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
`new_line`	a insters line-feed/carriage return sequence into the buffer
`put(<value>)`	inserts given value into the buffer `<value>` is either `varchar2`, `number` or `date`
`put_line(<value>)`	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
`get_line(line out varchar2, status out integer)`	retrieves one line from the buffer retrieved data stored in `line`; `status`=0 if success
`get_lines(lines out string255_table, nlines in out integer)`	retrieves specified number of lines into a string table `lines`. `nlines` - number of lines retrieved

`string255_table` is defined in the package as:

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