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In SQL Server we have got lot of aggregate functions. Examples

1. Count()
2. Sum()
3. avg()
4. Min()
5. Max()

Group by clause is used to group a selected set of rows into a set of summary rows by the values of one or more columns or expressions. It is always used in conjunction with one or more aggregate functions.

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ID	Name	Gender	Salary	City
1	Tom	Male	4000	London
2	Pam	Female	3000	New York
3	John	Male	3500	London
4	Sam	Male	4500	London
5	Todd	Male	2800	Sydney
6	Ben	Male	7000	New York
7	Sara	Female	4800	Sydney
8	Valarie	Female	5500	New York
9	James	Male	6500	London
10	Russell	Male	8800	London

I want an sql query, which gives total salaries paid by City. The output should be as shown below.

City	TotalSalary
London	27300
New York	15500
Sydney	7600

Query for retrieving total salaries by city:

We are applying SUM() aggregate function on Salary column, and grouping by city column. This effectively adds, all salaries of employees with in the same city.

```
Select City, SUM(Salary) as TotalSalary
from tblEmployee
Group by City
```

Note: If you omit, the group by clause and try to execute the query, you get an error - Column 'tblEmployee.City' is invalid in the select list because it is not contained in either an aggregate function or the GROUP BY clause.

Now, I want an sql query, which gives total salaries by City, by gender. The output should be as shown below.

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City	Gender	TotalSalary
London	Male	27300
New York	Female	8500
New York	Male	7000
Sydney	Female	4800
Sydney	Male	2800

Query for retrieving total salaries by city and by gender: It's possible to group by multiple columns. In this query, we are grouping first by city and then by gender.

```
Select City, Gender, SUM(Salary) as TotalSalary
from tblEmployee
group by City, Gender
```

Now, I want an sql query, which gives total salaries and total number of employees by City, and by gender. The output should be as shown below.

City	Gender	TotalSalary	TotalEmployees
London	Male	27300	5
New York	Female	8500	2
New York	Male	7000	1
Sydney	Female	4800	1
Sydney	Male	2800	1

Query for retrieving total salaries and total number of employees by City, and by gender: The only difference here is that, we are using Count() aggregate function.

```
Select City, Gender, SUM(Salary) as TotalSalary,
COUNT(ID) as TotalEmployees
from tblEmployee
group by City, Gender
```

Filtering Groups:

WHERE clause is used to filter rows before aggregation, where as HAVING clause is

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used to filter groups after aggregations. The following 2 queries produce the same result.

Filtering rows using WHERE clause, before aggrgations take place:

```
Select City, SUM(Salary) as TotalSalary
from tblEmployee
Where City = 'London'
group by City
```

Filtering groups using HAVING clause, after all aggrgations take place:

```
Select City, SUM(Salary) as TotalSalary
from tblEmployee
group by City
Having City = 'London'
```

From a performance standpoint, you cannot say that one method is less efficient than the other. Sql server optimizer analyzes each statement and selects an efficient way of executing it. As a best practice, use the syntax that clearly describes the desired result. Try to eliminate rows that you wouldn't need, as early as possible.

It is also possible to combine WHERE and HAVING

```
Select City, SUM(Salary) as TotalSalary
from tblEmployee
Where Gender = 'Male'
group by City
Having City = 'London'
```

Difference between WHERE and HAVING clause:

1. WHERE clause can be used with - Select, Insert, and Update statements, where as HAVING clause can only be used with the Select statement.
2. WHERE filters rows before aggregation (GROUPING), where as, HAVING filters groups, after the aggregations are performed.

3. Aggregate functions cannot be used in the WHERE clause, unless it is in a sub query

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contained in a HAVING clause, whereas, aggregate functions can be used in Having clause.

16 comments:



Arun Vino June 2, 2013 at 6:48 PM

How come its possible that you explain everything without even allowing me to ask question...

You answer all my questions before i ask...

I would like to extent my sincere thanks to you.

Please do continue...

