND ORDERITEMS.ISBN = BOOKAUTHOR.ISBN;
```

	ALL BOOKS BY JANICE JONES SOLD
1	7

The above statement returns the sum of the total number of books ordered by Janice Jones including multiple quantities for the same book

The statement below returns the count of total titles that have been published by Janice Jones disregarding the quantity of each book that has been bought.

```
SELECT COUNT (*)"TOTAL BOOKS"
FROM BOOKS
JOIN BOOKAUTHOR ON BOOKS.ISBN = BOOKAUTHOR.ISBN
JOIN ORDERITEMS ON BOOKS.ISBN = BOOKAUTHOR.ISBN
JOIN AUTHOR ON BOOKAUTHOR.AUTHORID = AUTHOR.AUTHORID
WHERE UPPER (LNAME) = 'JONES' AND UPPER (FNAME) = 'JANICE'
AND ORDERITEMS.ISBN = BOOKAUTHOR.ISBN;
```



	TOTAL BOOKS BY JANICE JONES
1	6

7. List the customers (customer id, last name, first name) and their total number of orders (include only customers who have at least one order).

```
SELECT customers.customer#, lastname,firstname,COUNT(*)"Order
Count"
FROM
ORDERS JOIN CUSTOMERS ON ORDERS.CUSTOMER# =
CUSTOMERS.CUSTOMER#
GROUP BY customers.customer#,
customers.lastname,customers.firstname;
```

	CUSTOMER#	LASTNAME	FIRSTNAME	Order Count
1	1001	MORALES	BONITA	2
2	1020	FALAH	KENNETH	2
3	1003	SMITH	LEILA	2
4	1010	LUCAS	JAKE	2
5	1014	LEE	JASMINE	1
6	1007	GIANA	TAMMY	2
7	1017	NELSON	BECCA	1
8	1005	GIRARD	CINDY	2
9	1008	JONES	KENNETH	1
10	1015	SCHELL	STEVE	1
11	1019	SMITH	JENNIFER	1
12	1004	PIERSON	THOMAS	1
13	1011	MCGOVERN	REESE	1
14	1018	MONTIASA	GREG	2

8. List the customer (customer id, last name, first name) and their total number of orders (list all customers even if they do not have orders).

```
SELECT customers.customer#,
lastname,firstname,COUNT(order#)"Order Count"
FROM
ORDERS RIGHT OUTER JOIN CUSTOMERS ON ORDERS.CUSTOMER# =
CUSTOMERS.CUSTOMER#
GROUP BY
CUSTOMERS.CUSTOMER#,customers.lastname,customers.firstname;
```

	CUSTOMER#	LASTNAME	FIRSTNAME	Order Count
1	1001	MORALES	BONITA	2
2	1002	THOMPSON	RYAN	0
3	1016	DAUM	MICHELL	0
4	1020	FALAH	KENNETH	2
5	1003	SMITH	LEILA	2
6	1010	LUCAS	JAKE	2
7	1012	MCKENZIE	WILLIAM	0
8	1014	LEE	JASMINE	1
9	1007	GIANA	TAMMY	2
10	1017	NELSON	BECCA	1
11	1005	GIRARD	CINDY	2
12	1006	CRUZ	MESHIA	0
13	1008	JONES	KENNETH	1
14	1015	SCHELL	STEVE	1
15	1019	SMITH	JENNIFER	1
16	1021	SCARLETT	O 'HARA	0
17	1009	PEREZ	JORGE	0
18	1004	PIERSON	THOMAS	1
19	1011	MCGOVERN	REESE	1
20	1013	NGUYEN	NICHOLAS	0
21	1018	MONTIASA	GREG	2

9. List the customers (customer id, last name, first name) who have more than 1 order.

```
SELECT customers.customer#, lastname,firstname,COUNT
(order#)"Order Count"
FROM
ORDERS JOIN CUSTOMERS ON ORDERS.CUSTOMER# =
CUSTOMERS.CUSTOMER#
GROUP BY CUSTOMERS.CUSTOMER#,
customers.lastname,customers.firstname
HAVING COUNT (order#)>1;
```

	CUSTOMER#	LASTNAME	FIRSTNAME	Order Count
1	1001	MORALES	BONITA	2
2	1020	FALAH	KENNETH	2
3	1003	SMITH	LEILA	2
4	1010	LUCAS	JAKE	2
5	1007	GIANA	TAMMY	2
6	1005	GIRARD	CINDY	2
7	1018	MONTIASA	GREG	2

10. List the customers (customer id, last name, first name) who have ordered at least one "computer" book.

```
SELECT CUSTOMERS.CUSTOMER#, CUSTOMERS.LASTNAME,
CUSTOMERS.FIRSTNAME
FROM ORDERITEMS JOIN BOOKS ON ORDERITEMS.ISBN = BOOKS.ISBN
JOIN ORDERS ON ORDERS.ORDER# = ORDERITEMS.ORDER#
JOIN CUSTOMERS ON ORDERS.CUSTOMER# = CUSTOMERS.CUSTOMER#
WHERE UPPER (BOOKS.CATEGORY) = 'COMPUTER'
GROUP BY CUSTOMERS.CUSTOMER#, CUSTOMERS.LASTNAME,
CUSTOMERS.FIRSTNAME;
```

	CUSTOMER#	LASTNAME	FIRSTNAME
1	1001	MORALES	BONITA
2	1003	SMITH	LEILA
3	1014	LEE	JASMINE
4	1007	GIANA	TAMMY
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