

## Database Programming with PL/SQL Semester 1 Final Review

Name: \_\_\_\_\_

1. What are the steps for using a cursor? \_\_\_\_\_
  - a. Define, select, close
  - b. Open, fetch, close
  - c. Define, open, fetch, close
  - d. Open, select, fetch, close
2. The following statement is a valid cursor declaration. (True or False) DECLARE  
CURSOR dept\_emp\_cursor IS  
SELECT department\_name, COUNT(\*) AS how\_many FROM  
departments d, employees e  
WHERE d.department\_id = e.department\_id GROUP BY  
d.department\_name  
HAVING COUNT(\*) > 1;
3. OPEN is an executable statement that performs which of the following operations (circle answers)?
  - a. Executes the SELECT statement in the cursor declaration, returning the results into the active set (fills the box with data)
  - b. Dynamically allocates memory for a context area
  - c. Retrieves the first row from the cursor.
  - d. Positions the pointer to the first row in the active set.
4. How do you test to see whether the cursor contains rows?  
\_\_\_\_\_
5. What is wrong with the following code?  
\_\_\_\_\_

```
DECLARE
CURSOR emp_curs IS
  SELECT last_name, salary FROM employees; v_last_name
employees.last_name%TYPE; v_salary
employees.salary%TYPE;
BEGIN
  FETCH emp_curs INTO v_last_name, v_salary; OPEN
  emp_curs;
  FETCH emp_curs INTO v_last_name, v_salary; CLOSE
  emp_curs;
END;
```

6. A cursor may be reopened at any time. (True or False)
7. The example below uses what type of composite data type structure? \_\_\_\_\_

```
DECLARE
  CURSOR emp_cursor IS SELECT
    employee_id, last_name FROM employees
    WHERE department_id = 30; v_emp_record
emp_cursor%ROWTYPE; BEGIN
  OPEN emp_cursor; LOOP
    FETCH emp_cursor INTO v_emp_record;
  ...
```

8. How do you reference the last\_name value inside the loop in the example below?
- \_\_\_\_\_

```
DECLARE
  CURSOR emp_cursor IS SELECT
    employee_id, last_name FROM employees
    WHERE department_id = 30; v_emp_record
emp_cursor%ROWTYPE; BEGIN
  OPEN emp_cursor; LOOP
    FETCH emp_cursor INTO v_emp_record;
  ...
```

9. Which are the cursor attributes that return useful information about the execution of a cursor manipulation statement (circle answers)?
- a. %OPEN
  - b. %FOUND
  - c. %NOTFOUND
  - d. %ROWTYPE
  - e. %ROWCOUNT
10. What type of loop performs the following actions: The cursor is opened, a row is fetched once for each iteration in the loop, the loop is terminated automatically when the last row is processed, and the cursor is closed automatically.
- \_\_\_\_\_
11. To display the last name of an employee, what code should you write at Point A in the example below? \_\_\_\_\_

```
DECLARE
  CURSOR emp_cursor IS SELECT * FROM employees; BEGIN
  FOR emp_record IN emp_cursor LOOP DBMS_OUTPUT.PUT_LINE( --
    Point A -- );
  END LOOP; END;
```

12. Select the correct method for opening the cursor in the example below (circle answer).

```
CURSOR emp_curs
(p_dept_id employees.department_id%TYPE, p_job_id
employees.job_id%TYPE) IS SELECT * FROM
employees
WHERE department_id = p_dept_id AND job_id =
p_job_id;
```

- a. OPEN emp\_curs (20);
- b. FOR emp\_rec IN emp\_curs (20) LOOP
- c. OPEN emp\_curs ('IT\_PROG', 20);
- d. FOR emp\_rec IN emp\_curs (20, 'IT\_PROG') LOOP

13. Is this a valid cursor declaration? (Yes or No)

```
CURSOR dept_curs (p_loc_id NUMBER(4)) IS SELECT *
FROM departments
WHERE location_id = p_loc_id;
```

14. What is the main purpose of the FOR UPDATE clause in a cursor declaration?

15. In which DML statements would you use the WHEN CURRENT OF clause?

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16. You want to fetch rows from the EMPLOYEES table. You want to lock the fetched rows, to prevent other users from updating them. What would you write in Line A?

```
CURSOR emp_curs IS
SELECT department_name, employee_id, last_name, salary FROM employees
e, departments d
WHERE e.department_id = d.department_id
-- Line A -- ;
```

- a. FOR UPDATE
- b. FOR UPDATE OF employee\_id
- c. FOR UPDATE OF departments

17. You have declared a cursor as SELECT .... FOR UPDATE; You have OPENed the cursor and locked the FETCHed rows. When are these row locks released?

