



# LAPORAN HASIL PRAKTIKUM

## BASIS DATA LANJUT



OLEH :

IVAN RIZAL AHMADI

NIM. 2341760128

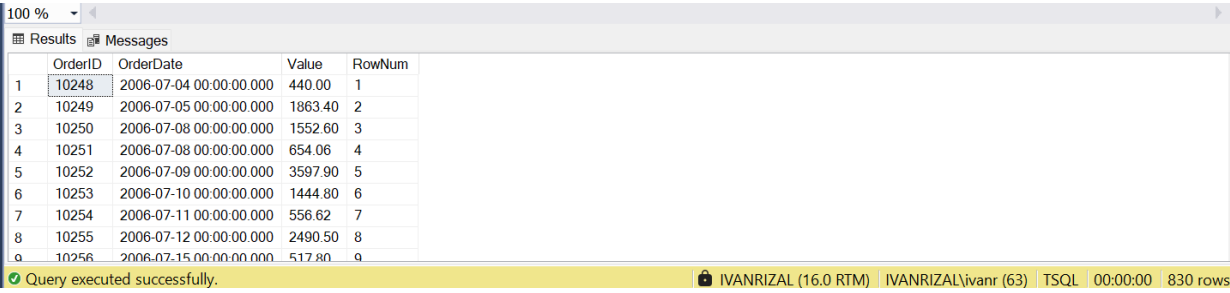
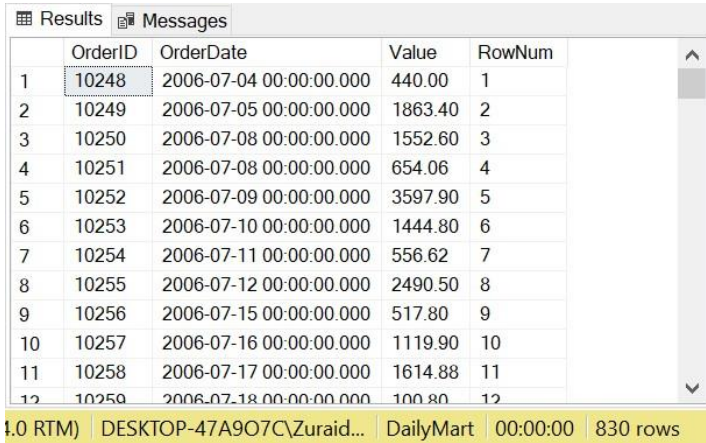
SIB-2C/17

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Langkah	Keterangan
1	<p>[Soal-1] Tulislah query untuk menampilkan kolom OrderID, OrderDate, dan Value dari View Sales.OrderValues. Gunakan fungsi ROW_NUMBER untuk mengembalikan nomor baris yang diurutkan berdasarkan kolom OrderDate dan beri nama alias RowNum</p> <pre>--soal 1 SELECT     OrderID,     OrderDate,     Value,     ROW_NUMBER() OVER (ORDER BY OrderDate) AS RowNum FROM     Sales.OrderValues;</pre>  



2

[Soal-2] Salin query pada soal no 1 kemudian modifikasi dengan menambahkan kolom bernama RankNum. RankNum diperoleh menggunakan fungsi RANK dengan urutan peringkat berdasarkan kolom OrderDate  
--soal2

```
SELECT
    OrderID,
    OrderDate,
    Value,
    ROW_NUMBER() OVER (ORDER BY OrderDate) AS RowNum,
    RANK() OVER (ORDER BY OrderDate) AS RankNum
FROM
    Sales.OrderValues;
```

Results Messages

	OrderID	OrderDate	Value	RowNum	RankNum
1	10248	2006-07-04 00:00:00.000	440.00	1	1
2	10249	2006-07-05 00:00:00.000	1863.40	2	2
3	10250	2006-07-08 00:00:00.000	1552.60	3	3
4	10251	2006-07-08 00:00:00.000	654.06	4	3
5	10252	2006-07-09 00:00:00.000	3597.90	5	5
6	10253	2006-07-10 00:00:00.000	1444.80	6	6
7	10254	2006-07-11 00:00:00.000	556.62	7	7
8	10255	2006-07-12 00:00:00.000	2490.50	8	8
9	10256	2006-07-15 00:00:00.000	517.80	9	9

Query executed successfully. IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 830 rows

Results Messages

	OrderID	OrderDate	Value	RowNum	RankNum
1	10248	2006-07-04 00:00:00.000	440.00	1	1
2	10249	2006-07-05 00:00:00.000	1863.40	2	2
3	10250	2006-07-08 00:00:00.000	1552.60	3	3
4	10251	2006-07-08 00:00:00.000	654.06	4	3
5	10252	2006-07-09 00:00:00.000	3597.90	5	5
6	10253	2006-07-10 00:00:00.000	1444.80	6	6
7	10254	2006-07-11 00:00:00.000	556.62	7	7
8	10255	2006-07-12 00:00:00.000	2490.50	8	8
9	10256	2006-07-15 00:00:00.000	517.80	9	9
10	10257	2006-07-16 00:00:00.000	1119.90	10	10
11	10258	2006-07-17 00:00:00.000	1614.88	11	11
12	10259	2006-07-18 00:00:00.000	100.80	12	12

1.0 RTM) DESKTOP-47A907C\Zuraid... DailyMart 00:00:00 830 rows

3

[Soal-3] Apakah perbedaan antara fungsi RANK dan fungsi ROW\_NUMBER?