PS.If you can take class for explaining SAS software, please do let me know...I am using in my office and find it difficult..hope you can help me ...thank you a lot....

Please send me reply to vjp2082@yahoo.co.in

[Reply](#)



Unknown June 4, 2013 at 3:04 AM

Hello Mr, I'm very thankful for your video and tutorial, but, can I get the data dictionary of every table?

I got a little confuse about tblEmployee. Where can I find the design of the table?

thank you =)

[Reply](#)

Yosia September 14, 2013 at 10:44 AM

I am a junior C#, ASP.NET and SQL server learner at the moment and I have been purchasing books the past few months to lean these subjects. However, the books have not really helped to explain clearly as you do.

You are extremely good ! Your videos and slides are making my dream clearer.

Thank you and please continue the good JOB !!

[Reply](#)

Anonymous October 31, 2013 at 8:31 PM

Dear Sir

I am learning SQL for the couple of months. I have seen a lot of materials but yours is the best. Even though I don't know u in person, u earned a lot of respect from me. providing this quality material for free is really amazing. u are changing the life of many people including mine in a good way .

can u cover more topics in SQL like: Backup and Recovery, HA/DR like Mirroring Logshipping, Replication and Cluster, Security, SSIS/SSRS

Thank you Sir

From DC

[Reply](#)



SKM December 4, 2013 at 10:32 AM

THANK SO VERY MUCH FOR POSTING ALL YOUR VIDEOS AND FOR DOING SUCH AN EXCELLENT JOB EXPLAINING THE CONCEPTS. YOU ARE TRULY AMAZING!!! -- GOD BLESS YOU!

[Reply](#)

umesh k May 17, 2015 at 5:09 AM



Venkat your tutorials and videos are awesome.....

[Reply](#)



Rammohan Polagani June 10, 2015 at 4:32 AM

i am a big fan of venkat

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Harsh Saxena June 30, 2015 at 3:29 AM

thank u for such a beneficial, valuable videos its very easy to learn for the biggner with the help of these tutorials .

[Reply](#)



Ekta Gupta September 9, 2015 at 2:29 PM

hey venkat

believe me or not i started coding in .net after seeing your videos. My husband got impressed. I really like to pay something once i get the job. I seen the link to amazon but could you have one more button for donation to some NGO or something like that... I am sure many people like to do that after watching your noble task of contributing to society.

[Reply](#)

Anonymous January 15, 2016 at 2:16 AM

Hi Venkat,ur videos are awesome.I have one doubt about this statement: WHERE clause can be used with - Select, Insert, and Update statements, where as HAVING clause can only be used with the Select statement.Does where work with Insert?or u want say delete, instead of insert

[Reply](#)

Anonymous February 7, 2016 at 11:31 PM

Hi venkat, i need to know if we can use WHERE Clause in INSERT Statement, because i think WHERE can only be used while UPDATING an existing data. But while

INSERTING, it will completely be a new record where "WHERE" clause will be of no use. I have seen that it can be used in "Insert Into Select Statement" but that's completely different than only INSERT statement. So, please let us know once you get this message. I love your videos a lot but have a little confusion. :)

Reply

Replies

Anonymous April 27, 2016 at 9:27 AM

Where clause can be used only with select, update and delete. It cannot be used with insert unless we use where not exists. This is a different case. Thanks for noticing. :)

Reply

Anonymous April 27, 2018 at 2:06 PM

Dear Venkat,

I would like to thank you for your relentless work to post this bioinformatic, educational and very practical SQL Server videos

it is really related too the real working environment.

What makes your videos is that you can delivery the subject matter in a very clear way.

God Bless you

Reply

Anonymous May 6, 2018 at 12:28 AM

Thank You SO much Venkat sir.

Your videos provides perfect guidelines and knowledge .

Reply



Murtaza Mansoor December 22, 2018 at 3:51 AM

Thanks so much for putting so much effort into it, there could not have been more clear and brief explanation of such concepts.

[Reply](#)**Ramdas warhad** January 19, 2019 at 8:33 AM

great explanations you cleared my concept

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