# GROUP FUNCTIONS

# GROUP FUNCTIONS

- The data that you need is not always directly stored in the tables. Sometimes you need to perform calculations on the stored data in order to present it to the end user.
- For example, you cannot get the total amount of each order by simply querying from the orderdetails table because the orderdetails table stores only quantity and price of each item. You have to select the quantity and price for each item on an order and calculate the total order value.
- We use aggregate functions for this task. By definition an aggregate function performs a calculation on a set of values and returns a single value.

# GROUP FUNCTIONS

- There are several aggregate functions available in MySQL:
  - MIN
  - MAX
  - SUM
  - AVG
  - COUNT
- An aggregate function can be applied to a whole table or a group of rows on a table.
- An aggregate function will ignore null values.

# GROUP FUNCTIONS

- Min: used on any data type to return the minimum value
- Max: used on any data type to return the maximum value

| SAL |
| --- |
| 5000 |
| 2850 |
| 2450 |
| 2975 |
| 3000 |
| 3000 |
| 800 |

SELECT MIN(sal)
FROM emp;

| MIN(SAL) |
| --- |
| 800 |

# GROUP FUNCTIONS

- Sum: used on numeric data to find the total or sum of values
- Avg: used on numeric data to find the average

| SAL |
| --- |
| 5000 |
| 2850 |
| 2450 |
| 2975 |
| 3000 |
| 3000 |
| 800 |

SELECT SUM(sal)
FROM emp;

| SUM(SAL) |
| --- |
| 29025 |

# GROUP FUNCTIONS

- Count: returns the number of rows for customers that had order issues resolved.

```
SELECT COUNT(c.customerNumber)
FROM customers c
INNER JOIN orders o ON c.customerNumber = o.customerNumber
WHERE o.status = 'Resolved';
```

# GROUP FUNCTIONS

- Group functions are written in the select clause
- They cannot be written in the where clause

```
SELECT lastName,
    firstName
    from employees
    where employeeNumber= min(employeeNumber);
```

| | | | | | |
|---|---|---|---|---|---|
| ⊗ | 7 | 11:23:35 | SELECT lastName, firstName from employees... | Error Code: 1111. Invalid use of group function | 0.000 sec |

# GROUP FUNCTIONS

- Min used with any data type

| Examples | Result |
| --- | --- |
| SELECT MIN(lifeExpectancy)<br>AS “Lowest life expentancy”<br>FROM countries; | 37.2 |
| SELECT MIN(Name)<br>FROM country; | Afghanistan |
| SELECT MIN(orderDate)<br>FROM orders; | 2003-01-06 |

# GROUP FUNCTIONS

- Max used on any data type

| Examples | Result |
| --- | --- |
| SELECT MAX(lifeExpectancy)<br>AS “Lowest life expentancy”<br>FROM countries; | 83.5 |
| SELECT MAX(Name)<br>FROM country; | Zimbabwe |
| SELECT MAX(orderDate)<br>FROM orders; | 2005-05-31 |

# GROUP FUNCTIONS

- Sum used on numeric data

| Examples | Result |
| --- | --- |
| SELECT SUM(SurfaceArea)<br>FROM country<br>WHERE region = ‘Caribbean’; | 234423 |
| SELECT SUM(creditLimit)<br>FROM customers<br>WHERE state = 'NSW'; | 201100 |

# GROUP FUNCTIONS

- AVG used on numeric data

| Examples | Result |
| --- | --- |
| SELECT AVG(SurfaceArea)<br>FROM country<br>WHERE continent = ‘Europe’; | 501068.128261 |
| SELECT AVG(creditLimit)<br>FROM customers<br>WHERE state = 'NSW'; | 100550 |

# GROUP FUNCTIONS

- You can have more than one group function in the select clause, on the same or different columns

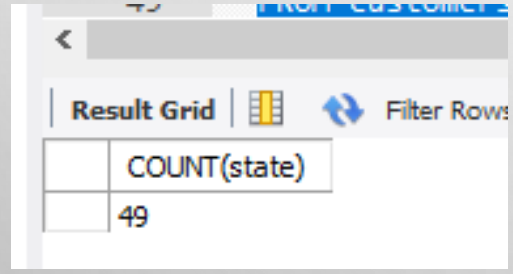
```
SELECT AVG(SurfaceArea),
       MIN(surfaceArea),
        SUM(surfaceArea)
FROM country
WHERE continent = 'Europe';
```

| | AVG(SurfaceArea) | MIN(surfaceArea) | SUM(surfaceArea) |
|---|---|---|---|
| | 501068.128261 | 0.40 | 23049133.90 |

# GROUP FUNCTIONS

- Count returns the number of non-null values in the column

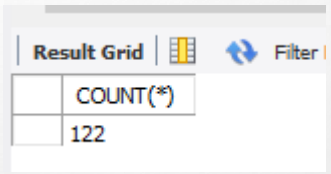
```
SELECT COUNT(state)FROM customers;
```



# GROUP FUNCTIONS

- Count(*) returns a count of all rows in a table

```
SELECT count(*)
FROM customers;
```

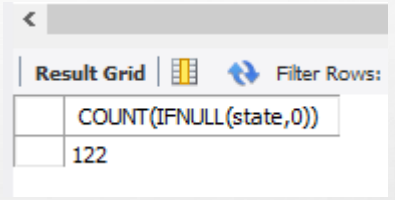



- We use count when we want to count all rows even those that have nulls

# GROUP FUNCTIONS

- Sometimes you want to include null values in group functions

```
SELECT  COUNT(IFNULL(state,0))
FROM customers;
```




```
SELECT COUNT(state)
FROM customers;
```