- **ROW\_NUMBER():** Menghasilkan nomor urut unik untuk setiap baris berdasarkan urutan yang diberikan, tanpa mengabaikan kesamaan dalam kolom yang diurutkan.  
Contoh: 1, 2, 3, 4, 5, dll.
- **RANK():** Menghasilkan peringkat untuk setiap baris, tetapi jika ada baris dengan nilai yang sama pada kolom yang diurutkan, mereka akan mendapatkan peringkat yang sama, dan peringkat berikutnya akan dilewati.  
Contoh: 1, 2, 2, 4, 5, dll.



4

[Soal-4] Tuliskan query untuk menampilkan kolom CustomerID, OrderID, OrderDate, dan Value dari View Sales.OrderValues. Tampilkan nomor urut order untuk masing-masing customer dengan fungsi RANK(). Urutan dilakukan berdasarkan kolom OrderDate secara descending. Beri nama alias OrderRankNum.

```
--soal 4
SELECT
    CustomerID,
    OrderID,
    OrderDate,
    Value,
    RANK() OVER (PARTITION BY CustomerID ORDER BY OrderDate DESC) AS OrderRankNum
FROM
    Sales.OrderValues;
```

Results		Messages			
	CustomerID	OrderID	OrderDate	Value	OrderRankNum
1	1	11011	2008-04-09 00:00:00.000	933.50	1
2	1	10952	2008-03-16 00:00:00.000	471.20	2
3	1	10835	2008-01-15 00:00:00.000	845.80	3
4	1	10702	2007-10-13 00:00:00.000	330.00	4
5	1	10692	2007-10-03 00:00:00.000	878.00	5
6	1	10643	2007-08-25 00:00:00.000	814.50	6
7	2	10926	2008-03-04 00:00:00.000	514.40	1
8	2	10759	2007-11-28 00:00:00.000	320.00	2
9	2	10625	2007-08-08 00:00:00.000	479.75	3
10	2	10308	2006-09-18 00:00:00.000	88.80	4
11	3	10856	2008-01-28 00:00:00.000	660.00	1
12	3	10682	2007-09-25 00:00:00.000	375.50	2

cal) (14.0 RTM) DESKTOP-47A9O7C\Zuraid... DailyMart 00:00:00 830 rows

	CustomerID	OrderID	OrderDate	Value	OrderRankNum
1	1	11011	2008-04-09 00:00:00.000	933.50	1
2	1	10952	2008-03-16 00:00:00.000	471.20	2
3	1	10835	2008-01-15 00:00:00.000	845.80	3
4	1	10702	2007-10-13 00:00:00.000	330.00	4
5	1	10692	2007-10-03 00:00:00.000	878.00	5
6	1	10643	2007-08-25 00:00:00.000	814.50	6
7	2	10926	2008-03-04 00:00:00.000	514.40	1
8	2	10759	2007-11-28 00:00:00.000	320.00	2
9	2	10625	2007-08-08 00:00:00.000	479.75	3

Query executed successfully. IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 830 rows



5

[Soal-5] Tuliskan query untuk menampilkan kolom CustomerID, OrderID, OrderDate, dan Value dari view Sales.OrderValues. Tambahkan dua kolom berikut:

- OrderYear yaitu nilai tahun dari kolom OrderDate
- OrderRankNum yaitu nomor urut yang dipartisi berdasarkan pelanggan dan tahun pesanan serta diurutkan berdasarkan nilai pesanan dalam urutan menurun

```
--soal 5
SELECT
CustomerID,
OrderID,
OrderDate,
Value,
YEAR(OrderDate) AS OrderYear,
RANK() OVER (PARTITION BY CustomerID, YEAR(OrderDate) ORDER BY Value DESC) AS OrderRankNum
FROM
Sales.OrderValues;
```

	CustomerID	OrderID	OrderDate	Value	OrderYear	OrderRankNum
1	1	10692	2007-10-03 00:00:00.000	878.00	2007	1
2	1	10643	2007-08-25 00:00:00.000	814.50	2007	2
3	1	10702	2007-10-13 00:00:00.000	330.00	2007	3
4	1	11011	2008-04-09 00:00:00.000	933.50	2008	1
5	1	10835	2008-01-15 00:00:00.000	845.80	2008	2
6	1	10952	2008-03-16 00:00:00.000	471.20	2008	3
7	2	10308	2006-09-18 00:00:00.000	88.80	2006	1
8	2	10625	2007-08-08 00:00:00.000	479.75	2007	1
9	2	10759	2007-11-28 00:00:00.000	320.00	2007	2

Query executed successfully.

IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 830 rows

	CustomerID	OrderID	OrderDate	Value	OrderYear	OrderRankNum
1	1	10692	2007-10-03 00:00:00.000	878.00	2007	1
2	1	10643	2007-08-25 00:00:00.000	814.50	2007	2
3	1	10702	2007-10-13 00:00:00.000	330.00	2007	3
4	1	11011	2008-04-09 00:00:00.000	933.50	2008	1
5	1	10835	2008-01-15 00:00:00.000	845.80	2008	2
6	1	10952	2008-03-16 00:00:00.000	471.20	2008	3
7	2	10308	2006-09-18 00:00:00.000	88.80	2006	1
8	2	10625	2007-08-08 00:00:00.000	479.75	2007	1
9	2	10759	2007-11-28 00:00:00.000	320.00	2007	2
10	2	10926	2008-03-04 00:00:00.000	514.40	2008	1
11	3	10365	2006-11-27 00:00:00.000	403.20	2006	1
12	3	10573	2007-06-19 00:00:00.000	2082.00	2007	1

Que... (local) (14.0 RTM) DESKTOP-47A9O7C\Zuraid... DailyMart 00:00:00 830 rows



6

[Soal-6] Salin query jawaban soal nomor 5 dan modifikasi untuk memfilter hanya pesanan dengan dua peringkat paling awal berdasarkan kolom orderrankno!

```
--soal 6
WITH RankedOrders AS (
SELECT
    CustomerID,
    OrderID,
    OrderDate,
    Value,
    YEAR(OrderDate) AS OrderYear,
    RANK() OVER (PARTITION BY CustomerID, YEAR(OrderDate) ORDER BY Value DESC) AS OrderRankNum
FROM
    Sales.OrderValues
)
SELECT
    CustomerID,
    OrderID,
    OrderDate,
    Value,
    OrderYear,
    OrderRankNum
FROM
    RankedOrders
WHERE
    OrderRankNum <= 2 -- Memfilter hanya pesanan dengan dua peringkat paling awal
ORDER BY
    CustomerID, OrderYear, OrderRankNum;
```

	CustomerID	OrderID	OrderDate	Value	OrderYear	OrderRankNum
1	1	10692	2007-10-03 00:00:00.000	878.00	2007	1
2	1	10643	2007-08-25 00:00:00.000	814.50	2007	2
3	1	11011	2008-04-09 00:00:00.000	933.50	2008	1
4	1	10835	2008-01-15 00:00:00.000	845.80	2008	2
5	2	10308	2006-09-18 00:00:00.000	88.80	2006	1
6	2	10625	2007-08-08 00:00:00.000	479.75	2007	1
7	2	10759	2007-11-28 00:00:00.000	320.00	2007	2
8	2	10926	2008-03-04 00:00:00.000	514.40	2008	1
9	3	10365	2006-11-27 00:00:00.000	403.20	2006	1

Query executed successfully.

IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 418 rows

Results		Messages					
	CustomerID	OrderID	OrderDate	Value	OrderYear	OrderRankNum	
1	1	10692	2007-10-03 00:00:00.000	878.00	2007	1	
2	1	10643	2007-08-25 00:00:00.000	814.50	2007	2	
3	1	11011	2008-04-09 00:00:00.000	933.50	2008	1	
4	1	10835	2008-01-15 00:00:00.000	845.80	2008	2	
5	2	10308	2006-09-18 00:00:00.000	88.80	2006	1	
6	2	10625	2007-08-08 00:00:00.000	479.75	2007	1	
7	2	10759	2007-11-28 00:00:00.000	320.00	2007	2	
8	2	10926	2008-03-04 00:00:00.000	514.40	2008	1	
9	3	10365	2006-11-27 00:00:00.000	403.20	2006	1	
10	3	10573	2007-06-19 00:00:00.000	2082.00	2007	1	
11	3	10535	2007-05-13 00:00:00.000	1940.85	2007	2	
12	3	10856	2008-01-28 00:00:00.000	660.00	2008	1	

Query executed successfully. (local) (14.0 RTM) DESKTOP-47A9O7C\Zuraid... DailyMart 00:00:00 418 rows

