

Homework 3

Khang Thai

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Question 1)

```
library(RSQLite)
```

```
## Warning: package 'RSQLite' was built under R version 4.3.3
```

```
library(DBI)
```

```
## Warning: package 'DBI' was built under R version 4.3.3
```

```
con <- DBI::dbConnect(RSQLite::SQLite(), dbname = "classic.db")
```

(a)

Primary Key: productCode, orderNumber

Foreign Key: p.productCode, od.orderNumber

(b)

```
SELECT productLine, SUM(quantityOrdered) AS totalQuantityOrdered
FROM orderdetails
JOIN products ON orderdetails.productCode = products.productCode
GROUP BY productLine
ORDER BY totalQuantityOrdered DESC
```

Table 1: 7 records

productLine	totalQuantityOrdered
Classic Cars	35582
Vintage Cars	22933
Motorcycles	12778
Planes	11872
Trucks and Buses	11001
Ships	8532
Trains	2818

Classic Cars has the most quantity ordered

(c)

```
SELECT orderNumber, SUM(quantityOrdered) AS totalQuantityOrdered
FROM orderdetails
```

```
GROUP BY orderNumber
ORDER BY totalQuantityOrdered DESC
LIMIT 1;
```

Table 2: 1 records

orderNumber	totalQuantityOrdered
10222	717

```
SELECT od.orderNumber, p.productName, od.quantityOrdered
FROM orderDetails od
JOIN products p ON od.productCode = p.productCode
WHERE od.orderNumber = (
    SELECT orderNumber
    FROM orderdetails
    GROUP BY orderNumber
    ORDER BY SUM(quantityOrdered) DESC
    LIMIT 1)
ORDER BY od.quantityOrdered DESC;
```

Table 3: Displaying records 1 - 10

orderNumber	productName	quantityOrdered
10222	1972 Alfa Romeo GTA	49
10222	1980s Black Hawk Helicopter	49
10222	1999 Yamaha Speed Boat	49
10222	Corsair F4U (Bird Cage)	48
10222	1912 Ford Model T Delivery Wagon	47
10222	1940 Ford Delivery Sedan	46
10222	1941 Chevrolet Special Deluxe Cabriolet	45
10222	1937 Horch 930V Limousine	43
10222	American Airlines: MD-11S	43
10222	The Titanic	38

(d)

```
SELECT
    COUNT(CASE WHEN od.priceEach < p.MSRP THEN 1 END) AS below_msrp,
    COUNT(CASE WHEN od.priceEach = p.MSRP THEN 1 END) AS at_msrp,
    COUNT(CASE WHEN od.priceEach > p.MSRP THEN 1 END) AS above_msrp
FROM orderDetails od
JOIN products p ON od.productCode = p.productCode
```

Table 4: 1 records

below_msrp	at_msrp	above_msrp
2855	141	0

(e)

```
SELECT COUNT(p.productCode) AS never_purchased
FROM products p
LEFT JOIN orderDetails od ON p.productCode = od.productCode
WHERE od.orderNumber IS NULL;
```

Table 5: 1 records

never_purchased
1

```
SELECT p.productCode, p.productName
FROM products p
LEFT JOIN orderDetails od ON p.productCode = od.productCode
WHERE od.orderNumber IS NULL;
```

Table 6: 1 records

productCode	productName
S18_3233	1985 Toyota Supra

Question 2)

(a)

```
SELECT orderNumber, COUNT(DISTINCT productCode) AS distinctProducts
FROM orderDetails
GROUP BY orderNumber
ORDER BY distinctProducts DESC
LIMIT 1;
```

Table 7: 1 records

orderNumber	distinctProducts
10398	18

```
SELECT p.productName
FROM orderDetails od
JOIN products p ON od.productCode = p.productCode
WHERE od.orderNumber = (
    SELECT orderNumber
    FROM orderDetails
    GROUP BY orderNumber
    ORDER BY COUNT(DISTINCT productCode) DESC
    LIMIT 1
)
ORDER BY p.productName;
```

Table 8: Displaying records 1 - 10

productName
1900s Vintage Bi-Plane
1900s Vintage Tri-Plane
1928 British Royal Navy Airplane
1928 Ford Phaeton Deluxe
1930 Buick Marquette Phaeton
1937 Horch 930V Limousine
1941 Chevrolet Special Deluxe Cabriolet
1980s Black Hawk Helicopter
1999 Yamaha Speed Boat
ATA: B757-300

