Introduction to DB2 Database

By

Satish Mongam

DB2 DBA

IBM Certified Database Associate

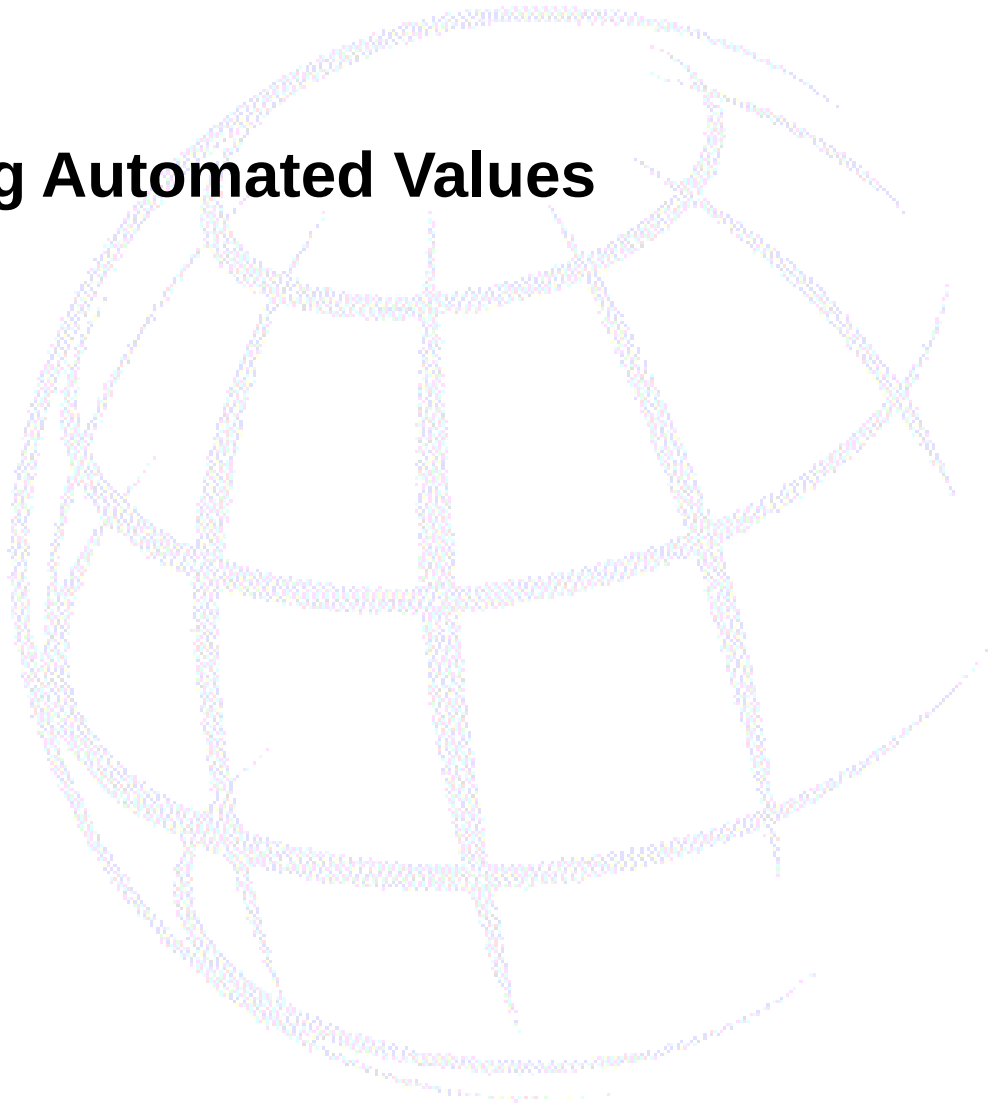
smongam@miraclesoft.com

Certified for IBM Information Management software

MIRACLE MSS SOFTWARE SYSTEMS, INC.

Agenda

- Functions
- Generating Automated Values
- Views
- Index



BUILT IN FUNCTIONS

1) CHARACTER FUNCTIONS

2) NUMERIC FUNCTIONS

3) DATE FUNCTIONS

CHARACTER FUNCTIONS

1) ASCII ('A') – 65

2) CHR(65) – A

3) CONCAT('MIRACLE ','SOFTWARE') – MIRACLE SOFTWARE

4) 'MIRACLE ' || 'SOFTWARE' || ' SYSTEMS'
– MIRACLE SOFTWARE SYSTEMS

5) LENGTH('MIRACLE') – 8

6) LOWER('MIRACLE') miracle

7) UPPER('miracle')– MIRACLE

8) REPLACE('MIRACLEHARD','HARD','SOFT') – MIRACLESOFT

9) SUBSTR('MIRACLE SOFTWARE SYSTEMS',9,8) – SOFTWARE

CHARACTER FUNCTIONS

10) LOCATE('E','MIRACLE') – 7

11) LTRIM(' MIRACLE') – MIRACLE

12) RTRIM('MIRACLE ') – MIRACLE

13) REPEAT('MIRACLE',3)

