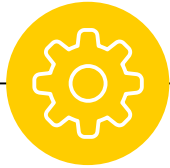


welcome back



SQL *Essentials*

Roadmap

RDBMS
ER Model



SQL Server
DDL



DML
Operator



Function
SQL Clause



Join data



Sub Query



Best
Practice





Previous lecture

DML

- INSERT
- UPDATE
- DELETE

Select

- SELECT Syntax
- TOP & PERCENT
- ALIAS
- DISTINCT
- FROM
- WHERE
- VIEW
- SELECT INTO

Operator

- Authentic
- Compare
- Logical



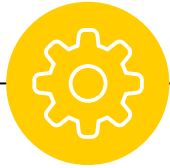
What we will explore today?

SQL built-in Function

- String functions
- Datetime functions
- Aggregate functions
- Others

SQL Clause

- GROUP BY
- HAVING



SQL Built-in Functions



String functions



Got you

- open file
“LECTURE4_FUNCTION_DEMO.sql”

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Trương	NULL	5	7	1999-10-15



LOWER & UPPER

```
SELECT LOWER('HELLO') AS 'lower function';
```

Results		Messages	
		lower function	
1		hello	

```
SELECT UPPER('Hi there') AS 'UPPER FUNCTION';
```

		UPPER FUNCTION	
1		HI THERE	



Practice

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

```
SELECT UPPER(FirstName) AS 'UPPER FirstName',  
       LOWER(LastName) AS 'LOWER LastName'  
FROM Student
```

	UPPER FirstName	LOWER LastName
1	NGUYỄN	huân
2	VÕ	hiếu
3	NGUYỄN	huệ
4	NGUYỄN	truong



LEN & REVERSE

```
SELECT LEN('Test Length') AS 'LEN FUNCTION';
```

Results		Message	
		LEN FUNCTION	
1		11	

```
SELECT REVERSE('123456') AS 'REVERSE FUNCTION';
```

		REVERSE FUNCTION	
1		654321	



Try it

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

	REVERSE LastName	Length of LastName
1	năuH	4
2	uếiH	4
3	ệuH	3
4	gnourT	6



CONCAT & SUBSTRING

```
SELECT CONCAT('He', 'llo') AS 'CONCAT FUNCTION';
```

Results		Messages	
		CONCAT FUNCTION	
1		Hello	

```
SELECT SUBSTRING('1234567', 2, 3) AS 'SUBSTRING FUNCTION';
```

		SUBSTRING FUNCTION	
1		234	



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	FullName		
1	Nguyễn Văn Huân		
2	Võ Văn Hiếu		
3	Nguyễn Thị Huệ		
4	Nguyễn Truong		



LTRIM & RTRIM

```
SELECT '|' + LTRIM(' HI ') + '|' AS 'LTRIM FUNCTION';
```

Results		Messages	
		LTRIM FUNCTION	
1		HI	

```
SELECT '|' + RTRIM(' HI ') + '|' AS 'RTRIM FUNCTION';
```

		RTRIM FUNCTION	
1		HI	



Datetime functions



MONTH, DAY, YEAR

```
SELECT MONTH('11/13/2022') AS 'MONTH FUNCTION';
```

Results		Messages	
		MONTH FUNCTION	
1		11	

```
SELECT DAY('11/13/2022') AS 'DAY FUNCTION';
```

		DAY FUNCTION	
1		13	

```
SELECT YEAR('11/13/2022') AS 'YEAR FUNCTION';
```

		YEAR FUNCTION	
1		2022	



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	LastName	DateOfBirth	Birth Year
1	Huân	2000-10-15	2000
2	Hiếu	2005-10-15	2005
3	Huệ	2008-10-15	2008
4	Truong	1999-10-15	1999



GETDATE & ISDATE

```
SELECT GETDATE() AS 'GETDATE FUNCTION';
```

Results		Messages
GETDATE FUNCTION		
1	2022-11-10 07:17:20.643	

```
SELECT ISDATE('11/13/2022') AS 'ISTDATE FUNCTION';  
SELECT ISDATE('HELLO') AS 'ISTDATE FUNCTION CHAR';
```