(b)

```

SELECT c.contactFirstName, c.contactLastName, c.country
FROM customers c
JOIN orders o ON c.customerNumber = o.customerNumber
WHERE o.orderNumber = (
  SELECT orderNumber
  FROM orderDetails
  GROUP BY orderNumber
  ORDER BY COUNT(DISTINCT productCode) DESC
  LIMIT 1
);

```

Table 9: 1 records

contactFirstName	contactLastName	country
Paul	Henriot	France

(c)

```

SELECT c.customerName, c.contactFirstName, c.contactLastName, o.orderNumber,
SUM(od.quantityOrdered * od.priceEach) AS total
FROM customers c
JOIN orders o ON c.customerNumber = o.customerNumber
JOIN orderDetails od ON o.orderNumber = od.orderNumber
GROUP BY o.orderNumber, c.customerNumber, c.customerName, c.contactFirstName, c.contactLastName
ORDER BY total DESC
LIMIT 1;

```

Table 10: 1 records

customerName	contactFirstName	contactLastName	orderNumber	total
Dragon Souveniers, Ltd.	Eric	Natividad	10165	67392.85

(d)

```

SELECT p.productName, SUM(od.quantityOrdered) AS totalQuantity
FROM products p
JOIN orderDetails od ON p.productCode = od.productCode
JOIN orders o ON od.orderNumber = o.orderNumber
JOIN customers c ON o.customerNumber = c.customerNumber
WHERE c.country = 'USA'
GROUP BY p.productCode, p.productName
ORDER BY totalQuantity DESC
LIMIT 1;

```

Table 11: 1 records

productName	totalQuantity
1957 Chevy Pickup	523

```

SELECT p.productName, SUM(od.quantityOrdered) AS totalQuantity
FROM products p
JOIN orderDetails od ON p.productCode = od.productCode
JOIN orders o ON od.orderNumber = o.orderNumber
JOIN customers c ON o.customerNumber = c.customerNumber
WHERE c.country = 'Germany'
GROUP BY p.productCode, p.productName
ORDER BY totalQuantity DESC
LIMIT 1;

```

Table 12: 1 records

productName	totalQuantity
1971 Alpine Renault 1600s	117

Question 3)

(a)

Left join is intended to return all orders that is related to the customers information Inner join is intended to return only orders that have matching customers Right join is intended to return all customers that is related to the order information

(b)

```

SELECT COUNT(*) AS orderCount
FROM orders o
JOIN customers c ON o.customerNumber = c.customerNumber
WHERE c.contactFirstName = 'Susan'
AND c.contactLastName = 'Nelson'

```

Table 13: 1 records

orderCount
17

(c)

```
SELECT COUNT(od.quantityOrdered) AS totalQauntityOrdered
FROM customers c
JOIN orders o ON c.customerNumber = o.customerNumber
JOIN orderDetails od ON o.orderNumber = od.orderNumber
WHERE c.contactFirstName = 'Susan'
AND c.contactLastName = 'Nelson'
```

Table 14: 1 records

totalQauntityOrdered
180

Question 4)

```
SELECT salesRepEmployeeNumber, COUNT(DISTINCT customerNumber) AS totalCustomers,
SUM(totalSpending) AS totalCustomerSpending
FROM (
  SELECT c.salesRepEmployeeNumber, c.customerNumber,
  SUM(od.quantityOrdered * od.priceEach) AS totalSpending
  FROM orderDetails od
  JOIN orders o ON od.orderNumber = o.orderNumber
  JOIN customers c ON o.customerNumber = c.customerNumber
  WHERE c.salesRepEmployeeNumber IS NOT NULL
  GROUP BY c.salesRepEmployeeNumber, c.customerNumber
) AS customerSpending
GROUP BY salesRepEmployeeNumber
ORDER BY totalCustomerSpending DESC;
```

Table 15: Displaying records 1 - 10

salesRepEmployeeNumber	totalCustomers	totalCustomerSpending
1370	7	1258577.8
1165	6	1081530.5
1401	10	868220.6
1501	8	732096.8
1504	9	704853.9
1323	8	669377.1
1612	5	584593.8
1337	6	569485.8
1611	5	562582.6
1216	6	505875.4