Additional Practices

Additional Practices Overview

These additional practices are provided as a supplement to the course *Oracle Database 10g: PL/SQL Fundamentals*. In these practices, you apply the concepts that you learned in *Oracle Database 10g: PL/SQL Fundamentals*.

These additional practices provide supplemental practice in declaring variables, writing executable statements, interacting with the Oracle server, writing control structures, and working with composite data types, cursors, and handle exceptions. The tables used in this portion of the additional practices include `employees`, `jobs`, `job_history`, and `departments`.

Additional Practice 1 and 2

Note: These exercises can be used for extra practice when discussing how to declare variables and write executable statements.

1. **Evaluate each of the following declarations. Determine which of them are not legal and explain why.**

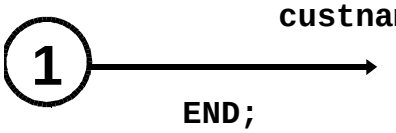
   a. **DECLARE**
   ```
   name,dept    VARCHAR2(14);
   ```
   b. DECLARE
   ```
   test         NUMBER(5);
   ```
   c. DECLARE
   ```
   MAXSALARY          NUMBER(7,2) = 5000;
   ```
   d. DECLARE
   ```
   JOINDATE           BOOLEAN := SYSDATE;
   ```

2. **In each of the following assignments, determine the data type of the resulting expression.**

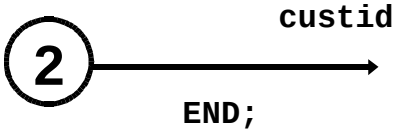
   a. `email := firstname || to_char(empno);`
   b. `confirm := to_date('20-JAN-1999', 'DD-MON-YYYY');`
   c. `sal := (1000*12) +  500`
   d. `test := FALSE;`
   e. `temp := temp1 < (temp2/ 3);`
   f. `var := sysdate;`

Additional Practice 3

3.
```
DECLARE
     custid     NUMBER(4) := 1600;
     custname  VARCHAR2(300) := 'Women Sports Club';
     new_custid     NUMBER(3) := 500;
BEGIN
DECLARE
     custid      NUMBER(4) := 0;
     custname  VARCHAR2(300) := 'Shape up Sports Club';
     new_custid  NUMBER(3) := 300;
     new_custname  VARCHAR2(300) := 'Jansports Club';
BEGIN
     custid := new_custid;
     custname := custname || ' ' ||  new_custname;
```




```
END;
     custid := (custid *12) / 10;
```




```
END;
     /
```

Evaluate the PL/SQL block given above and determine the data type and value of each of the following variables according to the rules of scoping:

a. **The value of `CUSTID` at position 1 is:**

b. **The value of `CUSTNAME` at position 1 is:**

c. **The value of `NEW_CUSTID` at position 2 is:**

d. **The value of `NEW_CUSTNAME` at position 1 is:**

e. **The value of `CUSTID` at position 2 is:**

f. **The value of `CUSTNAME` at position 2 is:**

Note: These exercises can be used for extra practice when discussing how to interact with the Oracle server and write control structures.

4. **Write a PL/SQL block to accept a year and check whether it is a leap year. For example, if the year entered is 1990, the output should be "1990 is not a leap year."**

   Hint: The year should be exactly divisible by 4 but not divisible by 100, or it should be divisible by 400.

Additional Practice 4 and 5

Test your solution with the following years:

1990	Not a leap year
2000	Leap year
1996	Leap year
1886	Not a leap year
1992	Leap year
1824	Leap year

```
old 2: YEAR NUMBER(4) := &P_YEAR;
new 2: YEAR NUMBER(4) := 1990;
1990 is not a leap year
PL/SQL procedure successfully completed.
```

- **a. For the exercises below, you will require a temporary table to store the results. You can either create the table yourself or run the `lab_ap_05.sql` script that will create the table for you. Create a table named `TEMP` with the following three columns:**

Column Name	NUM_STORE	CHAR_STORE	DATE_STORE
Key Type			
Nulls/Unique			
FK Table			
FK Column			
Data Type	Number	VARCHAR2	Date
Length	7,2	35	

b. Write a PL/SQL block that contains two variables, `MESSAGE` and `DATE_WRITTEN`. Declare `MESSAGE` as `VARCHAR2` data type with a length of 35 and `DATE_WRITTEN` as `DATE` data type. Assign the following values to the variables:

Variable	Contents
MESSAGE	This is my first PL/SQL program

NUM_STORE	CHAR_STORE	DATE_STORE
	This is my first PLSQL Program	19-FEB-04

r results by querying the TEMP table.

Additional Practice 6 and 7

6. **a. Store a department number in an *i*SQL*Plus substitution variable.**

   b. Write a PL/SQL block to print the number of people working in that department

```
old 3: DEPTNO DEPARTMENTS.department_id%TYPE :=
&P_DEPTNO;
new 3: DEPTNO DEPARTMENTS.department_id%TYPE := 30;
6 employee(s) work for department number 30
PL/SQL procedure successfully completed.
```

Г ON.

- **Write a PL/SQL block to declare a variable called `sal` to store the salary of an employee. In the executable part of the program, do the following:**

  a. Store an employee name in an *i*SQL*Plus substitution variable.

  b. Store his or her salary in the `sal` variable.

  c. If the salary is less than 3,000, give the employee a raise of 500 and display the message "<Employee Name>'s salary updated" in the window.

