



What can I use ROW_NUMBER() for?

Clive Harriss

zClient Technical Professional - Information Management - IBM UK
clive_harriss@uk.ibm.com



Agenda

- **On-Line Analytical Processing** functions delivered since DB2 9
- ROW_NUMBER() OLAP function described
- Live demonstration of sample queries using ROW_NUMBER() using IBM Data Studio V4.1 on a DB2 10 for z/OS system
- Additional Information

New OLAP functions delivered since DB2 9

- DB2 9
 - ROW_NUMBER()
 - RANK()
 - DENSE_RANK()

- DB2 10
 - Aggregation Specifications – SUM(), AVG() etc
 - SELECT Store, Month, Sales, AVG(Sales)
 OVER (PARTITION BY Store ORDER BY Month ROWS 2 PRECEDING)
AS Moving_Avg
FROM Sales_History

New OLAP functions delivered since DB2 9

- DB2 11

- GROUPING SETS

- SELECT DEPTNO, RESPEMP, SUM(PRSTAFF)
FROM DSN8B10.PROJ
GROUP BY GROUPING SETS
((DEPTNO,RESPEMP)(DEPTNO), (RESPEMP), ());

- ROLLUP

- SELECT DEPTNO, RESPEMP, SUM(PRSTAFF)
FROM DSN8B10.PROJ
GROUP BY ROLLUP (DEPTNO,RESPEMP);

- CUBE

- SELECT DEPTNO, RESPEMP, SUM(PRSTAFF)
FROM DSN8B10.PROJ
GROUP BY CUBE (DEPTNO,RESPEMP);

ROW_NUMBER() OLAP Function

- Numbers the rows in a result table starting with 1
- To ensure order, include an ORDER BY clause after the OVER keyword
- If the ORDER BY clause is not specified row numbers are assigned to the rows in an arbitrary order, as the rows are returned
- Row numbers provide for the easy formulation of queries for computing histogram statistics
- Enable the formation of moving sums, moving averages etc
- Can be used to remove duplicate rows
- Equivalent to ROWNUM in Oracle

Remember: order the results if order is important to you

- If the ORDER BY clause is not specified, the row numbers are assigned to the rows in arbitrary order, as returned by the query

- SELECT EMPNO, FIRSTNAME, LASTNAME, SALARY,
 ROW_NUMBER() OVER () AS ROWNUM
FROM EMP

- To ensure an Ordered result set requires an ORDER BY

- SELECT EMPNO, FIRSTNAME, LASTNAME, SALARY,
 ROW_NUMBER() OVER (ORDER BY SALARY DESC) AS
SAL_ROWNUM
FROM EMP
ORDER BY EMPNO

Sample queries to illustrate the use of ROW_NUMBER()

- Query 1

Add a row number for empno

```
select empno, lastname, salary, row_number()  
       over() as rownum  
from dsn81010.empStatement
```

- Query 2

Add a row number based on salary

```
select empno, lastname, salary,  
       row_number() over(order by salary desc) as sal_rownum  
from dsn81010.emp;
```

Sample queries to illustrate the use of ROW_NUMBER()

- Query 3

Add a row number based on salary order by empno

```
select empno, lastname, salary,  
       row_number() over(order by salary desc) as sal_rownum from  
dsn81010.emp  
order by empno;
```

- Query 4

Select first 3 rows using fetch first

```
select empno, lastname,  
       row_number() over(order by empno) as r  
from dsn81010.emp  
order by empno fetch first 3 rows only
```


Sample queries to illustrate the use of ROW_NUMBER()

- Query 5

Select first 3 rows using row number

```
Select *
  from (select empno, lastname,
              row_number() over(order by empno) as r
        from dsn81010.emp
        where empno < 1000) as x
 where r < 4
 order by empno;
```

- Query 6

Select 3rd thru 6th rows

```
select *
  from (select empno, lastname,
              row_number() over(order by empno) as r
        from dsn81010.emp
        where empno < 1000) as x
 where r between 3 and 6 order by empno;
```

Sample queries to illustrate the use of ROW_NUMBER()

- Query 7

Select every 5th row

```
select *
  from (select empno, lastname,
              row_number() over(order by empno) as r
        from dsn81010.emp
        where empno < 1000) as x
 where (r - 1) = ((r - 1) / 5) * 5
 order by empno;
```

- Query 8

Select last 2 matching rows where empno < 1000

```
select *
  from (select empno, lastname, job,
              row_number() over(order by job) as R
        from dsn81010.empwhere empno < 1000) as x
 where r < 3
 order by empno
```

Sample queries to illustrate the use of ROW_NUMBER()

- Query 9

Select last 2 matching rows from table

Select *

```
    from (select empno, lastname, job,  
              row_number() over(order by job) as R  
    from dsn81010.emp ) as x  
where r < 3  
order by empno;
```

- Query 10

Number within workdept

```
SELECT workdept, lastname, hiredate,  
       ROW_NUMBER() OVER (PARTITION BY workdept ORDER BY hiredate) AS  
       nbr  
FROM dsn81010.emp  
ORDER BY workdept, hiredate
```



Additional Information

- Where to obtain your free download of Data Studio
 - [IBM Developerworks - Data Studio V4.1 download](#)

- Where to find all the DB2 for z/OS documentation
 - [IBM Knowledge Centre - DB2 for z/OS section](#)

- Where to find articles on OLAP functions
 - [IBM DeveloperWorks](#)

- Contact the Author
 - mailto:clive_harriss@uk.ibm.com?subject=RE: ROW_NUMBER_presentation

Questions?