

Retrieving Data from Other Rows



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Offset Functions



- LAG
- LEAD
- FIRST_VALUE
- LAST_VALUE

LAG and LEAD

- Include a column from another row
- LAG: Previous row
- LEAD: Next row
- ORDER BY required
- No frame

Syntax

```
LAG | LEAD(<expression>)  
OVER([PARTITION BY <expression>] ORDER BY <expression>);
```

```
LAG | LEAD(<expression>[,<offset>][,<default>])  
OVER([PARTITION BY <expression>] ORDER BY <expression>);
```

FIRST_VALUE and LAST_VALUE

- First or last row of the partition
- FIRST_VALUE retrieves from the first row
- LAST_VALUE retrieves from the last row
- ORDER BY required
- Frame required

Syntax

```
FIRST_VALUE | LAST_VALUE(<expression>)  
OVER([PARTITION BY <expression>] ORDER BY <expression>  
<frame definition>);
```

Default frame:

RANGE BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW

ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW

	CustomerID	OrderID	Amount	
1	1100	103	26	← FIRST_VALUE
2	1100	104	33	
3	1100	105	17	
4	1100	108	12	← LAST_VALUE
5	1100	112	40	
6	1100	130	35	
7	1100	133	18	
8	1100	140	60	

ROWS BETWEEN CURRENT ROW AND UNBOUNDED FOLLOWING

	CustomerID	OrderID	Amount
1	1100	103	26
2	1100	104	33
3	1100	105	17
4	1100	108	12
5	1100	112	40
6	1100	130	35
7	1100	133	18
8	1100	140	60

← FIRST_VALUE

← LAST_VALUE

ROWS BETWEEN 2 PRECEDING AND CURRENT ROW

	CustomerID	OrderID	Amount	
1	1100	103	26	
2	1100	104	33	← FIRST_VALUE
3	1100	105	17	
4	1100	108	12	← LAST_VALUE
5	1100	112	40	
6	1100	130	35	
7	1100	133	18	
8	1100	140	60	

Real World Examples

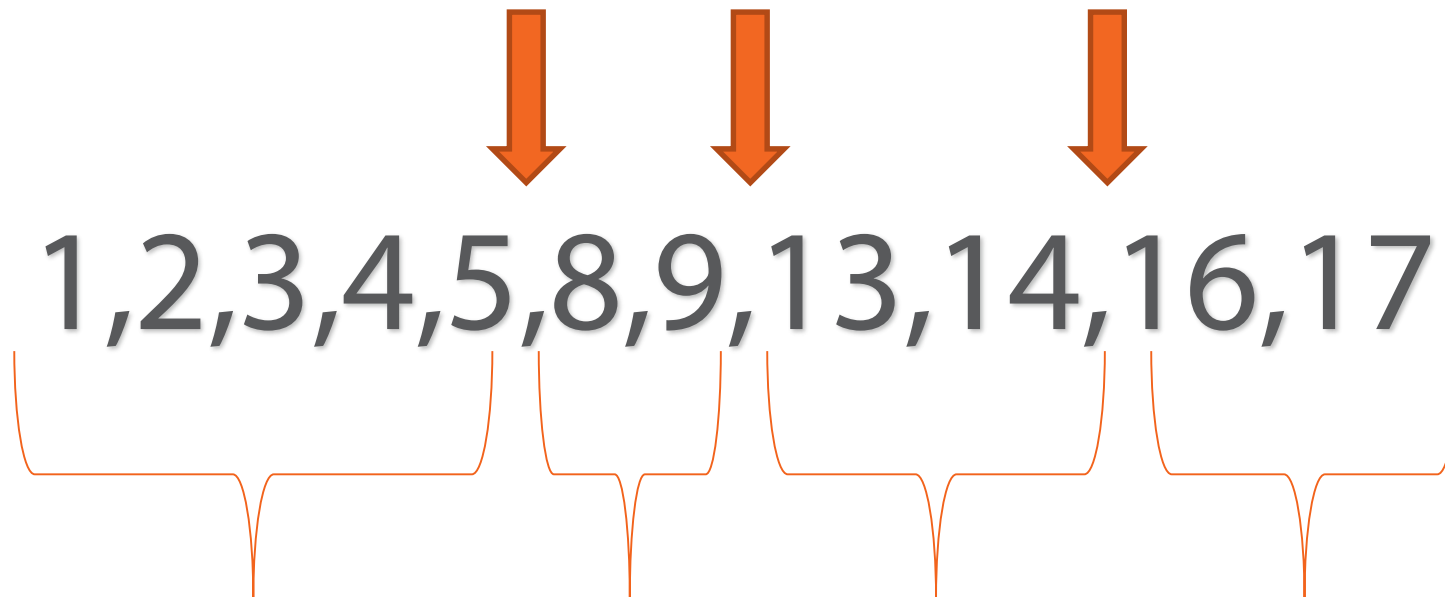
An orange square with the word "Gaps" centered inside in white text.

