

PL/SQL: Built-in I/O package

Built-in Packages

Some of the PL/SQL functionality is provided in a form built-in libraries or *packages* of functions and procedures. A brief list of PL/SQL's built-in packages is below:

dbms_output package: provides functionality for I/O operations.

dbms_sql package: provides ability to execute dynamically created SQL statements (including relational schema alterations).

htp package: HTTP and HTML-related procedures.

dbms_output package

`dbms_output` package includes procedures and functions necessary for I/O operations.

i/o buffer: `dbms_output` package works with an i/o buffer. The `put` procedures add content to the buffer, the `get` procedures retrieve content from the buffer.

Enabling buffer output. This can be done in two ways.

- **SQL*plus.** In `sql*plus` type

```
SQL> set serveroutput on
```

to enable the output with the default buffer size of 2000. To change buffer size, use

```
SQL>set serveroutput on size <value>
```

- **PL/SQL.** Use one of the following procedure calls:

```
dbms_output.enable          : enables output with default buffer size
```

```
dbms_output.enable(<value>) : enables output with specified buffer size
```

Disabling buffer output. Can be done in two ways as well:

- **SQL*plus:**

```
SQL> set serveroutput off
```

- **PL/SQL:**

```
dbms_output.disable;
```

Putting information into buffer. The following procedures put information into the buffer:

procedure	Explanation
<code>new_line</code>	inserts line-feed/carriage return sequence into the buffer
<code>put(<value>)</code>	inserts given value into the buffer <value> is either <code>varchar2</code> , <code>number</code> or <code>date</code>
<code>put_line(<value>)</code>	inserts <value> into the buffer, follows with lf/cr

Retrieving information from the buffer. Information can be extracted from the buffer. The buffer is treated as a **queue**, that is, information is extracted in a **FIFO** (first in – first out) order.

procedure	Explanation
<code>get_line(line out varchar2, status out integer)</code>	retrieves one line from the buffer retrieved data stored in <code>line</code> ; <code>status=0</code> if success
<code>get_lines(lines out string255_table, nlines in out integer)</code>	retrieves specified number of lines into a string table <code>lines</code> . <code>nlines</code> - number of lines retrieved

`string255_table` is defined in the package as:

```
type string222_table is table of varchar(255) index by binary_integer;
```