

/*

--Query framed on MS SQL Server 2017

Link : <http://sqlfiddle.com/#!18/24462/13/0>

For the following problem, we first need to fetch previous row 'Sales' values and next row 'Sales' values for the 'Previous month sales' and 'Next month sales' respectively which can be done by using Lead and Lag functions.

Secondly, we need to find cumulative sum of 'Sales' for 'YTD Sales' column which can be achieved by using a basic sum function

*/

-- Creating the table as provided :

CREATE TABLE Table1 (

City VARCHAR(100),

Year INTEGER,

Month INTEGER,

Sales INTEGER

);

INSERT INTO Table1 (City,Year,Month,Sales) VALUES ('Delhi',2020,5,4300),

('Delhi',2020,6,2000),

('Delhi',2020,7,2100),

('Delhi',2020,8,2200),

('Delhi',2020,9,1900),

('Mumbai',2020,10,200),

('Mumbai',2020,5,4400),

('Mumbai',2020,6,2800),

('Mumbai',2020,7,6000),

('Mumbai',2020,8,9300),

('Mumbai',2020,9,4200),

('Bangalore',2020,10,9700),

('Bangalore',2020,5,1000),

('Bangalore',2020,6,2300),

('Bangalore',2020,7,6800),

('Bangalore',2020,8,7000),

```
('Bangalore',2020,9,2300),
```

```
('Bangalore',2020,9,8400);
```

--We add a primary key column to the table in order to help us achieve the required columns with ease

```
ALTER TABLE Table1
```

```
ADD ID INT IDENTITY
```

```
CONSTRAINT PK_Table1 PRIMARY KEY CLUSTERED
```

--Schema built

```
SELECT City, Year, Month, Sales,
```

```
    [Previous Month Sales],
```

```
    [Next Month Sales],
```

```
    [YTD Sales]
```

```
FROM
```

```
(
```

```
    SELECT *,
```

```
    ISNULL(LAG(Sales) OVER (Partition by City ORDER BY ID),0) as 'Previous Month Sales',
```

```
    ISNULL(LEAD(Sales) OVER (Partition by City ORDER BY ID),0) as 'Next Month Sales',
```

```
    SUM(Sales) OVER(PARTITION BY City ORDER BY ID) AS 'YTD Sales'
```

--we partition our dataset over City in order to help identify subsets in our dataset

--Null values have been replaced by zero

```
    FROM Table1
```

```
) t
```

```
ORDER BY ID
```

```
;
```

--OUTPUT Table image attached

City	Year	Month	Sales	Previous Month Sales	Next Month Sales	YTD Sales
Delhi	2020	5	4300	0	2000	4300
Delhi	2020	6	2000	4300	2100	6300
Delhi	2020	7	2100	2000	2200	8400
Delhi	2020	8	2200	2100	1900	10600
Delhi	2020	9	1900	2200	0	12500
Mumbai	2020	10	200	0	4400	200
Mumbai	2020	5	4400	200	2800	4600
Mumbai	2020	6	2800	4400	6000	7400
Mumbai	2020	7	6000	2800	9300	13400
Mumbai	2020	8	9300	6000	4200	22700
Mumbai	2020	9	4200	9300	0	26900
Bangalore	2020	10	9700	0	1000	9700
Bangalore	2020	5	1000	9700	2300	10700
Bangalore	2020	6	2300	1000	6800	13000
Bangalore	2020	7	6800	2300	7000	19800
Bangalore	2020	8	7000	6800	2300	26800
Bangalore	2020	9	2300	7000	8400	29100
Bangalore	2020	9	8400	2300	0	37500