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18. What would you enter at Line A? \_\_\_\_\_

```
DECLARE
CURSOR region_cur IS SELECT * FROM
regions;
v_region_rec region_cur%ROWTYPE;
CURSOR country_cur (p_region_id NUMBER) IS SELECT *
FROM countries
WHERE region_id = p_region_id; v_country_rec
```

```
country_cur%ROWTYPE; BEGIN
OPEN region_cur; LOOP
  FETCH region_cur INTO v_region_rec; EXIT WHEN
  region_cur%NOTFOUND; DBMS_OUTPUT.PUT_LINE
  (v_region_rec.region_name);
-- Line A -- LOOP
  FETCH country_cur INTO v_country_rec; EXIT WHEN
  country_cur%NOTFOUND;
```

.....

- a. OPEN country\_cur (p\_region\_id);
- b. OPEN country\_cur (region\_cur.region\_id);
- c. OPEN country\_cur (region\_cur.region\_id);
- d. OPEN country\_cur (v\_region\_rec.region\_id);

19. You cannot use a FOR loop with multiple cursors. (True or False)
20. A PL/SQL record is a \_\_\_\_\_ data type consisting of a group of related data items stored as fields, each with its own name and data type.
21. How do you create a PL/SQL record based on the EMPLOYEES table? \_\_\_\_\_
- a. p\_emp\_record IN employees%TYPE
  - b. p\_emp\_record IN employees%ROWTYPE
  - c. p\_emp\_record IN employees%RECORD

22. How do you reference the SALARY field in the P\_EMP\_RECORD record?
- \_\_\_\_\_

23. A user-defined record cannot be defined using other records. (True or False)
24. The declaration below is a valid definition of a user-defined record using the PERSON\_TYPE record. (True or False)

```
TYPE employee_type IS RECORD (job_id
    VARCHAR2(10), salary
    NUMBER(8,2), person_data
    person_type);
```

25. A \_\_\_\_\_ is a composite data type and contains a set of occurrences of the same kind of data.
26. An \_\_\_\_\_ is based on a single field or column.
27. What is the default data type of the primary key of an index? \_\_\_\_\_
28. The following example declares two variables using the T\_NAMES type. (True or False)

```
DECLARE
TYPE t_names IS TABLE OF VARCHAR2(50) INDEX BY
  PLS_INTEGER;
last_names_tab t_names; first_names_tab
  t_names;
...
```

29. What are examples of methods to reference data or information about a table (circle answers)?

- a. EXISTS
- b. COUNT
- c. PREVIOUS
- d. NEXT

30. What does the following assignment do?

---

```
v_highest_number := last_names_tab.LAST;
```

31. Which of the following examples declares an INDEX BY table of record? \_\_\_\_\_

- a. TYPE t\_emprec IS TABLE OF employees%TYPE INDEX BY BINARY\_INTEGER;
- b. TYPE t\_emprec IS TABLE OF employees%ROWTYPE INDEX BY BINARY\_INTEGER;
- c. TYPE t\_emprec IS INDEX TABLE OF employees%ROWTYPE BY BINARY\_INTEGER;

32. An exception is an error that occurs during the execution of the block, which disrupts the normal operation of the program. (True or False)

33. What functions does an exception handler perform (circle answers)?

- a. Defines the recovery actions to be performed when exceptions are raised.
- b. Passes the error to the calling environment.
- c. Allows a block of code to be executed completely.

34. The WHEN OTHERS handler can be the first of multiple handlers. (True or False)

35. An \_\_\_\_\_ exception is raised when the programmer issues the RAISE statement.

36. A \_\_\_\_\_ Oracle server error has an Oracle-supplied name associated with it.

37. The TOO\_MANY\_ROWS error is raised under what typical condition?

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38. The example below is a valid block of code. (True or False)

```
EXCEPTION
  WHEN NO_DATA_FOUND THEN
    Statement 1;
  WHEN NO_DATA_FOUND THEN
    Statement 2;
  WHEN OTHERS THEN
    Statement 3; END;
```

39. The example below is a valid block of code. (True or False)

```
EXCEPTION
  WHEN ZERO_DIVIDE OR TOO_MANY_ROWS OR NO_DATA_FOUND THEN
    Statement 1;
  WHEN OTHERS THEN
    Statement 2; END;
```

40. What two pre-defined functions provide the Oracle server error number and message?

\_\_\_\_\_

41. The example declaration below is valid for a non-predefined exception. (True or False)

```
DECLARE
  e_insert_exp EXCEPTION;
  PRAGMA EXCEPTION_INIT (e_insert_exp, -01400);
```

42. What message will appear when this exception is reached? \_\_\_\_\_

```
WHEN OTHERS THEN
  DBMS_OUTPUT.PUT_LINE (SQLCODE || ': ' || SQLERRM); END;
```

- a. The code number and its associated error message.
- b. The code will fail because SQLCODE and SQLERRM cannot be used directly in a SQL statement.
- c. The code will fail because SQLCODE and SQLERRM were not declared.
- d. The code will fail because the error number is represented by SQLERRNUM.