## Praktikum – Bagian 1: Fungsi ROW\_NUMBER() dan RANK()



## Praktikum – Bagian 2: Window OFFSET Function

Langkah	Keterangan																																																												
1	<p>[Soal-7] Buatlah CTE (<i>common table expression</i>) dengan nama OrderRows yang mengembalikan kolom OrderID, OrderDate, dan Value dari view Sales.OrderValues. Tambahkan kolom RowNum yang merupakan hasil dari fungsi ROW_NUMBER urut berdasarkan kolom OrderDate dan OrderID!</p> <pre>--soal 7 WITH OrderRows AS (     SELECT         OrderID,         OrderDate,         Value,         ROW_NUMBER() OVER (ORDER BY OrderDate, OrderID) AS RowNum     FROM         Sales.OrderValues ) SELECT * FROM OrderRows;</pre> <table><tr><th></th><th>OrderID</th><th>OrderDate</th><th>Value</th><th>RowNum</th></tr><tr><td>16</td><td>10263</td><td>2006-07-23 00:00:00.000</td><td>1873.80</td><td>16</td></tr><tr><td>17</td><td>10264</td><td>2006-07-24 00:00:00.000</td><td>695.63</td><td>17</td></tr><tr><td>18</td><td>10265</td><td>2006-07-25 00:00:00.000</td><td>1176.00</td><td>18</td></tr><tr><td>19</td><td>10266</td><td>2006-07-26 00:00:00.000</td><td>346.56</td><td>19</td></tr><tr><td>20</td><td>10267</td><td>2006-07-29 00:00:00.000</td><td>3536.60</td><td>20</td></tr><tr><td>21</td><td>10268</td><td>2006-07-30 00:00:00.000</td><td>1101.20</td><td>21</td></tr><tr><td>22</td><td>10269</td><td>2006-07-31 00:00:00.000</td><td>642.20</td><td>22</td></tr><tr><td>23</td><td>10270</td><td>2006-08-01 00:00:00.000</td><td>1376.00</td><td>23</td></tr><tr><td>24</td><td>10271</td><td>2006-08-01 00:00:00.000</td><td>48.00</td><td>24</td></tr><tr><td>25</td><td>10272</td><td>2006-08-02 00:00:00.000</td><td>1456.00</td><td>25</td></tr><tr><td>26</td><td>10273</td><td>2006-08-05 00:00:00.000</td><td>2027.28</td><td>26</td></tr></table> <p>Query executed successfully</p> <p>IVANRIZAL (16.0 RTM)   IVANRIZAL\Ivanr (63)   TSQL   00:00:00   830 rows</p>		OrderID	OrderDate	Value	RowNum	16	10263	2006-07-23 00:00:00.000	1873.80	16	17	10264	2006-07-24 00:00:00.000	695.63	17	18	10265	2006-07-25 00:00:00.000	1176.00	18	19	10266	2006-07-26 00:00:00.000	346.56	19	20	10267	2006-07-29 00:00:00.000	3536.60	20	21	10268	2006-07-30 00:00:00.000	1101.20	21	22	10269	2006-07-31 00:00:00.000	642.20	22	23	10270	2006-08-01 00:00:00.000	1376.00	23	24	10271	2006-08-01 00:00:00.000	48.00	24	25	10272	2006-08-02 00:00:00.000	1456.00	25	26	10273	2006-08-05 00:00:00.000	2027.28	26
	OrderID	OrderDate	Value	RowNum																																																									
16	10263	2006-07-23 00:00:00.000	1873.80	16																																																									
17	10264	2006-07-24 00:00:00.000	695.63	17																																																									
18	10265	2006-07-25 00:00:00.000	1176.00	18																																																									
19	10266	2006-07-26 00:00:00.000	346.56	19																																																									
20	10267	2006-07-29 00:00:00.000	3536.60	20																																																									
21	10268	2006-07-30 00:00:00.000	1101.20	21																																																									
22	10269	2006-07-31 00:00:00.000	642.20	22																																																									
23	10270	2006-08-01 00:00:00.000	1376.00	23																																																									
24	10271	2006-08-01 00:00:00.000	48.00	24																																																									
25	10272	2006-08-02 00:00:00.000	1456.00	25																																																									
26	10273	2006-08-05 00:00:00.000	2027.28	26																																																									





2

**[Soal-8]** Buatlah query untuk menampilkan selisih nilai order terhadap nilai order sebelumnya. Tuliskan SELECT statement terhadap CTE OrderRows dan lakukan LEFT JOIN dengan CTE yang sama untuk membandingkan nilai Value dan PrevValue. PrevValue merupakan nilai kolom Value pada nomor urut sebelumnya. Tampilkan kolom OrderID, OrderDate, Value, dan PrevValue serta selisih nilai Value dan PrevValue yang diberi nama alias Diff.

```
--soal 8
WITH OrderRows AS (
    SELECT
        OrderID,
        OrderDate,
        Value,
        ROW_NUMBER() OVER (ORDER BY OrderDate, OrderID) AS RowNum
    FROM
        Sales.OrderValues
)
SELECT
    O1.OrderID,
    O1.OrderDate,
    O1.Value,
    O2.Value AS PrevValue,
    (O1.Value - O2.Value) AS Diff
FROM
    OrderRows O1
LEFT JOIN
    OrderRows O2 ON O1.RowNum = O2.RowNum + 1 -- Join berdasarkan row sebelumnya
ORDER BY
    O1.RowNum;
```