LAST_NAME	SALARY
Pataballa	4800
Greenberg	12000
Ernst	6000

  d. If the salary is more than 3,000, print the employee's salary in the format, "<Employee Name> earns ……."

  e. Test the PL/SQL block for the following last names:

Note: Undefine the variable that stores the employee's name at the end of the script.

Additional Practice 8 and 9

8. **Write a PL/SQL block to store the salary of an employee in an *i*SQL*Plus substitution variable.**

   In the executable part of the program, do the following:

   - **Calculate the annual salary as salary * 12.**
   - **Calculate the bonus as indicated below:**

Annual Salary	Bonus
>= 20,000	2,000
19,999 - 10,000	1,000
<= 9,999	500

   - **Display the amount of the bonus in the window in the following format: "The bonus is $……."**
   - **Test the PL/SQL for the following test cases:**

SALARY	BONUS
3000	2000
1000	1000
15000	2000

Note: These exercises can be used for extra practice when discussing how to work with composite data types, cursors and handling exceptions.

9. **a. Execute the script `lab_ap_09_a.sql` to create a temporary tabled called emp.**

   Write a PL/SQL block to store an employee number, the new department number, and the percentage increase in the salary in *i*SQL*Plus substitution variables.

   b. Update the department ID of the employee with the new department number, and update the salary with the new salary. Use the emp table for the updates. After the update is complete, display the message, "Update complete" in the window. If no matching records are found, display "No Data Found." Test the PL/SQL block for the following test cases:

EMPLOYEE_ID	NEW_DEPARTMENT_ID	% INCREASE	MESSAGE
100	20	2	Update Complete
10	30	5	No Data found
126	40	3	Update Complete

Additional Practice 10 and 11

10. Create a PL/SQL block to declare a cursor `EMP_CUR` to select the employee name, salary, and hire date from the `employees` table. Process each row from the cursor, and if the salary is greater than 15,000 and the hire date is greater than 01-FEB-1988, display the employee name, salary, and hire date in the window in the format shown in the sample output below:

```
Kochhar earns 17000 and joined the organization on 21-SEP-89
De Haan earns 17000 and joined the organization on 13-JAN-93
PL/SQL procedure successfully completed.
```

11. Create a PL/SQL block to retrieve the last name and department ID of each employee from the `EMPLOYEES` table for those employees whose `EMPLOYEE_ID` is less than 114. From the values retrieved from the `employees` table, populate two PL/SQL tables, one to store the records of the employee last names and the other to store the records of their department IDs. Using a loop, retrieve the employee name information and the salary information from the PL/SQL tables and display it in the window, using `DBMS_OUTPUT.PUT_LINE`. Display these details for the first 15 employees in

```
Employee Name: King Department_id: 90
Employee Name: Kochhar Department_id: 90
Employee Name: De Haan Department_id: 90
Employee Name: Hunold Department_id: 60
Employee Name: Ernst Department_id: 60
Employee Name: Austin Department_id: 60
Employee Name: Pataballa Department_id: 60
Employee Name: Lorentz Department_id: 60
Employee Name: Greenberg Department_id: 100
Employee Name: Faviet Department_id: 100
Employee Name: Chen Department_id: 100
Employee Name: Sciarra Department_id: 100
Employee Name: Urman Department_id: 100
Employee Name: Popp Department_id: 100
Employee Name: Raphaely Department_id: 30
PL/SQL procedure successfully completed.
```

Additional Practice 12, 13, and 14

12. a. Create a PL/SQL block that declares a cursor called `DATE_CUR`. Pass a parameter of
`DATE` data type to the cursor and print the details of all the employees who have
joined after that date.

```
DEFINE P_HIREDATE = 08-MAR-00
```

b. Test the PL/SOL block for the following hire dates: `08-MAR-00`, `25-JU`

```
166 Ande 24-MAR-00
167 Banda 21-APR-00
173 Kumar 21-APR-00
PL/SQL procedure successfully completed.
```

13. Execute the script `lab_ap_09_a.sql` to re-create the `emp` table. Create a PL/SQL block to promote clerks who earn more than 3,000 to the job title `SR CLERK` and increase their salaries by 10%. Use the `EMP` table for this practice. Verify the results by querying on the `emp` table.
Hint: Use a cursor with `FOR UPDATE` and `CURRENT OF` syntax.

14. a. For the exercise below, you will require a table to store the results. You can create the `analysis` table yourself or run the `lab_ap_14_a.sql` script that creates the table for you. Create a table called `analysis` with the following three columns:

Column Name	ENAME	YEARS	SAL
Key Type			
Nulls/Unique			
FK Table			
FK Column			
Data Type	VARCHAR2	Number	Number
Length	20	2	8,2

b. Create a PL/SQL block to populate the `analysis` table with the information from the `employees` table. Use an *i*SQL*Plus substitution variable to store an employee's last name.

Additional Practice 12, 13, and 14 (continued)

c. Query the `employees` table to find if the number of years that the employee has
been with the organization is greater than five, and if the salary is less than 3,500,
raise an exception. Handle the exception with an appropriate exception handler that
inserts the following values into the `analysis` table: employee last name, number of years of service, and the current salary. Otherwise display `Not due for a raise` in the window. Verify the results by querying the `analysis` table. Use the following test cases to test the PL/SQL block:

LAST_NAME	MESSAGE
Austin	Not due for a raise
Pataballa	Not due for a raise
Fripp	Not due for a raise
Khoo	Due for a raise