ISTDATE FUNCTION	
1	1

ISTDATE FUNCTION CHAR	
1	0



DATEPART

```
SELECT DATEPART(HOUR, '11/13/2022 19:20') AS 'DATEPART HOUR';  
SELECT DATEPART(MINUTE, '11/13/2022 19:20') AS 'DATEPART MINUTE';  
SELECT DATEPART(YEAR, '11/13/2022 19:20') AS 'DATEPART YEAR';
```

full interval	short
Year	year, yyyy, yy
Quarter	quarter, qq, q
month	month, mm, m
Day of the year	dayofyear, dy, y
Day of the month	day, dd, d
Week	week, ww, wk
Weekday	weekday, dw, w
hour	hour, hh

full interval	short
Second	second, ss, s
Millisecond	millisecond, ms
Microsecond	microsecond, mcs
Nanosecond	nanosecond, ns
Timezone offset	tzoffset, tz
ISO week	iso_week, isowk, isoww
Minute	minute, mi, n

Results		Messages
	DATEPART HOUR	
1	19	
	DATEPART MINUTE	
1	20	
	DATEPART YEAR	
1	2022	



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	LastName	DateOfBirth	Birth Year
1	Huân	2000-10-15	2000
2	Hiếu	2005-10-15	2005
3	Huệ	2008-10-15	2008
4	Truong	1999-10-15	1999



DATEDIFF

```
SELECT DATEDIFF(MM, '10/15/2020', '11/25/2022') AS 'DATEDIFF FUNCTION';  
SELECT DATEDIFF(YYYY, '10/15/2020', '11/25/2022') AS 'DATEDIFF FUNCTION';  
SELECT DATEDIFF(HOUR, '10/15/2020', '11/25/2022') AS 'DATEDIFF FUNCTION';
```

full interval	short
Year	year, yyyy, yy
Quarter	quarter, qq, q
month	month, mm, m
Day of the year	dayofyear, dy, y
Day of the month	day, dd, d
Week	week, ww, wk
Weekday	weekday, dw, w
hour	hour, hh

full interval	short
Second	second, ss, s
Millisecond	millisecond, ms
Microsecond	microsecond, mcs
Nanosecond	nanosecond, ns
Timezone offset	tzoffset, tz
ISO week	iso_week, isowk, isoww
Minute	minute, mi, n

Results		Messages	
DATEDIFF FUNCTION			
1	25		
DATEDIFF FUNCTION			
1	2		
DATEDIFF FUNCTION			
1	18504		



Practice 1

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	LastName	DateOfBirth	Age
1	Huân	2000-10-15	22
2	Hiếu	2005-10-15	17
3	Huệ	2008-10-15	14
4	Truong	1999-10-15	23



Age \geq 20

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

	LastName	DateOfBirth	Age
1	Huân	2000-10-15	22
2	Truong	1999-10-15	23



CONVERT

```
SELECT CONVERT(date, '15/10/2020', 103) Convert103;  
SELECT CONVERT(date, '15.10.2020', 104) Convert104;  
SELECT CONVERT(date, '15-10-2020', 105) Convert105;
```

style	input/output	default
100	mon dd yyyy hh:miAM/PM	Default
101	mm/dd/yyyy	US
102	yyyy.mm.dd	ANSI
103	dd/mm/yyyy	British/French
104	dd.mm.yyyy	German
105	dd-mm-yyyy	Italian
106	dd mon yyyy	-
107	Mon dd, yyyy	-
108	hh:mm:ss	-

Results		Messages
Convert103		
1	2020-10-15	
Convert104		
1	2020-10-15	
Convert105		
1	2020-10-15	



Aggregate functions



SUM

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

```
SELECT SUM(Physic) AS 'Sum of Physic'  
FROM Student
```

Results		Messages	
	Sum of Physic		
1	22		



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Message
Sum of Math		
1	12	



AVG

Results		Messages	
1	AVG of Physic		
	5		

base data

Results

Messages

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

```
SELECT AVG(Physic) AS 'AVG of Physic'  
FROM Student
```



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	AVG of Math		
1	4		



MIN & MAX

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

```
SELECT MIN(Math) AS 'MIN of Math',  
       MAX(Math) AS 'MAX of Math'  
FROM Student
```

	MIN of Math	MAX of Math
1	2	7



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	MIN of Physic	MAX of Physic	
1	4	8	



COUNT

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

```
SELECT COUNT(ID) AS 'COUNT ID'  
FROM Student
```

