

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

VINAY\SQLEXPRESS (SQL Server 16.0.1135 - Vin)

- Databases
  - System Databases
  - Database Snapshots
  - AdventureWorks2022
  - AdventureWorksDW2022
  - bank\_loan
  - ola
  - railways
- Road\_Accident
  - Database Diagrams
  - Tables
    - System Tables
    - FileTables
    - External Tables
    - Graph Tables
    - dbo.accident\_data
  - Views
  - External Resources
  - Synonyms
  - Programmability
  - Query Store
  - Service Broker
  - Storage
  - Security
- SalesAnalysis
- SalesDB

--- Basic SQL Queries

-- 1. How many accidents occurred in total?

```
select count(*) as Total_accidents from accident_data;
```

132 %

Results Messages

Total_accidents
1 660679

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 1 rows

Ready

Ln 6 Col 51 Ch 51 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect bank\_loan  
bank\_ola  
railways  
Road\_Accident  
Database Diagrams  
Tables  
System Tables  
FileTables  
External Tables  
Graph Tables  
dbo.accident\_data  
Columns  
Index (varchar(50), not null)  
Accident\_Severity (varchar(50), no  
Accident\_Date (date, not null)  
Latitude (varchar(50), null)  
Light\_Conditions (varchar(50), not  
District\_Area (varchar(50), not null)  
Longitude (varchar(50), null)  
Number\_of\_Casualties (int, not nu  
Number\_of\_Vehicles (int, not null)  
Road\_Surface\_Conditions (varchar  
Road\_Type (varchar(50), null)  
Urban\_or\_Rural\_Area (varchar(50),  
Weather\_Conditions (varchar(50),  
Vehicle\_Type (varchar(50), not null  
Keys

-- 2. What are the unique accident severity levels?

```
select distinct accident_severity from accident_data;
```

Results

accident_severity
1 Slight
2 Fatal
3 Serious

Messages

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:01 | 3 rows

Ln 15 Col 54 Ch 54 INS

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SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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New Query MDX DMX XMLA DAX

Road\_Accident Execute

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-- 3. Find the total number of accidents by year.

```
select year(accident_date) as year, count(*) as Total_accidents
from accident_data
group by year(accident_date)
order by year(accident_date) desc;
```

Results

	year	Total_accidents
1	2022	144419
2	2021	163554
3	2020	170591
4	2019	182115

Messages

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 4 rows

Ln 22 Col 35 Ch 35 INS

Ready

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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New Query MDX DMX XMLA DAX

Road\_Accident Execute

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-- 4. Get the top 5 road types with the most accidents.

```
select top 5 road_type, count(*) as Total_accidents
from accident_data
group by road_type
order by count(*) desc;
```

132 %

Results Messages

	road_type	Total_accidents
1	Single carriageway	492143
2	Dual carriageway	99424
3	Roundabout	43992
4	One way street	13559
5	Slip road	7041

Query executed successfully. VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:01 | 5 rows

Ready Ln 29 Col 24 Ch 24 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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Road\_Accident Execute

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-- 6. Find accident trends for a year(2022).

```
select datename(month,accident_date) as month, count(*) as Total_accidents
from accident_data
where year(accident_date) = 2022
group by datename(month,accident_date),month(accident_date)
order by month(accident_date);
```

Results

	month	Total_accidents
1	January	9967
2	February	10935
3	March	12341
4	April	11510
5	May	12372
6	June	12812
7	July	12653
8	August	12088
9	September	12960
10	October	13534
11	November	13622
12	December	9625

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 12 rows

Ln 44 Col 31 Ch 31 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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Road\_Accident Execute

Object Explorer

Connect bank\_loan  
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Number\_of\_Vehicles (int, not null)  
Road\_Surface\_Conditions (varchar  
Road\_Type (varchar(50), null)  
Urban\_or\_Rural\_Area (varchar(50),  
Weather\_Conditions (varchar(50),  
Vehicle\_Type (varchar(50), not null  
Keys

-- 5. How many accidents occurred in urban vs. rural areas?

```
select top 2 urban_or_rural_area, count(*) as total_accidents
from accident_data
group by urban_or_rural_area
order by count(*) desc;
```

