

Раздел 6.

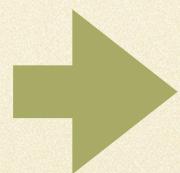
Агрегация данных - GROUP BY, HAVING, DISTINCT

Видеокурс: <https://stepik.org/a/130488>

Агрегация

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974



Результат

COUNT
5

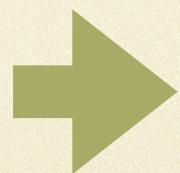
```
SELECT COUNT(*)  
FROM album
```

;

Агрегация и условие WHERE

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974



Результат

COUNT
2

```
SELECT COUNT(*)  
FROM album  
WHERE band_id = 93
```

Агрегация и условие WHERE

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974

```
SELECT 93 as band_id,  
       COUNT(*)  
  FROM album  
 WHERE band_id = 93
```

Результат

band_id	COUNT
93	2

```
SELECT 192 as band_id,  
       COUNT(*)  
  FROM album  
 WHERE band_id = 192
```

Результат

band_id	COUNT
192	3

GROUP BY

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974



Результат

band_id	COUNT
93	2
192	3

```
SELECT band_id,  
       COUNT(*)  
  FROM album  
 GROUP BY band_id
```

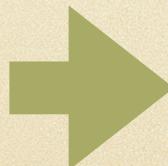
album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974



album_id	name	band_id	year
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974
18725	Master of Puppets	93	1986
297418	A Kind of Magic	192	1986
19318	The Black Album	93	1991

```
SELECT year,  
       COUNT(*)  
  FROM album  
 GROUP BY year
```



Результат

year	COUNT
1974	2
1986	2
1991	1

GROUP BY - 2

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974

```
SELECT band_id, year,  
      COUNT(*)  
   FROM album  
  GROUP BY band_id
```



```
SELECT band_id, year,  
      COUNT(*)  
   FROM album  
  GROUP BY band_id, year
```



GROUP BY - две колонки

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974



Результат

band_id	year	COUNT
93	1986	1
93	1991	1
192	1986	1
192	1974	2

band

band_id	name	year	comment
303	The Beatles	1957	
93	Metallica	1981	
192	Queen	1970	UK rock

```
SELECT band_id, year,  
       COUNT(*)  
  FROM album  
GROUP BY band_id, year
```

HAVING

```
SELECT band_id,  
       COUNT(*)  
  FROM album  
GROUP BY band_id
```

Результат

band_id	COUNT
93	2
192	3

```
SELECT band_id,  
       COUNT(*)  
  FROM album  
GROUP BY band_id  
HAVING COUNT(*) >= 3
```

Результат

band_id	COUNT
192	3

SUM

band_extended

band_id	name	year	n_albums	n_songs
303	The Beatles	1957	17	301
93	Metallica	1981	11	205
192	Queen	1970	14	189



Результат

COUNT	SUM(n_albums)
3	42

```
SELECT COUNT(*),  
       SUM(n_albums)  
FROM band_extended
```

COUNT(...)

band_extended

band_id	name	year	n_albums	n_songs
303	The Beatles	1957	17	301
93	Metallica	1981	11	205
192	Queen	1970	14	189
-1	Unknown	0	[null]	[null]



Результат

count1	count2	SUM(n_albums)
4	3	42

```
SELECT COUNT(*) as count1,  
       COUNT(n_albums) as count2,  
       SUM(n_albums)  
FROM band_extended
```

NULL в колонке GROUP BY

album

album_id	name	band_id	year
18725	Master of Puppets	93	1986
19318	The Black Album	93	1991
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974
[null]	Unknown	[null]	[null]



Результат

band_id	COUNT
93	2
192	3
[null]	1

```
SELECT band_id,  
       COUNT(*)  
  FROM album  
 GROUP BY band_id
```

Другие функции агрегации

```
SELECT band_id,  
       COUNT(*) as count1,  
       COUNT(n_albums) as count2,  
       SUM(n_albums),  
       --  
       MIN(year),  
       MAX(year),  
       AVG(n_albums),  
       COUNT(DISTINCT year)  
  FROM band_extended  
 GROUP BY band_id
```

Использование позиционных ссылок

```
SELECT band_id,  
       year,  
       COUNT(*)  
  FROM album  
 GROUP BY band_id,  
          year
```



```
SELECT band_id,  
       year,  
       COUNT(*)  
  FROM album  
 GROUP BY 1, 2  
 ;
```

DISTINCT

album

album_id	name	band_id	year
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974
18725	Master of Puppets	93	1986
297418	A Kind of Magic	192	1986
19318	The Black Album	93	1991

```
SELECT COUNT(DISTINCT year)
FROM album
```

;

Результат

count
3

```
SELECT DISTINCT year
FROM album
```

;

Результат

year
1974
1986
1991

```
SELECT year
FROM album
GROUP BY year
```

;

album

album_id	name	band_id	year
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974
18725	Master of Puppets	93	1986
297418	A Kind of Magic	192	1986
19318	The Black Album	93	1991

SELECT DISTINCT band_id, year
FROM album
;

Результат

band_id	year
192	1974
93	1986
192	1986
93	1991

SELECT COUNT(DISTINCT year, band)
FROM album
;



SELECT COUNT(*)
FROM (
SELECT DISTINCT band_id, year
FROM album
) as t

Результат

count
4

ORDER BY

album

```
SELECT album_id, name, band_id, year  
      FROM album  
 ORDER BY year DESC, band_id  
;
```

```
SELECT album_id, name, band_id, year  
      FROM album  
 ORDER BY 4 DESC, 3  
;
```

album_id	name	band_id	year
19318	The Black Album	93	1991
18725	Master of Puppets	93	1986
297418	A Kind of Magic	192	1986
54326	Queen II	192	1974
74821	Sheer Heart Attack	192	1974

album

album_id	name	...
19318	The Black Album	...
18725	Master of Puppets	...
297418	A Kind of Magic	...
54326	Queen II	...
74821	Sheer Heart Attack	...
[null]	Unknown	...

ORDER BY

```
SELECT album_id,  
       name  
FROM album  
ORDER BY 1 NULLS FIRST  
;
```

```
SELECT album_id,  
       name  
FROM album  
ORDER BY 1 NULLS LAST  
;
```

album_id	name
[null]	Unknown
18725	Master of Puppets
19318	The Black Album
54326	Queen II
74821	Sheer Heart Attack
297418	A Kind of Magic

album_id	name
18725	Master of Puppets
19318	The Black Album
54326	Queen II
74821	Sheer Heart Attack
297418	A Kind of Magic
[null]	Unknown

Общая структура запроса

album

album_id	name	band_id	year
54326	Queen II	192	1974
74821	Sheer Heart	192	1974
18725	Master of Puppets	93	1986
297418	A Kind of Magic	192	1986
19318	The Black Album	93	1991

```
SELECT year,  
       COUNT(*)  
  FROM album  
 WHERE band_id > 0  
 GROUP BY year  
 HAVING COUNT(*)>=2  
 ORDER BY 1
```

Результат

year	COUNT
1974	2
1986	2