year	month	day	hour	minute	temperature
2020	1	10	10	25	15
2020	2	1	1	35	25
2020	3	3	9	15	45
2020	4	5	1	35	15
2020	5	7	9	15	65
2020	6	9	1	45	55
2020	7	25	10	25	65
2020	8	27	1	45	75
2020	9	25	9	15	35
2020	10	27	1	35	25
2020	11	25	9	15	45
2020	12	27	1	35	55
2021	1	10	10	25	45
2021	2	1	1	35	35
2021	3	3	9	15	15
2021	4	5	1	35	25
2021	5	7	9	15	35
2021	6	9	1	45	15
2021	7	25	10	25	45
2021	8	27	1	45	65
2021	9	25	9	15	25
2021	10	27	1	35	15
2021	11	25	9	15	35
2021	12	27	1	35	45
2022	1	1	1	35	15
2022	1	3	9	15	25
2022	1	5	1	35	35
2022	1	7	9	15	15
2022	1	9	1	45	25
2022	1	10	10	25	15

```
--- **************************** PREVIOUS TEMPERATURE
************************************----------------------------------
SELECT year,month,day, temperature, lag(temperature) over (order by year,month,day) as
prev_temperature
FROM MODUNDRIGE;

---  ****************Difference of temperature over years ********************---------
----------
with cte as ( SELECT year,month,day, temperature, lag(temperature) over (order by
year,month,day) as prev_temperature
```

```
FROM MODUNDRIGE)
select YEAR,month,DAY,temperature-prev_temperature as temp_diff from cte


--- ******************************** SUCCEEDING TEMPERATURE
******************************** --------------------

SELECT year,month,day, temperature, LEAD(temperature) over (order by year,month,day) as
NEXT_temperature
FROM MODUNDRIGE;

---  ROW_NUMBER --  "Returns a unique row number for each row within a window partition"
-
--- RANK -- RANKS ROWS BASED ON THE VALUE PROVIDED

SELECT * FROM MODUNDRIGE ORDER BY YEAR,MONTH,DAY,MINUTE,temperature

SELECT year,month,day, temperature, row_number() over (partition by year, month order by
year,month,day desc) as last_day_of_month_from_data
FROM MODUNDRIGE
ORDER BY 1,2,3;


SELECT year,month,
row_number() over (partition by year order by month) as rn,
rank() over (partition by year order by month) as rank,
dense_rank() over (partition by year order by month) as dense_rank
FROM  MODUNDRIGE
ORDER BY 1,2;


-----------: What was the coldest 4-day period?


SELECT year,month,day,temperature,
avg(temperature) over (partition by '' order by year,month,day ROWS BETWEEN 3 preceding
and current row) last_3_days_avg
FROM MODUNDRIGE
ORDER BY 1,2,3;


 ----What is the cumulative average temperature?
  ---, let's average all rows until the previous row, by specifying the two limits as:

 SELECT year,month,day,temperature,
avg(temperature) over (partition by '' order by year,month,day ROWS BETWEEN unbounded
preceding and 1 preceding) preceding_days_avg
FROM  MODUNDRIGE
ORDER BY 1,2,3;

/***
year   month  day    temperature   preceding_days_avg
2020   1      10     15     NULL
2020   2      1      25     15
2020   3      3      45     20
2020   4      5      15     28.3333333333333
2020   5      7      65     25
2020   6      9      55     33
```

```
2020   7      25     65     36.6666666666667
2020   8      27     75     40.7142857142857
2020   9      25     35     45
2020   10     27     25     43.8888888888889
2020   11     25     45     42
2020   12     27     55     42.2727272727273
2021   1      10     45     43.3333333333333
2021   2      1      35     43.4615384615385
2021   3      3      15     42.8571428571429
2021   4      5      25     41
2021   5      7      35     40
2021   6      9      15     39.7058823529412
2021   7      25     45     38.3333333333333
2021   8      27     65     38.6842105263158
2021   9      25     25     40
2021   10     27     15     39.2857142857143
2021   11     25     35     38.1818181818182
2021   12     27     45     38.0434782608696
2022   1      1      15     38.3333333333333
2022   1      3      25     37.4
2022   1      5      35     36.9230769230769
2022   1      7      15     36.8518518518519
2022   1      9      25     36.0714285714286
2022   1      10     15     35.6896551724138
***/

----PREVIOUS ALL ROWS AND CURRENT ROW

SELECT year,month,day,temperature,
avg(temperature) over (partition by year, month order by year,month ROWS BETWEEN
unbounded preceding and current row) rows_avg,
avg(temperature) over (partition by year, month order by year,month RANGE BETWEEN
unbounded preceding and current row) range_avg
FROM MODUNDRIGE
ORDER BY 1,2,3;
/***
year   month  day    temperature   rows_avg      range_avg
2020   1      10     15     15     15
2020   2      1      25     25     25
2020   3      3      45     45     45
2020   4      5      15     15     15
2020   5      7      65     65     65
2020   6      9      55     55     55
2020   7      25     65     65     65
2020   8      27     75     75     75
2020   9      25     35     35     35
2020   10     27     25     25     25
2020   11     25     45     45     45
2020   12     27     55     55     55
2021   1      10     45     45     45
2021   2      1      35     35     35
2021   3      3      15     15     15
2021   4      5      25     25     25
