Given the table below, construct a SQL query that would return one row per month, containing the average customer satisfaction score (CSAT) for that month as well as a column giving the 6-month trailing average CSAT score.

**Customer Satisfaction Scores**

|  |  |  |
| --- | --- | --- |
| user\_id | created\_at | csat\_score |
| 6574651 | 2017-10-08 14:23:56 | 7 |
| 543334 | 2017-10-15 18:14:08 | 2 |
| 137846 | 2017-10-19 6:45:31 | 5 |
| 2450345 | 2017-11-15 11:30:29 | 8 |
| 3859696 | 2017-11-15 11:33:11 | 6 |
| 1834789 | 2017-11-15 11:34:55 | 1 |
| 9827342 | 2017-12-18 10:13:09 | 6 |
| 2069757 | 2017-12-20 8:56:20 | 3 |

**Example Output**

|  |  |  |
| --- | --- | --- |
| month | csat | csat\_six\_mo |
| 12/1/2017 | 6.55 | 6.44 |
| 1/1/2018 | 6.78 | 6.50 |

With this dataset, I made the following assumptions:

* The created\_at column has a consistent format of the datetime type.
* The 6 month trailing average will include the current month it is based on.
* No exact number of decimal places for the csat averages will be enforced since it was not specified.

I first create a CTE that lists the average csat score by month. Since the created\_at column is in the datetime format, this needs converted to just month and year and should also be grouped in that manner. In this particular context it should be quicker to do it this way rather than using a window function partitioned by a reformatted date (which would also need a distinct clause to remove duplicate rows). Then I query the CTE with an additional subquery that calculates the 6 month trailing average using the monthly averages going back 5 months (current month is included in the calculation). For this to work, the month data had to be interpreted as a date, so for that reason I formatted it as ‘MM/01/yyyy’ in the CTE. Results are ordered by month from oldest to newest.

with monthly\_customer\_satisfaction as (

select format(created\_at, 'MM/01/yyyy') as month,

AVG(csat\_score) as monthly\_csat

from Customer\_Satisfaction\_Scores

group by format(created\_at, 'MM/01/yyyy')

)

select format(mcs.month, 'MM-yyyy') as month,

mcs.monthly\_csat as csat,

(select avg(mcs2.monthly\_csat)

from monthly\_customer\_satisfaction mcs2

where mcs2.month between dateadd(M,-5,mcs.month) and mcs.month ) as csat\_six\_mo

from monthly\_customer\_satisfaction mcs

order by mcs.month asc