

## Homework Week #2

### PL/SQL Virtual Training

- Fill in the blanks.
  - An \_\_\_\_\_ is the name given to a PL/SQL object.
  - A \_\_\_\_\_ is a word that has special meaning to the Oracle database.
  - A \_\_\_\_\_ is a symbol that has special meaning to the Oracle database.
  - A \_\_\_\_\_ is an explicit numeric, character string, date, or Boolean value that is not represented by an identifier.
  - A \_\_\_\_\_ explains what a piece of code is trying to achieve.
- Identify each of the following identifiers as valid or invalid. If invalid, specify why.

Identifier	Valid (X)	Invalid (X)	Why Invalid?
Today			
Last name			
Today's_date			
number_of_days_in_february_this_year			
Isleap\$year			
#number			
NUMBER#			
Number1to7			

- Identify the reserved words in the following list.

Word	Reserved? Y/N
Create	
Make	
Table	
Seat	
Alter	
Rename	
Row	
number	
Web	

4. What kind of lexical unit (for example Reserved word, Delimiter, Literal, Comment) is each of the following?

Value	Lexical Unit
SELECT	
:=	
'TEST'	
FALSE	
-- new process	
FROM	
/*select the country with the highest elevation */	
V_test	
4.09	

5. Enter the data type category for each value into the Data Type Category column. In the Data Type column, enter a specific data type that can be used for the value. The first one has been done for you.

Value			Data Type Category	Data Type
Switzerland				
100.20				
1053				
12-DEC-2005				
False				
Index	Last_name			
1	'Newman'			
2	'Raman'			
3	'Han'			
A movie				
A soundbyte				
A picture				

6. Evaluate the variables in the following code. Answer the following questions about each variable. Is it named well? Why or why not? If it is not named well, what would be a better name and why?

```
DECLARE
    country_name VARCHAR2 (50);
    median_age    NUMBER(6,2);
BEGIN
    SELECT country_name, median_age INTO country_name, median_age
        FROM wf_countries
        WHERE country_name = 'United States of America');
    DBMS_OUTPUT.PUT_LINE(' The median age in '||country_name||' is '||median_age||'.');
END;
```

7. Examine the declarations in question 6. Change the declarations so that they use the %TYPE attribute.
8. Create the following anonymous block:

```
BEGIN
    DBMS_OUTPUT.PUT_LINE('Hello World');
END;
```

- A. Add a declarative section to this PL/SQL block. In the declarative section, declare the following variables:
- The today variable of the DATE type. Initialize today with sysdate.
  - The tomorrow variable of the today type. Use the %TYPE attribute to declare this variable.
- B. In the executable section, initialize the tomorrow variable with an expression that calculates tomorrow's date (add 1 to the value in today). Print the value of today and tomorrow after printing 'Hello World'.
9. Write and test an equijoin statement that lists each country's name, currency code, and currency name. Order the list by country name.
10. Write and test an equijoin statement that lists each language and the country or countries where it is official. Make sure the list is alphabetical by language and then by country. . (Hint: you need to join 3 tables – wf\_countries, wf\_spoken\_languages, wf\_languages)

11. There are 100 rows in table A and 250 rows in table B. The Cartesian product of A and B would yield this number of rows:

- A. 250
- B. 25000
- C. 100
- D. none of the above

12. Which statement is definitely wrong?

- A. 

```
SELECT e.employee_id, d.department_id
FROM employees e, departments d
WHERE e.department_id = d.department_id(+);
```
- B. 

```
SELECT e.employee_id, d.department_id
FROM employees e, departments d
WHERE e.department_id (+)= d.department_id(+);
```
- C. 

```
SELECT e.employee_id, d.department_id
FROM employees e, departments d
WHERE e.department_id (+)= d.department_id;
```
- D. none of the above

13. Without referring to the answer in question 12, write a SQL statement that lists the name of the employee with the earliest hire date.

14. Which country has the smallest area?

15. List the name of each country and the number of languages spoken in it. Order the results by the number of languages, from the most to the least.

16. List the name of each currency and the number of countries it is used in. Restrict the list to those currencies which are used in more than one country.

17. Examine the following code and then answer the questions.

```
DECLARE
  x VARCHAR2(20);
BEGIN
  x:= '123' + '456' ;
  DBMS_OUTPUT.PUT_LINE(x);
END;
```

- A. What do you think the output will be when you run the above code?

- B. Now, run the code. What is the output?
- C. In your own words, describe what happened when you ran the code. Did any implicit conversions take place?
18. Write an anonymous PL/SQL block that uses the programmer's full name and then returns the number of characters in the name.
19. Write an anonymous PL/SQL block that uses today's date and outputs it in the format of 'Month DD, YYYY'. Store the date in a DATE variable called my\_date. Create another variable of the date type called v\_last\_day. Assign v\_last\_day to the last day of this month. Display the output.
20. Modify the program created in question 20 to add 45 days to today's date and then calculate the number of months between the two dates.
21. Examine the following code and then answer the questions.

```
DECLARE
  x NUMBER(6);
BEGIN
  x := 5 + 3 * 2 ;
  DBMS_OUTPUT.PUT_LINE(x);
END;
```

- A. What do you think the output will be when you run the above code?
- B. Now run the code. What is the output?
- C. In your own words, explain the results.

22. Evaluate the PL/SQL block below and determine the value of each of the following variables according to the rules of scoping.

```
DECLARE
  weight  NUMBER(3) := 600;
  message VARCHAR2(255) := 'Product 10012';
BEGIN

  DECLARE
    weight  NUMBER(3) := 1;
    message VARCHAR2(255) := 'Product 11001';
    new_locln VARCHAR2(50) := 'Europe';
  BEGIN
    weight := weight + 1;
    new_locln := 'Western ' || new_locln;
    -- Position 1 --
  END;

  weight := weight + 1;
  message := message || ' is in stock';
  -- Position 2 --
END;
```

- A. The value of weight at position 1 is:
- B. The value of new\_locln at position 1 is:
- C. The value of weight at position 2 is:
- D. The value of message at position 2 is:

23. Enter and run the following PL/SQL block. It will execute correctly if you have entered it correctly, but it contains some examples of bad programming practice.

- A. Modify the block to use good programming practice, and re-run the block.
- B. Your modified block should contain examples of the following good programming practices: explicit data type conversions, meaningful and consistent variable names, use of %TYPE, upper and lowercase conventions, single and multi-line comments, and clear indentation.

```
DECLARE
    myvar1    VARCHAR2(20);
    myvar2    number(4);
BEGIN
    SELECT country_name INTO myvar1
    FROM wf_countries WHERE country_id = 1246;
    myvar2 :=
        '1234';
        MYVAR2 := myvar2 * 2;
    DBMS_OUTPUT.PUT_LINE(myvar1);
End;
```