

# GROUP BY and HAVING

A Few More Examples ...

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT country, AVG(age)
FROM Person
GROUP BY country
```

That's simple grouping

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

country	AVG(age)
BR	37
TR	49
US	27

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT country, AVG(age)
FROM Person
WHERE age < 40
GROUP BY country
```

Here we do some filtering  
before the grouping ...

name	age	sex	country
Mario	34	M	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

country	AVG(age)
BR	34
US	27

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT country, AVG(age)
FROM Person
GROUP BY country
HAVING AVG(age) < 40
```

country	AVG(age)
BR	37
TR	49
US	27

Here we do some filtering  
after the grouping ...

country	AVG(age)
BR	37
US	27

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT MAX(age)
FROM Person
GROUP BY sex
```

The GROUP BY clause may have attributes which are not SELECTed but not vice-versa

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

MAX(age)
49
40

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT MAX(age)
FROM Person
```

If a GROUP BY is defined then the aggregation is done over all groups otherwise it is done over all table

MAX(age)
49

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT country
FROM Person
GROUP BY sex
```

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

# ILLEGAL !!!

The attribute SELECTed is not unique per GROUP, 'country' must have been in the GROUP BY clause

name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```
SELECT country, avg(age)
FROM Person
```

country
BR
TR
BR
US
US
US

Avg(age)
33.8

**ILLEGAL !!!**



name	age	sex	country
Mario	34	M	BR
Tamer	49	M	TR
Anna	40	F	BR
Mary	30	F	US
John	20	M	US
Jane	30	F	US

```

SELECT sex, country
FROM Person
WHERE age <= 40
      AND age > 20
GROUP BY sex, country
HAVING AVG(age) <= 30

```

name	age	sex	country
Mario	34	M	BR
Anna	40	F	BR
Mary	30	F	US
Jane	30	F	US

sex	country
F	US

GROUP BY and HAVING

Congratulations, you've graduated !