Practices for Lesson 6: Writing Control Structures

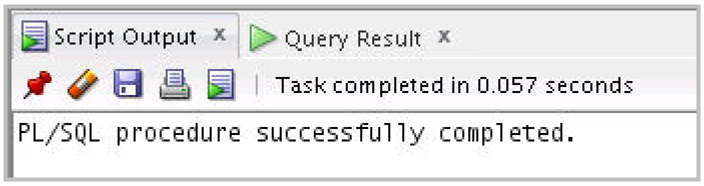
Chapter 6

Practice 6: Writing Control Structures

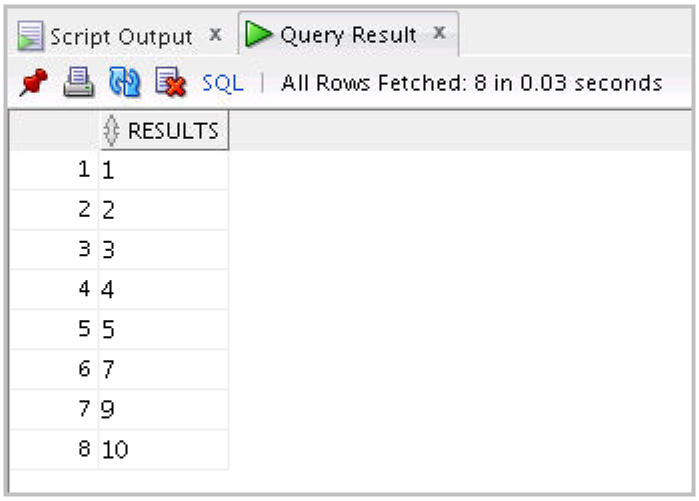
In this practice, you create PL/SQL blocks that incorporate loops and conditional control structures. This practice tests your understanding of various `IF` statements and `LOOP` constructs.

1. Execute the command in the `lab_06_01.sql` file to create the `messages` table. Write a PL/SQL block to insert numbers into the `messages` table.
   a. Insert the numbers 1 through 10, excluding 6 and 8.
   b. Commit before the end of the block.
   c. Execute a `SELECT` statement to verify that your PL/SQL block worked.

Result: You should see the following output:



```
PL/SQL procedure successfully completed.
```

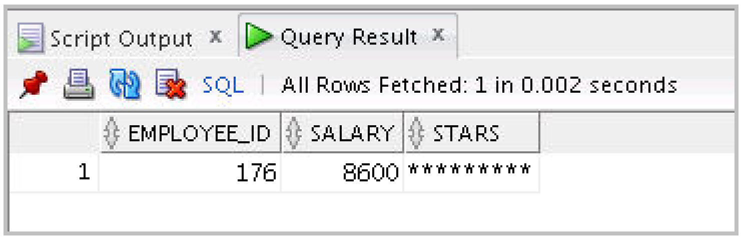


```
   RESULTS
1  1
2  2
3  3
4  4
5  5
6  7
7  9
8  10
```

2. Execute the `lab_06_02.sql` script. This script creates an `emp` table that is a replica of the `employees` table. It alters the `emp` table to add a new column, `stars`, of `VARCHAR2` data type and size 50. Create a PL/SQL block that inserts an asterisk in the `stars` column for every `$1000` of an employee's salary. Save your script as `lab_06_02_soln.sql`.
   a. In the declarative section of the block, declare a variable `v_empno` of type `emp.employee_id` and initialize it to 176. Declare a variable `v_asterisk` of type `emp.stars` and initialize it to `NULL`. Create a variable `v_sal` of type `emp.salary`.
   b. In the executable section, write logic to append an asterisk (`*`) to the string for every $1,000 of the salary. For example, if the employee earns $8,000, the string of asterisks should contain eight asterisks. If the employee earns $12,500, the string of asterisks should contain 13 asterisks (rounded to the nearest whole number).
   c. Update the `stars` column for the employee with the string of asterisks. Commit before the end of the block.

d. Display the row from the `emp` table to verify whether your PL/SQL block has executed successfully.

e. Execute and save your script as `lab_06_02_soln.sql`. The output is as follows:



```
All Rows Fetched: 1 in 0.002 seconds

     EMPLOYEE_ID  SALARY  STARS
1            176    8600  *********
```

