Practice SQL Aggregate Functions

This page provides exercises and solutions to help you practice SQL Aggregate functions. These exercises are based on the ACDB database, and may be performed online or by running the sample schema scripts on your local database server. For additional exercises in other subjects, use this link.

Part 1 – Basic Usage

1. Display the lowest last name alphabetically (*Customers* table).
2. Display the average monthly payment (*Packages* table).
3. Display the highest last name alphabetically (*Customers* table).
4. Display the number of internet packages (*Packages* table).
5. Display the number of records in *Customers* table.
6. Display the number of distinct states (*Customers* table).
7. Display the number of distinct internet speeds (*Packages* table).
8. Display the number of values (exclude Nulls) in Fax column (*Customers* table).
9. Display the number of Null values in Fax column (*Customers* table).
10. Display the highest, lowest and average monthly discount (*Customers* table).

Part 2 – GROUP BY and HAVING clauses

1. Display the state and the number of customers for each state (*Customers* table).
2. Display the internet speed and the average monthly payment for each speed (*Packages* table).
3. Display the state and the number of distinct cities for each state (*Customers* table).
4. Display the sector number and the highest monthly payment for each

sector (*Packages* table).

5. Package number and average monthly discount (*Customers* table) –
    1. Display the package number and the average monthly discount for each package.
    2. Display the package number and the average monthly discount for each package, only for packages whose number equals 22 or 13.

6. Display the highest, lowest and average monthly payment for each internet speed (*Packages* table).
7. The number of customer in each internet package (*Customers* table) –
    1. Display the package number and the number of customers for each package number.
    2. Modify the query to display the package number and number of customers for each package number, only for the customers whose monthly discount is greater than 20.
    3. Modify the query to display the package number and number of customers for each package number, only for the packages with more than 100 customers.

8. Display the state, city and number of customers for each state and city.
9. Cities and the average monthly discount (*Customers* table) –
    1. Display the city and the average monthly discount for each city
    2. Display the city and the average monthly discount for each city, only for the customers whose monthly discount is greater than 20

10. States and the lowest monthly discount (*Customers* table) –
    1. Display the state and the lowest monthly discount for each state.
    2. Display the state and lowest monthly discount for each state, only for states where the lowest monthly discount is greater than 10

11. Display the internet speed and number of package for each internet speed, only for the internet speeds with more than 8 packages.

Solutions

These solutions apply to SQL Server and Oracle.

```sql
-- 1
SELECT MIN(last_name) FROM customers

-- 2
SELECT AVG(monthly_payment) FROM packages

-- 3
SELECT MAX(last_name) FROM customers

-- 4
SELECT COUNT(*) FROM packages

-- 5
SELECT COUNT(*) FROM customers

-- 6
SELECT COUNT(DISTINCT state) FROM customers

-- 7
SELECT COUNT(DISTINCT speed) FROM packages

-- 8
SELECT COUNT(fax) FROM customers

-- 9
SELECT COUNT(*) - COUNT(fax)
FROM customers
-- or
SELECT COUNT(*)
FROM customers
WHERE fax IS NOT NULL

-- 10
SELECT  MIN(monthly_discount) ,
    MAX(monthly_discount) ,
    AVG(monthly_discount)
FROM customers

-- 11
```

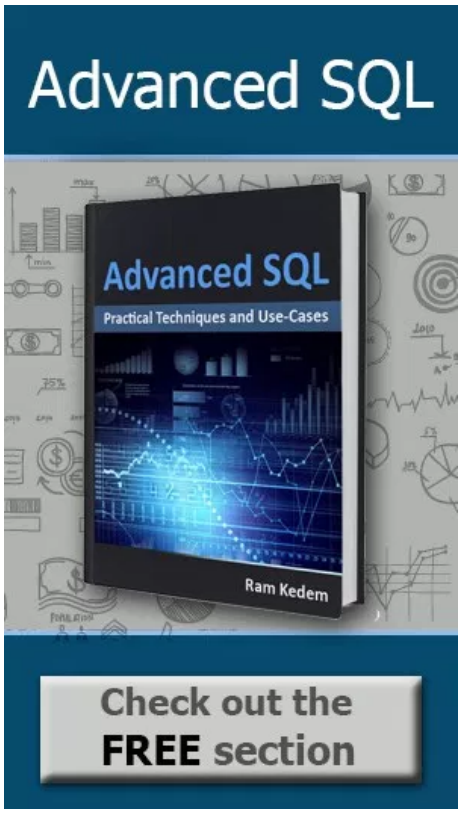
```
040  SELECT COUNT(*) , state
041  FROM customers
042  GROUP BY state
043
044  -- 12
045  SELECT AVG(monthly_payment) , speed
046  FROM packages
047  GROUP BY speed
048
049  -- 13
050  SELECT COUNT(DISTINCT city) , state
051  FROM customers
052  GROUP BY state
053
054  -- 14
055  SELECT MAX(monthly_payment) , sector_id
056  FROM packages
057  GROUP BY sector_id
058
059   -- 15
060   -- A
061   SELECT pack_id , AVG(monthly_discount)
062   FROM customers
063   GROUP BY pack_id
064
065   -- B
066    SELECT pack_id , AVG(monthly_discount)
067   FROM customers
068   WHERE pack_id IN (13, 22)
069   GROUP BY pack_id
070
071   -- C
072   SELECT AVG(monthly_discount)
073   FROM customers
074   WHERE pack_id = 18
075
076   -- 16
077   SELECT speed , MIN(monthly_payment) , MAX(monthly_payment)
078   FROM   packages
```

```
079   GROUP BY speed
080
081   -- 17
082   -- A
083   SELECT pack_id , COUNT(*)
084   FROM customers
085   GROUP BY pack_id
086
087    -- B
088   SELECT pack_id , COUNT(*)
089   FROM customers
090   WHERE monthly_discount > 20
091   GROUP BY pack_id
092
093   -- C
094   SELECT pack_id , COUNT(*)
095   FROM customers
096   GROUP BY pack_id
097   HAVING COUNT(*) > 100
098
099   -- 18
100   SELECT state, city, COUNT(*)
101   FROM customers
102   GROUP BY state, city
103   ORDER BY state, city
104
105  -- 19
106   -- A
107   SELECT AVG(monthly_discount) , city
108   FROM customers
109   GROUP BY city
110
111    -- B
112   SELECT AVG(monthly_discount) , city
113   FROM customers
114   WHERE monthly_discount > 20
115   GROUP BY city
116
117   -- 20
```

```sql
-- A
SELECT MIN(monthly_discount) , state
FROM customers
GROUP BY state

-- B
 SELECT MIN(monthly_discount) , state
FROM customers
GROUP BY state
HAVING min(monthly_discount) > 10

-- 21
SELECT COUNT(*) , speed
FROM packages
GROUP BY speed
HAVING COUNT(*) > 8
```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