	OrderID	OrderDate	Value	PrevValue	Diff
1	10248	2006-07-04 00:00:00.000	440.00	NULL	NULL
2	10249	2006-07-05 00:00:00.000	1863.40	440.00	1423.40
3	10250	2006-07-08 00:00:00.000	1552.60	1863.40	-310.80
4	10251	2006-07-08 00:00:00.000	654.06	1552.60	-898.54
5	10252	2006-07-09 00:00:00.000	3597.90	654.06	2943.84
6	10253	2006-07-10 00:00:00.000	1444.80	3597.90	-2153.10
7	10254	2006-07-11 00:00:00.000	550.00	1444.80	-894.80

✓ Query executed successfully.

IVANRIZAL (16.0 RTM) | IVANRIZAL\ivanr (63) | TSQL | 00:00:02 | 830 rows





Results		Messages				
	OrderID	OrderDate	Value	PrevValue	Diff	
1	10248	2006-07-04 00:00:00.000	440.00	NULL	NULL	^
2	10249	2006-07-05 00:00:00.000	1863.40	440.00	1423.40	
3	10250	2006-07-08 00:00:00.000	1552.60	1863.40	-310.80	
4	10251	2006-07-08 00:00:00.000	654.06	1552.60	-898.54	
5	10252	2006-07-09 00:00:00.000	3597.90	654.06	2943.84	
6	10253	2006-07-10 00:00:00.000	1444.80	3597.90	-2153.10	
7	10254	2006-07-11 00:00:00.000	556.62	1444.80	-888.18	
8	10255	2006-07-12 00:00:00.000	2490.50	556.62	1933.88	
9	10256	2006-07-15 00:00:00.000	517.80	2490.50	-1972.70	
10	10257	2006-07-16 00:00:00.000	1119.90	517.80	602.10	
11	10258	2006-07-17 00:00:00.000	1614.88	1119.90	494.98	
12	10259	2006-07-18 00:00:00.000	100.80	1614.88	-1514.08	v

l) (14.0 RTM)

DESKTOP-47A9O7C\Zuraid...

DailyMart

00:00:02

830 rows

3

[Soal-9] Tuliskan query untuk memperoleh hasil yang sama dengan query pada soal-8 tetapi menggunakan fungsi LAG(). Query yang dibuat pada soal ini tidak menggunakan CTE.

```
--soal 9
SELECT
    OrderID,
    OrderDate,
    Value,
    LAG(Value) OVER (ORDER BY OrderDate, OrderID) AS PrevValue,
    (Value - LAG(Value) OVER (ORDER BY OrderDate, OrderID)) AS Diff
FROM
    Sales.OrderValues
ORDER BY
    OrderDate, OrderID;
```

	OrderID	OrderDate	Value	PrevValue	Diff
1	10248	2006-07-04 00:00:00.000	440.00	NULL	NULL
2	10249	2006-07-05 00:00:00.000	1863.40	440.00	1423.40
3	10250	2006-07-08 00:00:00.000	1552.60	1863.40	-310.80
4	10251	2006-07-08 00:00:00.000	654.06	1552.60	-898.54
5	10252	2006-07-09 00:00:00.000	3597.90	654.06	2943.84
6	10253	2006-07-10 00:00:00.000	1444.80	3597.90	-2153.10
7	10254	2006-07-11 00:00:00.000	556.62	1444.80	-888.18
8	10255	2006-07-12 00:00:00.000	2490.50	556.62	1933.88
9	10256	2006-07-15 00:00:00.000	517.80	2490.50	-1972.70
10	10257	2006-07-16 00:00:00.000	1119.90	517.80	602.10
11	10258	2006-07-17 00:00:00.000	1614.88	1119.90	494.98
12	10259	2006-07-18 00:00:00.000	100.80	1614.88	-1514.08

Query executed successfully.

IVANRIZAL (16.0 RTM) | IVANRIZAL\ivanr (63) | TSQL | 00:00:00 | 830 rows



4

[Soal-10] Buatlah sebuah CTE bernama SalesMonth2007 yang mengembalikan jumlah pesanan pada setiap bulan dengan 2 kolom berikut:

- Month yaitu nilai bulan (angka) dari kolom OrderDate
- Value (agregat dari kolom Value)

Filter hasilnya hanya untuk pesanan yang dilakukan pada tahun 2007

```
--soal 10
WITH SalesMonth2007 AS (
  SELECT
    MONTH(OrderDate) AS Month,
    SUM(Value) AS Value
  FROM
    Sales.OrderValues
  WHERE
    YEAR(OrderDate) = 2007
  GROUP BY
    MONTH(OrderDate)
)
SELECT *
FROM SalesMonth2007;
```

	Month	Value
1	1	61258.08
2	2	38483.64
3	3	38547.23
4	4	53032.95
5	5	53781.30
6	6	36362.82
7	7	51000.00

Query executed successfully.