2021   5      7      35     35     35
2021   6      9      15     15     15
2021   7      25     45     45     45
2021   8      27     65     65     65
2021   9      25     25     25     25
```

```
2021   10     27     15     15     15
2021   11     25     35     35     35
2021   12     27     45     45     45
2022   1      1      15     15     21.6666666666667
2022   1      3      25     20     21.6666666666667
2022   1      5      35     25     21.6666666666667
2022   1      7      15     22.5   21.6666666666667
2022   1      9      25     23     21.6666666666667
2022   1      10     15     21.6666666666667     21.6666666666667
***/

--PRECEEDING TWO ROWS AND ONE FOLLOWING ROW

SELECT year,month,day,temperature,
avg(temperature) over (partition by '' order by year,month,day ROWS BETWEEN 2 preceding
and 1 following) last_3_days_avg
FROM  MODUNDRIGE
ORDER BY 1,2,3;

/***
year   month  day    temperature   last_3_days_avg
2020   1      10     15     20
2020   2      1      25     28.33333333
2020   3      3      45     25
2020   4      5      15     37.5
2020   5      7      65     45
2020   6      9      55     50
2020   7      25     65     65
2020   8      27     75     57.5
2020   9      25     35     50
2020   10     27     25     45
2020   11     25     45     40
2020   12     27     55     42.5
2021   1      10     45     45
2021   2      1      35     37.5
2021   3      3      15     30
2021   4      5      25     27.5
2021   5      7      35     22.5
2021   6      9      15     30
2021   7      25     45     40
2021   8      27     65     37.5
2021   9      25     25     37.5
2021   10     27     15     35
2021   11     25     35     30
2021   12     27     45     27.5
2022   1      1      15     30
2022   1      3      25     30
2022   1      5      35     22.5
2022   1      7      15     25
2022   1      9      25     22.5
2022   1      10     15     18.33333333

**/
---- previous MONTH temperature and percentage growth

wITH MonthlySalesCTE(year, month, temperature) AS (
       SELECT year,
                     month,
```

```
                    SUM(temperature) as totaltemp
        FROM   MODUNDRIGE soh
        WHERE  YEAR = 2021
        GROUP BY YEAR, MONTH
)
SELECT cte.Year CalendarYear,
               cte.Month CalendarMonth,
               cte.temperature Currenttemp,
               lag(cte.temperature) over (order by cte.year,cte.month) as
prev_temperature,
               CAST(((cte.temperature - SUM(soh.temperature)) / cte.temperature) AS
decimal(3,2)) AS PctGrowth
FROM   MODUNDRIGE soh
               INNER JOIN MonthlySalesCTE cte
                      ON soh.year = cte.year - 1 AND soh.month = cte.month
GROUP BY cte.year, cte.month, cte.temperature
ORDER BY cte.month DESC

 /****
 CalendarYear CalendarMonth Currenttemp   prev_temperature     PctGrowth
2021   12      45      35      -0.22
2021   11      35      15      -0.29
2021   10      15      25      -0.67
2021   9       25      65      -0.4
2021   8       65      45      -0.15
2021   7       45      15      -0.44
2021   6       15      35      -2.67
2021   5       35      25      -0.86
2021   4       25      15      0.4
2021   3       15      35      -2
2021   2       35      45      0.29
2021   1       45      NULL    0.67
*****/

--MoM YoY
SELECT
  year
  ,month
  ,temperature
  ,(temperature- LAG(temperature, 1) OVER (ORDER BY year))/LAG(temperature, 1) OVER
(ORDER BY year) as 'MoM'
  ,(temperature - LAG(temperature, 12) OVER (ORDER BY year))/LAG(temperature, 12) OVER
(ORDER BY year) as 'YoY'
FROM MODUNDRIGE

/****RESULT
year   month  temperature   MoM    YoY
2020   12      55      NULL    NULL
2020   11      45      -0.181818182  NULL
2020   10      25      -0.444444444  NULL
2020   9       35      0.4     NULL
2020   8       75      1.142857143   NULL
2020   7       65      -0.133333333  NULL
2020   1       15      -0.769230769  NULL
2020   2       25      0.666666667   NULL
2020   3       45      0.8     NULL
2020   4       15      -0.666666667  NULL
2020   5       65      3.333333333   NULL
```

```
2020   6      55     -0.153846154  NULL
2021   12     45     -0.181818182  -0.181818182
2021   11     35     -0.222222222  -0.222222222
2021   10     15     -0.571428571  -0.4
2021   9      25     0.666666667   -0.285714286
2021   8      65     1.6    -0.133333333
2021   7      45     -0.307692308  -0.307692308
2021   1      45     0      2
2021   2      35     -0.222222222  0.4
2021   3      15     -0.571428571  -0.666666667
2021   4      25     0.666666667   0.666666667
2021   5      35     0.4    -0.461538462
2021   6      15     -0.571428571  -0.727272727
2022   1      15     0      -0.666666667
2022   1      25     0.666666667   -0.285714286
2022   1      35     0.4    1.333333333
2022   1      15     -0.571428571  -0.4
2022   1      25     0.666666667   -0.615384615
2022   1      15     -0.4   -0.666666667
***//
```