Gaps

A green square with the text "YOY" centered inside in white text.

YOY

The Islands and Gaps Problem



Offset Function Performance

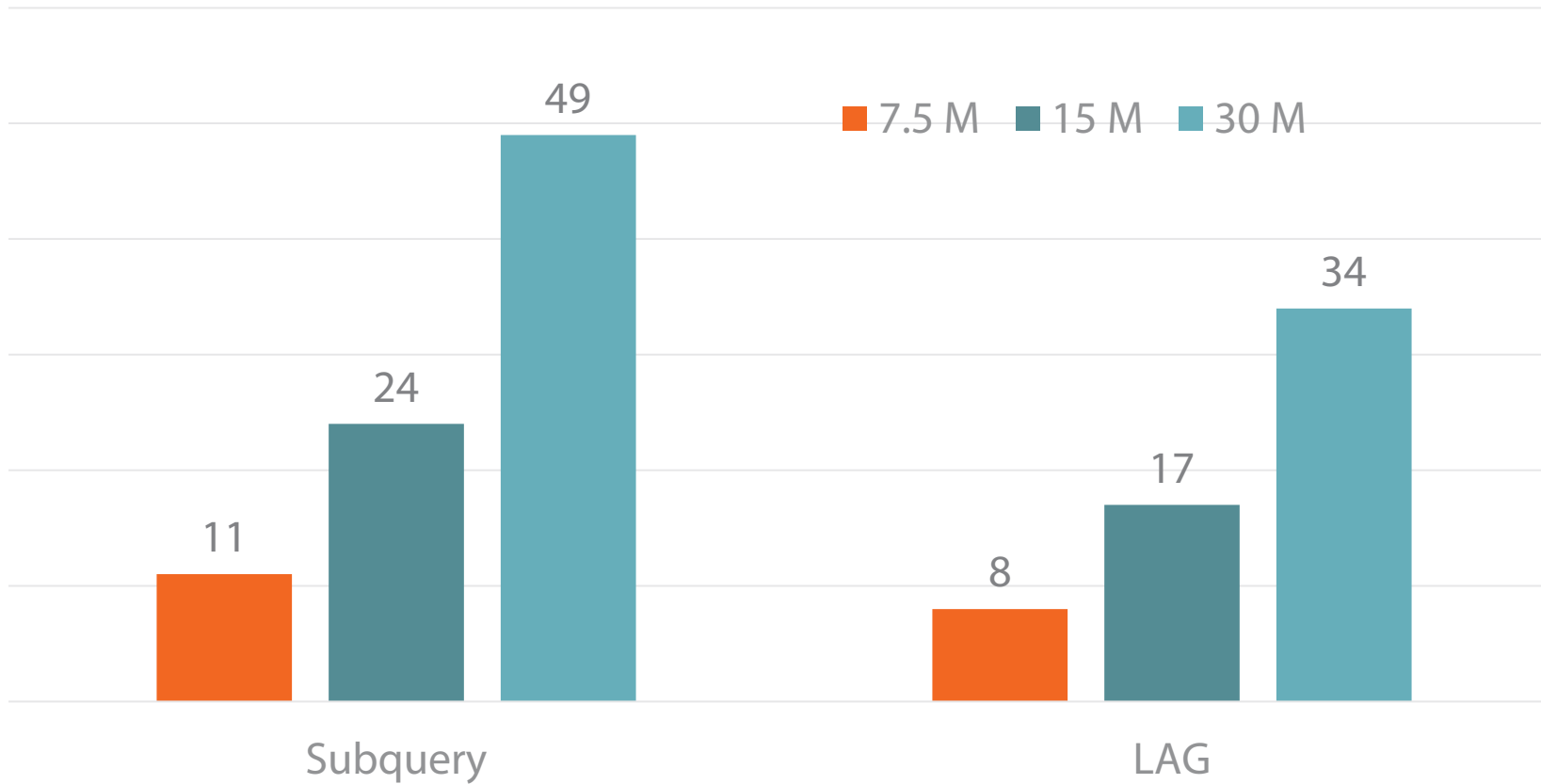
Frame for FIRST_VALUE and
LAST_VALUE

Hardcode offset value with
