# Sequences

- they generate consecutive integers
- SQL:2003; SQL Server ≥ 2012
- notes are based on PMOSL documentation and SQL Standard syntax

## Creating

must be distinct from the name of any table/view in the same schema

(P)

P OS CREATE SEQUENCE [IF NOT EXISTS] table1_seq — Std: <sequence generator definition>

[START WITH start] - def: (PO: 1) (S: $-2^{63}$)

[INCREMENT BY i = 1]

[CACHE n] - def: (P: 1 - no cache) (O: 20) (S: auto chosen by DBMS)

default range of values: (PS: ≈ ±$9 \cdot 10^{18}$) (O: ≈ ±$10^{27}$)

## Altering and deleting

(O: no)

P OS ALTER SEQUENCE table1_seq RESTART [WITH num1]; — Std: <alter sequence generator statement>

P OS DROP SEQUENCE [IF EXISTS] table1_seq; — Std: <drop sequence generator statement>

(PS)

## Usage (marking: s - the name of a sequence)

| | Postgres | Oracle | SQL Standard, SQL Server | |
|---|---|---|---|---|
| <next val> | nextval('s') | s.nextval | NEXT VALUE FOR s | increments s and returns the new value; ROLLBACK doesn't undo this change! |
| <curr val> | currval('s') | s.currval | – | the value most recently obtained by nextval (use it after nextval, see doc) |

pseudocolumns

P OS • INSERT INTO table1 VALUES (<next val>, 'a');

P OS • assigning to a variable in a procedure (e.g. in a trigger, as we did it in Oracle < 12: SELECT table1_seq.nextval FROM dual)

P OS • in a table definition: col1 [SMALL|BIG]INT DEFAULT <next val> PRIMARY KEY — (Oracle ≥ 12)

(O: column type e.g. NUMBER(10))

## Alternatives for a sequence in a table definition (preferred)

optional

P col1 [SMALL|BIG]SERIAL PRIMARY KEY

M col1 [SMALL|BIG]INT PRIMARY KEY AUTO_INCREMENT

S col1 [SMALL|BIG]INT PRIMARY KEY IDENTITY - generally: IDENTITY[(start=1, increment=1)]

L col1 INTEGER PRIMARY KEY AUTOINCREMENT

(O: column type e.g. NUMBER)

(O: ALWAYS is default)

P O col1 [SMALL|BIG]INT GENERATED {ALWAYS|BY DEFAULT} AS IDENTITY PRIMARY KEY

SQL:2003
Oracle ≥ 12
Postgres ≥ 10

DBMS always/by default uses an implicit sequence to assign a value to the column;
(O: also "BY DEFAULT ON NULL" - see doc)

generally: IDENTITY [([START WITH n] [INCREMENT BY m])]
(O: the doc recommends to specify the CACHE clause with a value > 20 to enhance performance)