IVANRIZAL (16.0 RTM) | IVANRIZAL\ivanr (63) | TSQL | 00:00:00 | 12 rows

5

[Soal-11] Tuliskan query SELECT yang mengembalikan Month dan Value dari CTE SalesMonth2007. Tambahkan 3 kolom berikut:

- AvgOfPrev3Months (rata-rata penjualan tiga bulan sebelumnya)
- DiffJanuary (selisih nilai Value dengan Value pada bulan Januari. Gunakan fungsi FIRST\_VALUE)
- NextVal (nilai dari kolom Value pada bulan selanjutnya)



```
--soal 11
WITH SalesMonth2007 AS (
    SELECT
        MONTH(OrderDate) AS Month,
        SUM(Value) AS Value
    FROM
        Sales.OrderValues
    WHERE
        YEAR(OrderDate) = 2007
    GROUP BY
        MONTH(OrderDate)
)
SELECT
    Month,
    Value,
    -- Rata-rata penjualan tiga bulan sebelumnya
    AVG(Value) OVER (ORDER BY Month ROWS BETWEEN 3 PRECEDING AND 1 PRECEDING) AS AvgOfPrev3Months,
    -- Selisih nilai dengan bulan Januari
    (Value - FIRST_VALUE(Value) OVER (ORDER BY Month)) AS DiffJanuary,
    -- Nilai pada bulan selanjutnya
    LEAD(Value) OVER (ORDER BY Month) AS NextVal
FROM
    SalesMonth2007;
```

	Month	Value	AvgOfPrev3Months	DiffJanuary	NextVal
1	1	61258.08	NULL	0.00	38483.64
2	2	38483.64	61258.080000	-22774.44	38547.23
3	3	38547.23	49870.860000	-22710.85	53032.95
4	4	53032.95	46096.316666	-8225.13	53781.30
5	5	53781.30	43354.606666	-7476.78	36362.82
6	6	36362.82	48453.826666	-24895.26	51020.86
7	7	51020.86	47725.690000	-10237.22	47287.68
8	8	47287.68	47054.003333	12070.40	55620.27

Query executed successfully. IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 12 rows



Results		Messages			
	Month	Value	AvgOfPrev3Months	DiffJanuary	NextVal
1	1	61258.08	NULL	0.00	38483.64
2	2	38483.64	61258.080000	-22774.44	38547.23
3	3	38547.23	49870.860000	-22710.85	53032.95
4	4	53032.95	46096.316666	-8225.13	53781.30
5	5	53781.30	43354.606666	-7476.78	36362.82
6	6	36362.82	48453.826666	-24895.26	51020.86
7	7	51020.86	47725.690000	-10237.22	47287.68
8	8	47287.68	47054.993333	-13970.40	55629.27
9	9	55629.27	44890.453333	-5628.81	66749.23
10	10	66749.23	51312.603333	5491.15	43533.80
11	11	43533.80	56555.393333	-17724.28	71398.44
12	12	71398.44	55304.100000	10140.36	NULL

14.0 RTM | DESKTOP-47A9O7C\Zuraid... | DailyMart | 00:00:00 | 12 rows

- 6 [Soal-12] Salin query dari soal-11. Tambahkan dua kolom berikut:
- AvgOfLast3Months (rata-rata penjualan 3 bulan terakhir)
  - RunningTotalValue (nilai penjualan kumulatif sampai dengan tertentu)

```
--Soal 12
WITH SalesMonth2007 AS (
    SELECT
        MONTH(OrderDate) AS Month,
        SUM(Value) AS Value
    FROM
        Sales.OrderValues
    WHERE
        YEAR(OrderDate) = 2007
    GROUP BY
        MONTH(OrderDate)
)
SELECT
    Month,
    Value,

    AVG(Value) OVER (ORDER BY Month ROWS BETWEEN 3 PRECEDING AND 1 PRECEDING) AS AvgOfPrev3Months,

    AVG(Value) OVER (ORDER BY Month ROWS BETWEEN 1 FOLLOWING AND 3 FOLLOWING) AS AvgOfLast3Months,

    (Value - FIRST_VALUE(Value) OVER (ORDER BY Month)) AS DiffJanuary,

    LEAD(Value) OVER (ORDER BY Month) AS NextVal,

    SUM(Value) OVER (ORDER BY Month ROWS UNBOUNDED PRECEDING) AS RunningTotalValue
FROM
    SalesMonth2007;
```



