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DBMS_RANDOM

The DBMS_RANDOM package provides a built-in random number generator. DBMS_RANDOM is not intended for cryptography.

This chapter contains the following topics:

- Deprecated Subprograms
- Security Model
- Operational Notes
- Summary of DBMS_RANDOM Subprograms

DBMS_RANDOM Deprecated Subprograms

These subprograms are deprecated with Oracle Database 11*g*. Oracle recommends that you do not use deprecated procedures in new applications. Support for deprecated features is for backward compatibility only.

- INITIALIZE Procedure
- RANDOM Function
- TERMINATE Procedure

DBMS_RANDOM Security Model

This package should be installed as SYS. By default, the package is initialized with the current user name, current time down to the second, and the current session. Oracle recommends that users who need to execute this package should be given EXECUTE privilege explicitly and should not rely on PUBLIC EXECUTE privilege.

DBMS_RANDOM Operational Notes

These operational notes apply to DBMS_RANDOM.

- DBMS_RANDOM.RANDOM produces integers in [-2^^31, 2^^31).
- DBMS_RANDOM.VALUE produces numbers in [0,1) with 38 digits of precision.

DBMS_RANDOM can be explicitly initialized, but does not need to be initialized before calling the random number generator. It will automatically initialize with the date, user ID, and process ID if no explicit initialization is performed.

If this package is seeded twice with the same seed, then accessed in the same way, it will produce the same results in both cases.

In some cases, such as when testing, you may want the sequence of random numbers to be the same on every run. In that case, you seed the generator with a constant value by calling one of the overloads of DBMS_RANDOM.SEED. To produce different output for every run, simply to omit the call to "Seed" and the system will choose a suitable seed for you.

Summary of DBMS_RANDOM Subprograms

This table lists the `DBMS_RANDOM` subprograms and briefly describes them.

Table 158-1 *DBMS_RANDOM Package Subprograms*

Subprogram	Description
INITIALIZE Procedure	Initializes the package with a seed value
NORMAL Function	Returns random numbers in a normal distribution
RANDOM Function	Generates a random number
SEED Procedures	Resets the seed
STRING Function	Gets a random string
TERMINATE Procedure	Terminates package
VALUE Functions	Gets a random number, greater than or equal to 0 and less than 1, with 38 digits to the right of the decimal (38-digit precision), while the overloaded function gets a random Oracle number x, where x is greater than or equal to `low` and less than `high`

INITIALIZE Procedure

This deprecated procedure initializes the generator.

> **Note:**
>
> This procedure is deprecated with Release 11gR1 and, although currently supported, it should not be used.

Syntax

```
DBMS_RANDOM.INITIALIZE (
   val  IN  BINARY_INTEGER);
```

Pragmas

```
PRAGMA restrict_references (initialize, WNDS);
```

Parameters

Table 158-2 INITIALIZE Procedure Parameters

Parameter	Description
`val`	Seed number used to generate a random number

Usage Notes

This procedure is obsolete as it simply calls the SEED Procedures.

NORMAL Function

This function returns random numbers in a standard normal distribution.

Syntax

```
DBMS_RANDOM.NORMAL
  RETURN NUMBER;
```

Pragmas

```
PRAGMA restrict_references (normal, WNDS);
```

Return Values

Table 158-3 NORMAL Function Parameters

Parameter	Description
number	Returns a random number

RANDOM Function

This deprecated procedure generates a random number.

> **Note:**
>
> This function is deprecated with Release 11gR1 and, although currently supported, it should not be used.

Syntax

```
DBMS_RANDOM.RANDOM
   RETURN binary_integer;
```

Pragmas

```
PRAGMA restrict_references (random, WNDS);
```

Return Values

Table 158-4 RANDOM Function Parameters

Parameter	Description
binary_integer	Returns a random integer greater or equal to -power(2,31) and less than power(2,31)

SEED Procedures

This procedure resets the seed.

Syntax

```
DBMS_RANDOM.SEED (
   val  IN  BINARY_INTEGER);

DBMS_RANDOM.SEED (
   val  IN  VARCHAR2);
```

Pragmas

```
PRAGMA restrict_references (seed, WNDS);
```

Parameters

Table 158-5 SEED Procedure Parameters

Parameter	Description
val	Seed number or string used to generate a random number

Usage Notes

The seed can be a string up to length 2000.

STRING Function

This function gets a random string.

Syntax

```
DBMS_RANDOM.STRING
   opt  IN  CHAR,
   len  IN  NUMBER)
  RETURN VARCHAR2;
```

Pragmas

```
PRAGMA restrict_references (string, WNDS);
```

Parameters

Table 158-6 STRING Function Parameters

Parameter	Description
opt	Specifies what the returning string looks like: • 'u', 'U' - returning string in uppercase alpha characters • 'l', 'L' - returning string in lowercase alpha characters • 'a', 'A' - returning string in mixed case alpha characters • 'x', 'X' - returning string in uppercase alpha-numeric characters • 'p', 'P' - returning string in any printable characters. Otherwise the returning string is in uppercase alpha characters.

Table 158-6 (Cont.) STRING Function Parameters

Parameter	Description
len	Length of the returning string

Return Values

Table 158-7 STRING Function Return Values

Parameter	Description
VARCHAR2	Returns a VARCHAR2

TERMINATE Procedure

When you are finished with the package, call the TERMINATE procedure.

> **Note:**
>
> This procedure is deprecated with Release 11gR1 and, although currently supported, it should not be used.

Syntax

```
DBMS_RANDOM.TERMINATE;
```

VALUE Functions

The basic function gets a random number, greater than or equal to 0 and less than 1, with 38 digits to the right of the decimal (38-digit precision). Alternatively, you can get a random Oracle number x, where x is greater than or equal to low and less than high.

Syntax

```
DBMS_RANDOM.VALUE
  RETURN NUMBER;

DBMS_RANDOM.VALUE(
  low  IN  NUMBER,
  high IN  NUMBER)
RETURN NUMBER;
```

Parameters

Table 158-8 VALUE Function Parameters

Parameter	Description
low	Lowest number in a range from which to generate a random number. The number generated may be equal to low

Table 158-8 (Cont.) VALUE Function Parameters

Parameter	Description
`high`	Highest number below which to generate a random number. The number generated will be less than `high`

Return Values

Table 158-9 VALUE Function Return Values

Parameter	Description
`NUMBER`	Returns an Oracle Number