	COUNT ID
1	4

```
SELECT COUNT(MiddleName) AS 'COUNT MiddleName'  
FROM Student
```

	COUNT MiddleName
1	3



COUNT(*) vs COUNT(1)

```
SELECT COUNT(*) AS 'COUNT ID'  
FROM Student
```

```
SELECT COUNT(1) AS 'COUNT MiddleName'  
FROM Student
```

Results		Messages	
COUNT ID			
1	4		
COUNT MiddleName			
1	4		



COUNT with DISTINCT

base data

	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Trương	NULL	5	7	1999-10-15

```
SELECT COUNT(DISTINCT MiddleName) AS 'COUNT DISTINCT'  
FROM Student
```



CEILING & FLOOR

```
SELECT CEILING(1.00001) AS 'LÀM TRÒN LÊN'
```

LÀM TRÒN LÊN	
1	2

```
SELECT FLOOR(1.99999) AS 'LÀM TRÒN XUỐNG'
```

LÀM TRÒN XUỐNG	
1	1



PI & ROUND

```
SELECT PI() AS 'PI NUMBER'
```

Results		Messages
PI NUMBER		
1	3.14159265358979	

```
SELECT ROUND(PI(), 4) AS 'ROUND PI NUMBER'  
SELECT ROUND(PI(), 2) AS 'ROUND PI NUMBER'
```

Results		Messages
ROUND PI NUMBER		
1	3.1416	
ROUND PI NUMBER		
1	3.14	



POWER & SQRT

```
SELECT POWER(2, 8) AS 'POWER LÀ SỨC MẠNH'
```

Results		Messages	
		POWER LÀ SỨC MẠNH	
1		256	

```
SELECT SQRT(16) AS 'SQRT LÀ CĂN BẬC 2'
```

		SQRT LÀ CĂN BẬC 2	
1		4	



Others function



ISNULL

```
SELECT ISNULL(NULL, 10)
```

Results		Messages	
		(No column name)	
1		10	

```
SELECT ISNULL(5, 10)
```

Results		Messages	
		(No column name)	
1		5	



Practice

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

Results		Messages	
	MiddleName	LastName	Math
1	Văn	Huân	7
2	Văn	Hiếu	3
3	Thị	Huệ	2
4	DEFAULT	Truong	0



Just like if-else statement

```
SELECT IIF(1>0, N'Điều kiện đúng', N'Điều kiện sai');
```

Results		Message:
	(No column name)	
1	Điều kiện đúng	

```
SELECT IIF(1=0, N'Điều kiện đúng', N'Điều kiện sai');
```

Results		Messages
	(No column name)	
1	Điều kiện sai	



Math > 5

base data

Results		Messages						
	ID	FirstName	MiddleName	LastName	Math	Physic	Chemical	DateOfBirth
1	1	Nguyễn	Văn	Huân	7	8	9	2000-10-15
2	2	Võ	Văn	Hiếu	3	4	5	2005-10-15
3	3	Nguyễn	Thị	Huệ	2	5	7	2008-10-15
4	4	Nguyễn	NULL	Truong	NULL	5	7	1999-10-15

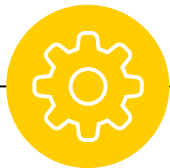
Results		Messages	
	LastName	Học Lực	
1	Huân	Tạm ổn	
2	Hiếu	Chưa ổn lắm	
3	Huệ	Chưa ổn lắm	
4	Truong	Chưa ổn lắm	



CAST

```
SELECT CAST(25.65 AS varchar) CastToChar;  
SELECT CAST(25.65 AS int) CastToInt;  
SELECT CAST('2022-11-25' AS datetime) CastToDatetime;
```

Results		Messages	
CastToChar			
1	25.65		
CastToInt			
1	25		
CastToDatetime			
1	2022-11-25 00:00:00.000		



SQL CLAUSE



Prepair

- open file “LECTURE4_SQLCLAUSE_DEMO.sql”