Results Messages

	Month	Value	AvgOfPrev3Months	AvgOfLast3Months	Diff.January	NextVal	RunningTotalValue
1	1	61258.08	NULL	43354.606666	0.00	38483.64	61258.08
2	2	38483.64	61258.080000	48453.826666	-22774.44	38547.23	99741.72
3	3	38547.23	49870.860000	47725.690000	-22710.85	53032.95	138288.95
4	4	53032.95	46096.316666	47054.993333	-8225.13	53781.30	191321.90
5	5	53781.30	43354.606666	44890.453333	-7476.78	36362.82	245103.20
6	6	36362.82	48453.826666	51312.603333	-24895.26	51020.86	281466.02
7	7	51020.86	47725.690000	56555.393333	-10237.22	47287.68	332486.88
8	8	47287.68	47054.993333	55304.100000	-13970.40	55629.27	379774.56

Query executed successfully.

IVANRIZAL (16.0 RTM) | IVANRIZAL\ivanr (63) | TSQL | 00:00:00 | 12 rows

Results Messages

	Month	Value	AvgOfPrev3Months	AvgOfLast3Months	RunningTotalValue	Diff.January	NextVal
1	1	61258.08	NULL	61258.080000	61258.08	0.00	38483.64
2	2	38483.64	61258.080000	49870.860000	99741.72	-22774.44	38547.23
3	3	38547.23	49870.860000	46096.316666	138288.95	-22710.85	53032.95
4	4	53032.95	46096.316666	43354.606666	191321.90	-8225.13	53781.30
5	5	53781.30	43354.606666	48453.826666	245103.20	-7476.78	36362.82
6	6	36362.82	48453.826666	47725.690000	281466.02	-24895.26	51020.86
7	7	51020.86	47725.690000	47054.993333	332486.88	-10237.22	47287.68
8	8	47287.68	47054.993333	44890.453333	379774.56	-13970.40	55629.27
9	9	55629.27	44890.453333	51312.603333	435403.83	-5628.81	66749.23
10	10	66749.23	51312.603333	56555.393333	502153.06	5491.15	43533.80
11	11	43533.80	56555.393333	55304.100000	545686.86	-17724.28	71398.44
12	12	71398.44	55304.100000	60560.490000	617085.30	10140.36	NULL

Query executed successfully... (local) (14.0 RTM) | DESKTOP-47A907C\Zuraid... | DailyMart | 00:00:00 | 12 rows

### Praktikum – Bagian 3: Window Aggregate Function

Langkah	Keterangan
1	<p>[Soal-13] Tuliskan query untuk menampilkan kolom CustomerID, OrderID, OrderDate, dan Value dari view Sales.OrderValues. Urutkan berdasarkan CustomerID. Tambahkan kolom bernama PercentOfCustTotal yang merupakan persentase masing-masing nilai order (Value) terhadap seluruh order (Total of Value) yang dilakukan oleh setiap pelanggan.</p> <pre>-- Soal 13 SELECT     CustomerID,     OrderID,     OrderDate,     Value,     (Value / SUM(Value) OVER (PARTITION BY CustomerID) * 100) AS PercentOfCustTotal FROM     Sales.OrderValues ORDER BY     CustomerID;</pre>