Solution 6: Writing Control Structures

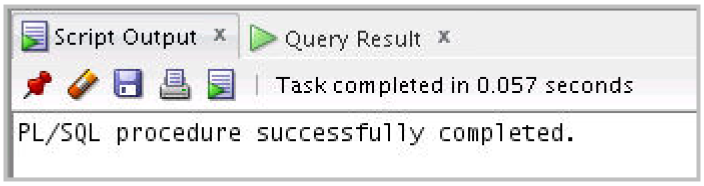
1. Execute the command in the `lab_06_01.sql` file to create the `messages` table. Write a PL/SQL block to insert numbers into the `messages` table.
   a. Insert the numbers 1 through 10, excluding 6 and 8.
   b. Commit before the end of the block.

```
BEGIN
FOR i in 1..10 LOOP
  IF i = 6 or i = 8 THEN
    null;
  ELSE
    INSERT INTO messages(results)
    VALUES (i);
 END IF;
END LOOP;
COMMIT;
END;
/
```

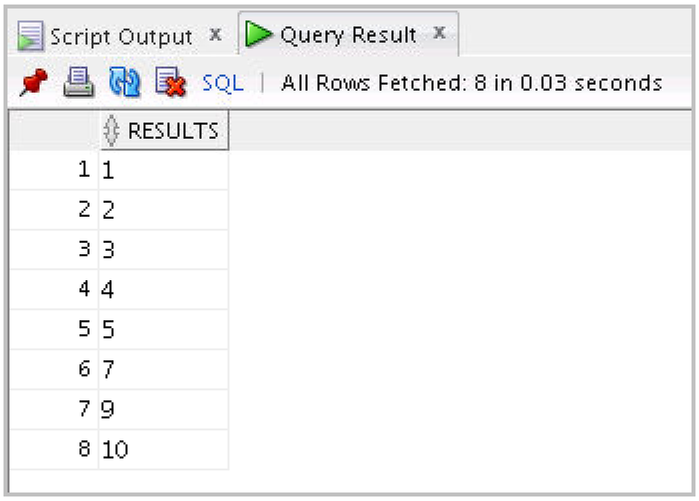
   c. Execute a `SELECT` statement to verify that your PL/SQL block worked.

```
SELECT * FROM messages;
```

Result: You should see the following output:



```
PL/SQL procedure successfully completed.
```



```
  RESULTS
1 1
2 2
3 3
4 4
5 5
6 7
7 9
8 10
```

2. Execute the `lab_06_02.sql` script. This script creates an `emp` table that is a replica of the employees table. It alters the `emp` table to add a new column, `stars`, of `VARCHAR2` data type and size 50. Create a PL/SQL block that inserts an asterisk in the `stars` column for every `$1000` of the employee's salary. Save your script as `lab_06_02_soln.sql`.

   a. In the declarative section of the block, declare a variable `v_empno` of type `emp.employee_id` and initialize it to 176. Declare a variable `v_asterisk` of type `emp.stars` and initialize it to `NULL`. Create a variable `v_sal` of type `emp.salary`.

```
DECLARE
  v_empno        emp.employee_id%TYPE := 176;
  v_asterisk     emp.stars%TYPE := NULL;
  v_sal           emp.salary%TYPE;
```

   b. In the executable section, write logic to append an asterisk (`*`) to the string for every $1,000 of the salary. For example, if the employee earns $8,000, the string of asterisks should contain eight asterisks. If the employee earns $12,500, the string of asterisks should contain 13 asterisks.

```
BEGIN
    SELECT NVL(ROUND(salary/1000), 0)  INTO v_sal
    FROM emp  WHERE employee_id = v_empno;

    FOR i IN 1..v_sal
       LOOP
        v_asterisk := v_asterisk ||'*';
    END LOOP;
```

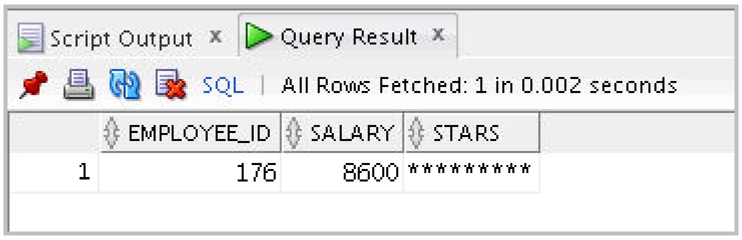
   c. Update the `stars` column for the employee with the string of asterisks. Commit before the end of the block.

```
   UPDATE emp SET stars = v_asterisk
   WHERE employee_id = v_empno;
   COMMIT;
END;
/
```

   d. Display the row from the `emp` table to verify whether your PL/SQL block has executed successfully.

```
SELECT employee_id,salary, stars
FROM emp WHERE employee_id =176;
```

e. Execute and save your script as `lab_06_02_soln.sql`. The output is as follows:



All Rows Fetched: 1 in 0.002 seconds

	EMPLOYEE_ID	SALARY	STARS
1	176	8600	*********