LAG and LEAD

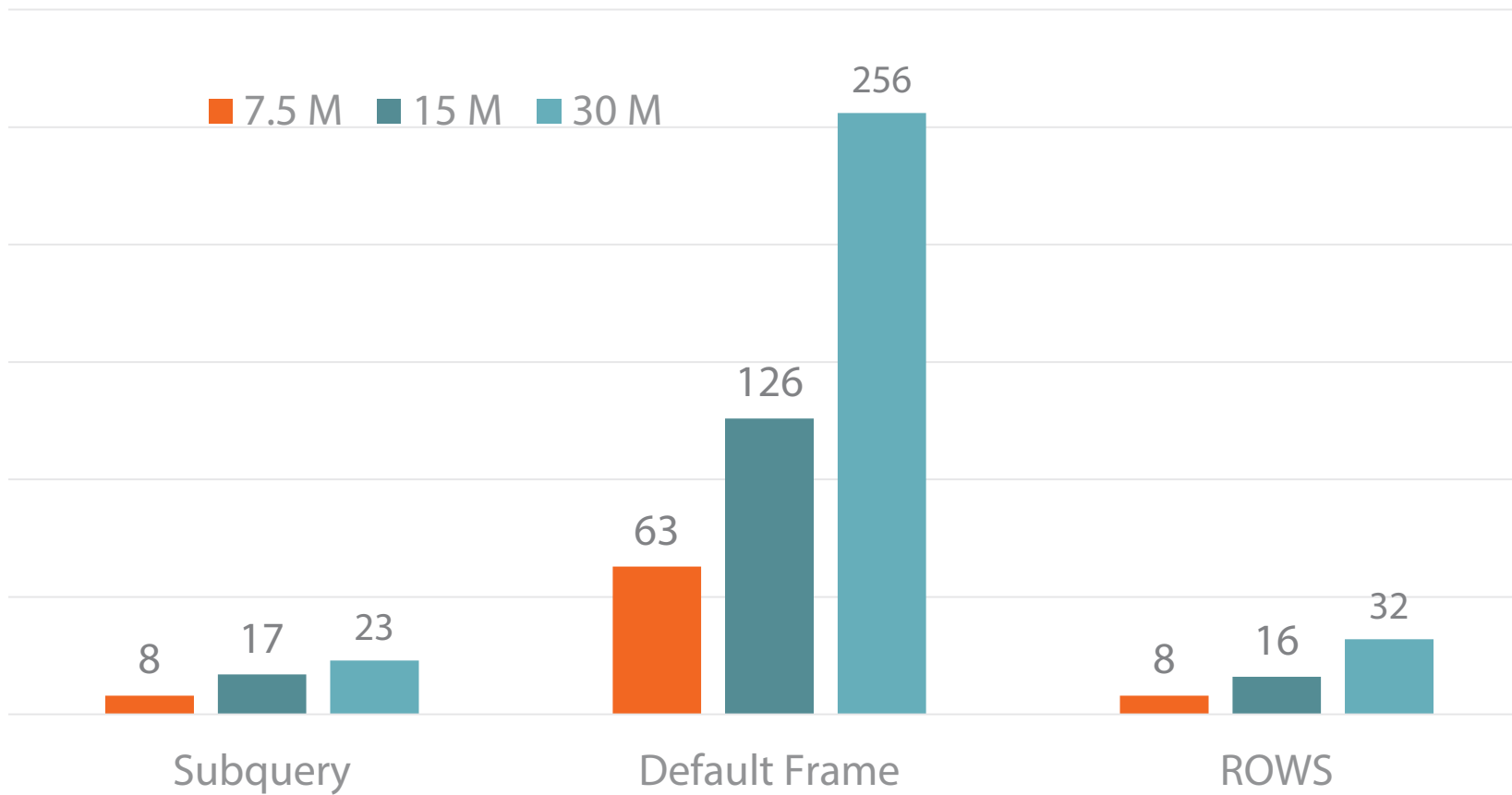
Covering index



Subquery vs. LAG



Subquery vs. FIRST_VALUE



Course Overview



Functions added in 2005 and 2012

Real world examples

Performance tuning

Coming up next: Statistical functions