	<div><div>ResultsMessages</div><table><tr><th></th><th>CustomerID</th><th>OrderID</th><th>OrderDate</th><th>Value</th><th>PercentOfCustTotal</th></tr><tr><td>1</td><td>1</td><td>10643</td><td>2007-08-25 00:00:00.000</td><td>814.50</td><td>19.0615492628130119354084</td></tr><tr><td>2</td><td>1</td><td>10692</td><td>2007-10-03 00:00:00.000</td><td>878.00</td><td>20.5476246197051252047742</td></tr><tr><td>3</td><td>1</td><td>10702</td><td>2007-10-13 00:00:00.000</td><td>330.00</td><td>7.7229113035338169904049</td></tr><tr><td>4</td><td>1</td><td>10835</td><td>2008-01-15 00:00:00.000</td><td>845.80</td><td>19.7940556985724315469225</td></tr><tr><td>5</td><td>1</td><td>10952</td><td>2008-03-16 00:00:00.000</td><td>471.20</td><td>11.0273812309852562602387</td></tr><tr><td>6</td><td>1</td><td>11011</td><td>2008-04-09 00:00:00.000</td><td>933.50</td><td>21.8464778843903580622513</td></tr><tr><td>7</td><td>2</td><td>10926</td><td>2008-03-04 00:00:00.000</td><td>514.40</td><td>36.6655974910011048148544</td></tr><tr><td>8</td><td>2</td><td>10759</td><td>2007-11-28 00:00:00.000</td><td>320.00</td><td>22.8090808653195053280587</td></tr></table><div>Query executed successfully. IVANRIZAL (16.0 RTM) IVANRIZAL\ivanr (63) TSQL 00:00:00 830 rows</div></div>		CustomerID	OrderID	OrderDate	Value	PercentOfCustTotal	1	1	10643	2007-08-25 00:00:00.000	814.50	19.0615492628130119354084	2	1	10692	2007-10-03 00:00:00.000	878.00	20.5476246197051252047742	3	1	10702	2007-10-13 00:00:00.000	330.00	7.7229113035338169904049	4	1	10835	2008-01-15 00:00:00.000	845.80	19.7940556985724315469225	5	1	10952	2008-03-16 00:00:00.000	471.20	11.0273812309852562602387	6	1	11011	2008-04-09 00:00:00.000	933.50	21.8464778843903580622513	7	2	10926	2008-03-04 00:00:00.000	514.40	36.6655974910011048148544	8	2	10759	2007-11-28 00:00:00.000	320.00	22.8090808653195053280587																														
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	CustomerID	OrderID	OrderDate	Value	PercentOfCustTotal																																																																																
1	1	10643	2007-08-25 00:00:00.000	814.50	19.0615492628130119354084																																																																																
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13	3	10535	2007-05-13 00:00:00.000	1940.85	27.6317700221242087819157																																																																																
2	<p>[Soal-14] Salin query pada soal-13 dan modifikasi dengan menambahkan kolom RunningTotalValue. Kolom ini merupakan total pembelian <b>sementara</b> yang pernah dilakukan pelanggan sejak order pertama kali hingga OrderID saat itu.</p> <pre>-- Soal 14 SELECT     CustomerID,     OrderID,     OrderDate,     Value,     (Value / SUM(Value) OVER (PARTITION BY CustomerID) * 100) AS PercentOfCustTotal,     SUM(Value) OVER (PARTITION BY CustomerID ORDER BY OrderDate, OrderID ROWS UNBOUNDED PRECEDING) AS RunningTotalValue FROM     Sales.OrderValues ORDER BY     CustomerID, OrderDate, OrderID;</pre>																																																																																				





	CustomerID	OrderID	OrderDate	Value	PercentOfCustTotal	RunningTotalValue
1	1	10643	2007-08-25 00:00:00.000	814.50	19.0615492628130119354084	814.50
2	1	10692	2007-10-03 00:00:00.000	878.00	20.5476246197051252047742	1692.50
3	1	10702	2007-10-13 00:00:00.000	330.00	7.7229113035338169904049	2022.50
4	1	10835	2008-01-15 00:00:00.000	845.80	19.7940556985724315469225	2868.30
5	1	10952	2008-03-16 00:00:00.000	471.20	11.0273812309852562602387	3339.50
6	1	11011	2008-04-09 00:00:00.000	933.50	21.8464778843903580622513	4273.00
7	2	10308	2006-09-18 00:00:00.000	88.80	6.3295199401261627285363	88.80
8	2	10625	2007-08-08 00:00:00.000	479.75	34.1958017035532271285506	568.55

Query executed successfully.

IVANRIZAL (16.0 RTM) | IVANRIZAL\ivanr (63) | TSQL | 00:00:00 | 830 rows

Results Messages

	CustomerID	OrderID	OrderDate	Value	PercentOfCustTotal	RunningTotalValue
1	1	10643	2007-08-25 00:00:00.000	814.50	19.0615492628130119354084	814.50
2	1	10692	2007-10-03 00:00:00.000	878.00	20.5476246197051252047742	1692.50
3	1	10702	2007-10-13 00:00:00.000	330.00	7.7229113035338169904049	2022.50
4	1	10835	2008-01-15 00:00:00.000	845.80	19.7940556985724315469225	2868.30
5	1	10952	2008-03-16 00:00:00.000	471.20	11.0273812309852562602387	3339.50
6	1	11011	2008-04-09 00:00:00.000	933.50	21.8464778843903580622513	4273.00
7	2	10308	2006-09-18 00:00:00.000	88.80	6.3295199401261627285363	88.80
8	2	10625	2007-08-08 00:00:00.000	479.75	34.1958017035532271285506	568.55
9	2	10759	2007-11-28 00:00:00.000	320.00	22.8090808653195053280587	888.55
10	2	10926	2008-03-04 00:00:00.000	514.40	36.6655974910011048148544	1402.95
11	3	10365	2006-11-27 00:00:00.000	403.20	5.7403352515240647040567	403.20
12	3	10507	2007-04-15 00:00:00.000	749.06	10.6643242150461704048132	1152.26

Query executed succ... (local) (14.0 RTM) | DESKTOP-47A9O7C\Zuraid... | DailyMart | 00:00:00 | 830 rows

-- Selamat Mengerjakan --