Results Messages

	urban_or_rural_area	total_accidents
1	Urban	421663
2	Rural	238990

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 2 rows

Ready Ln 40 Col 1 Ch 1 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect bank\_loan  
ola  
railways  
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Database Diagrams  
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Road\_Type (varchar(50), null)  
Urban\_or\_Rural\_Area (varchar(50),  
Weather\_Conditions (varchar(50),  
Vehicle\_Type (varchar(50), not null  
Keys

-- 7. Get road types with more than 10,000 accidents.

```
select road_type , count(*) as Total_accident
from accident_data
group by road_type
having count(*) > 10000;
```

Results

	road_type	Total_accident
1	Single carriageway	492143
2	One way street	13559
3	Roundabout	43992
4	Dual carriageway	99424

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 4 rows

Ln 53 Col 1 Ch 1 INS

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SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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-- 8. Find the top 3 weather conditions causing accidents.

```
select top 3 weather_conditions , count(*) as Total_accidents
from accident_data
group by weather_conditions
order by count(*) desc;
```

Results

	weather_conditions	Total_accidents
1	Fine no high winds	520885
2	Raining no high winds	79696
3	Other	17150

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 3 rows

Ln 61 Col 1 Ch 1 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect

- bank\_loan
- ola
- railways
- Road\_Accident
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    - Graph Tables
  - dbo.accident\_data
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      - Urban\_or\_Rural\_Area (varchar(50), null)
      - Weather\_Conditions (varchar(50), null)
      - Vehicle\_Type (varchar(50), not null)
    - Keys

SQLQuery1.sql - VIN... (VINAY\vinay (62))

```
-- 9. Compare accidents on weekdays vs weekends.

select
    ( case when datepart(weekday,accident_date) in (1,7) then 'Weekend'
else 'weakday' end) as Day,
    count(*) as Total_accidents from accident_data
group by ( case when datepart(weekday,accident_date) in (1,7) then 'Weekend'
else 'weakday' end)
order by count(*) desc;
```

Results

Day_Type	Accident_Count
Weekday	464199
Weekend	196480

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 2 rows

Ln 71 Col 2 Ch 2 INS

Ready

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

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Connect bank\_loan  
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District\_Area (varchar(50), not null  
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Number\_of\_Casualties (int, not nu  
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Road\_Surface\_Conditions (varchar  
Road\_Type (varchar(50), null)  
Urban\_or\_Rural\_Area (varchar(50),  
Weather\_Conditions (varchar(50),  
Vehicle\_Type (varchar(50), not null  
Keys

-- 10. Find the total number of accidents per district.

```
select district_area , count(*) as Total_accidents
from accident_data
group by district_area
order by count(*) desc;
```

145 %

Results Messages

	district_area	Total_accidents
1	Birmingham	13491
2	Leeds	8898
3	Manchester	6720
4	Bradford	6212
5	Sheffield	5710
6	Westminster	5706
7	Liverpool	5587
8	Glasgow City	4942
9	Bristol, City of	4819
10	Kirklees	4690
11	Barnet	4350
12	Lambeth	4241
13	Leicester	4082
14	Doncaster	4078
15	Southwark	3894
16	Nottingham	3893

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 422 rows

Ready Ln 76 Col 19 Ch 19 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect bank\_loan ola railways Road\_Accident Database Diagrams Tables System Tables FileTables External Tables Graph Tables dbo.accident\_data Columns Index (varchar(50), not null) Accident\_Severity (varchar(50), no Accident\_Date (date, not null) Latitude (varchar(50), null) Light\_Conditions (varchar(50), not District\_Area (varchar(50), not null Longitude (varchar(50), null) Number\_of\_Casualties (int, not nu Number\_of\_Vehicles (int, not null Road\_Surface\_Conditions (varchar Road\_Type (varchar(50), null) Urban\_or\_Rural\_Area (varchar Weather\_Conditions (varchar Vehicle\_Type (varchar(50), not null Keys

-- Intermediate SQL Queries

-- 11. Rank accident severities within each road type.

```
select road_type, accident_severity, count(*) as total_accidents,
rank() over(partition by road_type order by count(*) desc) as severity_rank
from accident_data
group by road_type, accident_severity
order by road_type, severity_rank ;
```