Some data overview

	ID	StudentID	FullName	LearnSubject	Score
1	9	1	Châu Tinh Trí	Anh	8
2	10	2	Châu Kiệt Luân	Anh	10
3	11	3	Châu Nhuận Phát	Anh	10
4	12	4	Ngôn Nhật Phi	Anh	8
5	1	1	Châu Tinh Trí	Toán	3
6	2	2	Châu Kiệt Luân	Toán	3
7	3	3	Châu Nhuận Phát	Toán	5
8	4	4	Ngôn Nhật Phi	Toán	5
9	5	1	Châu Tinh Trí	Văn	6
10	6	2	Châu Kiệt Luân	Văn	6
11	7	3	Châu Nhuận Phát	Văn	8
12	8	4	Ngôn Nhật Phi	Văn	8

```
SELECT SUM(Score) SUMScore  
FROM StudentScore
```

	SUMScore
1	80

```
SELECT AVG(Score) AVGScore  
FROM StudentScore
```

	AVGScore
1	6



GROUP BY

- The GROUP BY statement groups rows that have the same values into summary rows
- The GROUP BY statement is often used with aggregate functions (COUNT(), MAX(), MIN(), SUM(), AVG()) to group the result-set by one or more columns.



Big picture

```
SELECT column_data  
FROM source  
    JOIN source2  
WHERE condition  
GROUP BY  
HAVING condition  
ORDER BY sort [ASC|DESC]
```





GROUP BY

```
SELECT AVG(Score) AVGScore  
FROM StudentScore
```

Results		Messages	
	AVGScore		
1	6		

```
SELECT LearnSubject, AVG(Score) AVGScore  
FROM StudentScore  
GROUP BY LearnSubject
```

Results		Messages			
	ID	StudentID	FullName	LearnSubject	Score
1	9	1	Châu Tinh Trí	Anh	8
2	10	2	Châu Kiệt Luân	Anh	10
3	11	3	Châu Nhuận Phát	Anh	10
4	12	4	Ngôn Nhật Phi	Anh	8
5	1	1	Châu Tinh Trí	Toán	3
6	2	2	Châu Kiệt Luân	Toán	3
7	3	3	Châu Nhuận Phát	Toán	5
8	4	4	Ngôn Nhật Phi	Toán	5
9	5	1	Châu Tinh Trí	Văn	6
10	6	2	Châu Kiệt Luân	Văn	6
11	7	3	Châu Nhuận Phát	Văn	8
12	8	4	Ngôn Nhật Phi	Văn	8

Results		Messages	
	LearnSubject	AVGScore	
1	Anh	9	
2	Toán	4	
3	Văn	7	



Practice 1

Results		Messages	
	StudentID	FullName	AVGScore
1	1	Châu Tinh Trí	5
2	2	Châu Kiệt Luân	6
3	3	Châu Nhuận Phát	7
4	4	Ngôn Nhật Phi	7

Results		Messages			
	ID	StudentID	FullName	LearnSubject	Score
1	9	1	Châu Tinh Trí	Anh	8
2	10	2	Châu Kiệt Luân	Anh	10
3	11	3	Châu Nhuận Phát	Anh	10
4	12	4	Ngôn Nhật Phi	Anh	8
5	1	1	Châu Tinh Trí	Toán	3
6	2	2	Châu Kiệt Luân	Toán	3
7	3	3	Châu Nhuận Phát	Toán	5
8	4	4	Ngôn Nhật Phi	Toán	5
9	5	1	Châu Tinh Trí	Văn	6
10	6	2	Châu Kiệt Luân	Văn	6
11	7	3	Châu Nhuận Phát	Văn	8
12	8	4	Ngôn Nhật Phi	Văn	8



Practice 2

Results		Messages	
	StudentID	FullName	AVGScore
1	1	Châu Tinh Trì	5

Results		Messages			
	ID	StudentID	FullName	LearnSubject	Score
1	9	1	Châu Tinh Trì	Anh	8
2	10	2	Châu Kiệt Luân	Anh	10
3	11	3	Châu Nhuận Phát	Anh	10
4	12	4	Ngôn Nhật Phi	Anh	8
5	1	1	Châu Tinh Trì	Toán	3
6	2	2	Châu Kiệt Luân	Toán	3
7	3	3	Châu Nhuận Phát	Toán	5
8	4	4	Ngôn Nhật Phi	Toán	5
9	5	1	Châu Tinh Trì	Văn	6
10	6	2	Châu Kiệt Luân	Văn	6
11	7	3	Châu Nhuận Phát	Văn	8
12	8	4	Ngôn Nhật Phi	Văn	8