– MIRACLEMIRACLEMIRACLE

14) LEFT('MIRACLE',5) – MIRAC

15) RIGHT('MIRACLE',5) – RACLE

NUMERIC FUNCTIONS

1) ABS(52) - 52 , ABS(-52) - 52
2) MOD(14,5) - 4
3) POWER(5,3) - 125
4) CEIL(9.2) - 10 , CEIL(-9.2) - -9
5) FLOOR(9.2) - 9, FLOOR(-9.2) - -10
6) ROUND(1234.5666,3) - 1234.56670,
ROUND(1234.5664,3) - 1234.56660
7) TRUNC(1234.5666,2) - 1234.5600 ,
TRUNC(1234.5665,3) - 1234.5660
8) SQRT(25) - +5.0000000000000E+000

DATE FUNCTIONS

1) CURRENT DATE

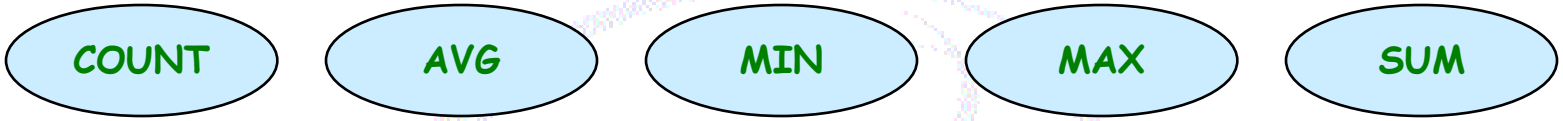
2) CURRENT TIMESTAMP

3) DAY(CURRENT DATE) , MONTH(CURRENT DATE) ,
YEAR(CURRENT DATE).

4) HOUR(CURRENT TIMESTAMP) ,
MINUTE(CURRENT TIMESTAMP)
SECOND(CURRENT TIMESTAMP).

5) DAYNAME(CURRENT DATE) ,
MONTHNAME(CURRENTDATE)
DAYNAME(CURRENT TIMESTAMP) ,
MONTHNAME(CURRENT TIMESTAMP).

GROUP FUNCTION




```
SELECT    COUNT(SAL),
          COUNT(DISTINCT SAL),
          AVG(SAL),
          AVG(DISTINCT SAL),
          MIN(SAL),
          MAX(SAL),
          SUM(SAL)
FROM EMP

SELECT DEPTNO, AVG(SAL) FROM EMP
          GROUP BY DEPTNO
          HAVING AVG(SAL) > 1600
```

The GROUP BY Statement:
The GROUP BY statement is used in conjunction with the aggregate functions to group the result-set by one or more columns.

The HAVING Clause:
The HAVING clause was added to SQL because the WHERE keyword could not be used with aggregate functions.

Function Execution

db2 “select current date from sysibm.sysdummy1”

db2 “select sum(salary) from staff”

Views

- A view is another way to look at the data in one or more tables.
- A view is a logical or virtual table, which does not, exists physically in the database.
- Advantages:
  - Security – The confidential columns can be suppressed from viewing and manipulation.
  - Readability - Application design becomes easier.
- **CREATE VIEW EMP_VIEW AS SELECT EMPNO,ENAME FROM EMP;**

Index

- An index can be created in a table to find data more quickly and efficiently.
- The CREATE INDEX statement is used to create indexes in tables.
- Indexes allow the database application to find data fast without reading the whole table.
- The users cannot see the indexes, they are just used to speed up searches/queries.
- **CREATE INDEX index_name ON table_name (column_name)**

Generation Automated Values in DB2

- **The Identity Column & The Sequence Object**

- **The Identity Column:**
  - Introduced in DB2 UDB Version 7.1.
  - Automatically generate a unique value for every row in a table.
  - The identity column is tied to the table.
  - To create an identity column, include the IDENTITY clause in your CREATE TABLE statement.
  - The column is declared with a numeric data type.
  - Can increment by sequential integers.
  - In a table you can use only one identity column.

The Identity Column – Example

- CREATE TABLE WIDGET_INVENT

```
( ROW_ID INT NOT NULL
GENERATED ALWAYS AS IDENTITY
(START WITH 1, INCREMENT BY 1, NO MAXVALUE, NO
  MINVALUE, NO CYCLE,
NO CACHE),
WIDGET_NO CHAR(6),
INV_COUNT INT WITH DEFAULT 0 );
```

Inserting Values:

```
INSERT INTO WIDGET_INVENT (WIDGET_NO, INV_COUNT)
   VALUES ('000005', 600), ('000006', 200);
INSERT INTO WIDGET_INVENT
   VALUES (DEFAULT,'000005', 600),
          (DEFAULT,'000006', 200);
```

The Sequence Object

- **The Sequence Object**
  - Introduced in DB2 UDB Version 7.2.
  - Automatically generate a unique value for every row in a table.
  - The identity column is not tied to the table.
  - It is separate database object.
  - The column is declared with a numeric data type.
  - Can increment by sequential integers.
  - In a table you can use N number of sequences.

The Sequence Object - Example

- **CREATE SEQUENCE *myseq***

AS INTEGER

START WITH 1

INCREMENT BY 1

NO MINVALUE

NO MAXVALUE

NO CYCLE

CACHE 10

- **Inserting Values**
- **INSERT INTO WIDGET_INVENT (NEXT VAL FOR *myseq*, '000005', 600);**

Any Queries ...

MIRACLE MSS
SOFTWARE SYSTEMS, INC.

Thank
Q

MIRACLE MSS
SOFTWARE SYSTEMS, INC.