Results Messages

	road_type	accident_severity	total_accidents	severity_rank
1	NULL	Slight	4006	1
2	NULL	Serious	481	2
3	NULL	Fatal	33	3
4	Dual carriageway	Slight	85863	1
5	Dual carriageway	Serious	11746	2
6	Dual carriageway	Fatal	1815	3
7	One way street	Slight	11809	1
8	One way street	Serious	1655	2
9	One way street	Fatal	95	3
10	Roundabout	Slight	40185	1
11	Roundabout	Serious	3665	2
12	Roundabout	Fatal	142	3
13	Single carriageway	Slight	415557	1
14	Single carriageway	Serious	70059	2
15	Single carriageway	Fatal	6527	3
16	Slip road	Slight	6381	1
17	Slip road	Serious	611	2

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 18 rows

Ready Ln 90 Col 35 Ch 35 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect

- bank\_loan
- ola
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      - Number\_of\_Vehicles (int, not null)
      - Road\_Surface\_Conditions (varchar)
      - Road\_Type (varchar(50), null)
      - Urban\_or\_Rural\_Area (varchar(50), null)
      - Weather\_Conditions (varchar(50), null)
      - Vehicle\_Type (varchar(50), not null)
    - Keys

-- 12. Find the Top 5 months with the highest accident increase compared to the previous month.

```
with cte_accidents as
    (select month(accident_date) as m,
     datename(month,accident_date) as month ,count(*) as Current_month_accidents,
     lag(count(*)) over(order by month(accident_date)) as previous_month_accidents
      from accident_data
     group by month(accident_date),datename(month,accident_date))
select top 5 month,Current_month_accidents,
(Current_month_accidents-previous_month_accidents) as Increase
from cte_accidents
order by Increase desc
```

Results Messages

month	Current_month_accidents	Increase
1 May	56352	4608
2 March	54086	4595
3 October	59580	3125
4 September	56455	2542
5 July	57445	964

Query executed successfully. | VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 5 rows

Ready Ln 104 Col 2 Ch 2 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

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-- 13. Get the accident count for each district and its percentage of total accidents.

```
select district_area, count(*) as number_of_accidents,
count(*)*100.0/sum(count(*)) over() as percentage
from accident_data
group by district_area
order by percentage desc;
```

Results Messages

	district_area	number_of_accidents	percentage
1	Birmingham	13491	2.041990134392
2	Leeds	8898	1.346796250524
3	Manchester	6720	1.017135401609
4	Bradford	6212	0.940244808749
5	Sheffield	5710	0.864262372498
6	Westminster	5706	0.863656934759
7	Liverpool	5587	0.845645162022
8	Glasgow City	4942	0.748018326600
9	Bristol, City of	4819	0.729401116124
10	Kirklees	4690	0.709875749040
11	Barnet	4350	0.658413541220
12	Lambeth	4241	0.641915362831
13	Leicester	4082	0.617849212703
14	Doncaster	4078	0.617243774964
15	Southwark	3894	0.589393638968
16	Nottingham	3893	0.589242279533
17	Edinburgh, ...	3824	0.578798478534
18	Brighton an...	3784	0.572744101144
19	Croydon	3687	0.558062235972

Query executed successfully. VINAY\SQLEXPRESS (16.0 RTM) VINAY\vinay (62) Road\_Accident 00:00:00 422 rows

Ready Ln 116 Col 26 Ch 26 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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Urban\_or\_Rural\_Area (varchar(50),  
Weather\_Conditions (varchar(50),  
Vehicle\_Type (varchar(50), not null  
Keys

-- 14. Find the road types with the highest number of Serious accidents.

```
select road_type, count(*) as Total_accidents
from accident_data
where accident_severity = 'Serious'
group by road_type
order by count(*) desc;
```

Results Messages

road_type	Total_accidents
Single carriageway	70059
Dual carriageway	11746
Roundabout	3665
One way street	1655
Slip road	611
NULL	481

Query executed successfully. VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 6 rows

Ln 124 Col 24 Ch 24 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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-- 15. Find the average number of accidents per day.

```
select count(*)*1.0 / count(distinct accident_date) as avg_accidents_per_day
from accident_data;
```

120 % Results Messages

	avg_accidents_per_day
1	452.210130047912

Query executed successfully. VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 1 rows