Careful with group by

- open file “LECTURE4_GROUPBY_DIFF.sql”

Results		Messages	
	HocSinhID	Ho Ten	Diem Mon Toan
1	1	Huy	90
2	2	Việt	100
3	3	Huy	50



The Different

Results		Messages	
	HocSinhID	Ho Ten	DiemMonToan
1	1	Huy	90
2	2	Việt	100
3	3	Huy	50

```
SELECT HoTen, AVG(DiemMonToan) 'Group by HoTen'  
FROM HocSinh  
GROUP BY HoTen;
```

	Ho Ten	Group by HoTen
1	Huy	70
2	Việt	100

```
SELECT HoTen, AVG(DiemMonToan) 'Group by HocSinhID, HoTen'  
FROM HocSinh  
GROUP BY HocSinhID, HoTen;
```

	Ho Ten	Group by HocSinhID, HoTen
1	Huy	90
2	Việt	100
3	Huy	50



HAVING

- The HAVING clause was added to SQL because the WHERE keyword cannot be used with aggregate functions.



HAVING

```
SELECT LearnSubject, AVG(Score) AVGScore  
FROM StudentScore  
GROUP BY LearnSubject
```

```
SELECT LearnSubject, AVG(Score) AVGScore  
FROM StudentScore  
GROUP BY LearnSubject  
HAVING AVG(Score) > 5
```

	LearnSubject	AVGScore
1	Anh	9
2	Toán	4
3	Văn	7



	LearnSubject	AVGScore
1	Anh	9
2	Văn	7



Practice

```
SELECT StudentID, FullName, AVG(Score) AVGScore
FROM StudentScore
GROUP BY StudentID, FullName
ORDER BY StudentID
```

Results Messages			
	StudentID	FullName	AVGScore
1	2	Châu Kiệt Luân	6
2	3	Châu Nhuận Phát	7
3	4	Ngôn Nhật Phi	7

Results Messages			
	StudentID	FullName	AVGScore
1	2	Châu Kiệt Luân	6
2	3	Châu Nhuận Phát	7
3	1	Châu Tinh Trí	5
4	4	Ngôn Nhật Phi	7



Practice Time

- open file “LECTURE4_FUNCTION_CLASSPRACTICE.sql”

```
-- PRACTICE SQL BUILT-IN FUNCTION
-- 1. IN RA THÔNG TIN ĐƠN HÀNG CÓ GIÁ TRỊ LỚN NHẤT MÀ ĐÃ HOÀN THÀNH TRONG NĂM 2022
-- 2. IN RA THÔNG TIN ĐƠN HÀNG CÓ GIÁ TRỊ LỚN NHẤT MÀ ĐÃ BỊ HỦY TRONG NĂM 2023
-- 3. TÍNH SỐ ĐƠN HÀNG ĐƯỢC ĐẶT VÀO TRONG KHOẢNG THÁNG 15/3/2022 CHO ĐẾN HẾT 15/8/2023
-- 4. TÍNH TỔNG SỐ ĐƠN HÀNG ĐÃ HOÀN THÀNH TRONG NĂM 2022 VÀ 2023
-- 5. TÍNH GIÁ TRỊ TRUNG BÌNH ĐƠN HÀNG TRONG NĂM 2023
-- 6. IN RA THÔNG TIN ĐƠN HÀNG CÓ GIÁ TRỊ NHỎ NHẤT MÀ ĐÃ HOÀN THÀNH TRONG NĂM 2022
-- 7. IN RA THÔNG TIN ĐƠN HÀNG CÓ GIÁ TRỊ NHỎ MÀ ĐÃ BỊ HỦY TRONG NĂM 2023
-- 8. TÍNH SỐ ĐƠN HÀNG ĐƯỢC ĐẶT THEO TỪNG THÁNG
-- 9. TÍNH SỐ ĐƠN HÀNG ĐƯỢC ĐẶT THEO TỪNG NĂM
-- 10. TÍNH GIÁ TRỊ TRUNG BÌNH ĐƠN HÀNG THEO TỪNG THÁNG TRONG NĂM 2023
-- 11. TỔNG SỐ ĐƠN HÀNG ĐƯỢC ĐẶT VÀO THÁNG 3 NĂM 2022
```



Extra Resources

Name	Link
became SQL god?	https://www.w3schools.com/sql/default.asp