Ready Ln 129 Col 20 Ch 20 INS

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect Road\_Accident

- Database Diagrams
- Tables
  - System Tables
  - FileTables
  - External Tables
  - Graph Tables
- dbo.accident\_data
  - Columns
    - Index (varchar(50), not null)
    - Accident\_Severity (varchar(50), no)
    - Accident\_Date (date, not null)
    - Latitude (varchar(50), null)
    - Light\_Conditions (varchar(50), not null)
    - District\_Area (varchar(50), not null)
    - Longitude (varchar(50), null)
    - Number\_of\_Casualties (int, not null)
    - Number\_of\_Vehicles (int, not null)
    - Road\_Surface\_Conditions (varchar)
    - Road\_Type (varchar(50), null)
    - Urban\_or\_Rural\_Area (varchar(50),
    - Weather\_Conditions (varchar(50),
    - Vehicle\_Type (varchar(50), not null)
  - Keys
  - Constraints
  - Triggers
  - Indexes

-- Advanced SQL Queries

-- 16. Find the longest accident-free period.

```
select max(datediff(day,previous_accident,accident_date)) as longest_accident_free_period
from (
    select accident_date, lag(accident_date) over(order by accident_date) as previous_accident
    from accident_data)t;
```

Results Messages

longest_accident_free_period
1

Query executed successfully. | VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:01 | 1 rows

Ln 143 Col 5 Ch 5 INS

Ready

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

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    - Road\_Surface\_Conditions (varchar)
    - Road\_Type (varchar(50), null)
    - Urban\_or\_Rural\_Area (varchar(50),
    - Weather\_Conditions (varchar(50),
    - Vehicle\_Type (varchar(50), not null)
  - Keys
  - Constraints
  - Triggers
  - Indexes

-- 17. Find the percentage change in accident count per year.

```
with cte_year as
    (select year(accident_date) as year, count(*) as current_year_accidents ,
     lag(count(*)) over(order by year(accident_date)) as previous_year_accidents
      from accident_data
     group by year(accident_date))
select year, (current_year_accidents - previous_year_accidents)*100.0/previous_year_accidents
      as percentage_change from cte_year
     order by year;
```

Results

year	percentage_change
2019	NULL
2020	-6.327869752628
2021	-4.125071076434
2022	-11.699499859373

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 4 rows

Ln 154 Col 15 Ch 15 INS

Ready

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect

Road\_Accident

- Database Diagrams
- Tables
  - System Tables
  - FileTables
  - External Tables
  - Graph Tables
- dbo.accident\_data
  - Columns
    - Index (varchar(50), not null)
    - Accident\_Severity (varchar(50), no)
    - Accident\_Date (date, not null)
    - Latitude (varchar(50), null)
    - Light\_Conditions (varchar(50), not null)
    - District\_Area (varchar(50), not null)
    - Longitude (varchar(50), null)
    - Number\_of\_Casualties (int, not null)
    - Number\_of\_Vehicles (int, not null)
    - Road\_Surface\_Conditions (varchar)
    - Road\_Type (varchar(50), null)
    - Urban\_or\_Rural\_Area (varchar(50), null)
    - Weather\_Conditions (varchar(50), null)
    - Vehicle\_Type (varchar(50), not null)
  - Keys
  - Constraints
  - Triggers
  - Indexes

--18. Find the month with the lowest accident count.

```
select top 1 datename(month,accident_date) as month,count(*) as Total_accidents
from accident_data
group by datename(month,accident_date)
order by count(*) desc;
```

Results

month	Total_accidents
November	60424

Messages

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 1 rows

Ln 161 Col 24 Ch 24 INS

Ready

SQLQuery1.sql - VINAY\SQLEXPRESS.Road\_Accident (VINAY\vinay (62))\* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query MDX DMX XMLA DAX

Road\_Accident Execute

Object Explorer

Connect Road\_Accident

-- 19. Identify accident trends in rainy conditions.

```
select datename(month,accident_date) as month, count(*) as total_accident
from accident_data
where weather_conditions like '%rain%'
group by datename(month,accident_date),month(accident_date)
order by month(accident_date);
```

Results Messages

	month	total_accident
1	January	9297
2	February	5465
3	March	6273
4	April	3714
5	May	6452
6	June	6120
7	July	8676
8	August	7635
9	September	6687
10	October	8325
11	November	13414
12	December	7253

Query executed successfully.

VINAY\SQLEXPRESS (16.0 RTM) | VINAY\vinay (62) | Road\_Accident | 00:00:00 | 12 rows

Ready Ln 170 Col 1 Ch 1 INS