43. What type of exception is raised by the programmer?

\_\_\_\_\_

44. What steps are necessary for a programmer to define and use an error not defined by the database (circle answers)?

- a. Name the exception
- b. Associate it with an error number
- c. Explicitly raise the exception
- d. Handle the exception

45. What is the method for calling an exception not defined by the database? \_\_\_\_\_

- a. e\_insert\_exp;
- b. CALL e\_insert\_exp;
- c. RAISE e\_insert\_exp;
- d. PRAGMA EXCEPTION\_INIT (e\_insert\_exp);

46. To display your own error message and code, what is the correct code? \_\_\_\_\_

- a. RAISE\_APPLICATION\_ERROR(20001, 'Message');
- b. RAISE\_ERROR (-20001, 'Message');
- c. RAISE\_APPLICATION\_ERROR (-20001, 'Message');

d. RAISE APPLICATION\_ERROR (20001, 'Message');

47. How would you reference the father's birth date in Line A?

---

```
<<outer>> DECLARE
  v_father_name VARCHAR2(20):='Patrick';
  v_date_of_birth DATE:='20-Apr-1972'; BEGIN
  DECLARE
    v_child_name VARCHAR2(20):='Mike';
    v_date_of_birth DATE:='12-Dec-2002'; BEGIN
      DBMS_OUTPUT.PUT_LINE('Name of father: '
        || v_father_name); DBMS_OUTPUT.PUT_LINE('Date of Birth: '
        || -- Line A -- );
```

48. What is the scope and visibility of v\_name in the example below? \_\_\_\_\_

```
<<outer>> DECLARE
  v_name VARCHAR2(20) BEGIN
  <<inner>> DECLARE
    v_name VARCHAR2(20) BEGIN
      ... END;
    ... END;
```

- a. It is in scope and visible in the outer block only.
- b. It is visible in both blocks but in scope only in the outer block.
- c. It is in scope and visible in both blocks.
- d. It is in scope in both blocks but visible only in the outer block.

49. Why does this example fail?

---

```
<<outer>> DECLARE
  v_name1 VARCHAR2(20); BEGIN
  <<inner>> DECLARE
    v_name2 VARCHAR2(20); BEGIN
      DBMS_OUTPUT.PUT_LINE(v_name1); END;
    DBMS_OUTPUT.PUT_LINE(v_name2); END;
```

50. A pre-defined Oracle server exception can be raised in an inner block and must be handled in the outermost block. (True or False)

51. Two records exist for department 50. What will be displayed when this code is run? \_\_\_\_\_

```
DECLARE
  v_last_name VARCHAR2(20); BEGIN
  DBMS_OUTPUT.PUT_LINE('Message 1'); BEGIN
    SELECT last_name into v_last_name
      FROM employees WHERE department_id = 50; DBMS_OUTPUT.PUT_LINE('Message 2');
  END; DBMS_OUTPUT.PUT_LINE('Message 3');
EXCEPTION
```

```
WHEN OTHERS THEN
    DBMS_OUTPUT.PUT_LINE('Message 4');
END;
```

- a. Message 1
- b. Message 1 Message 4
- c. Message 1 Message 3  
Message 4

52. Procedures and functions are PL/SQL\_\_\_\_\_ compiled and stored in the database.

53. What is the command to make a new procedure named get\_name? \_\_\_\_\_

- a. INSERT OR REPLACE PROCEDURE get\_name...
- b. CREATE PROCEDURE get\_name...
- c. SAVE PROCEDURE get\_name;

54. Stored procedures and functions improve performance of PL/SQL code. (True or False)

55. Which data dictionary views contain information about a procedure (circle answer)?

- a. USER\_PROCEDURES
- b. USER\_OBJECTS
- c. USER\_CODE

56. What are the ways to execute the procedure get\_name (circle answers)?

- a. From an anonymous block
- b. From another procedure
- c. From a DML statement
- d. From Application Express

57. What is the phrase to update corrected code for the procedure get\_name?

\_\_\_\_\_

58. Which data dictionary view contains the code of the procedure get\_name?

\_\_\_\_\_

59. A parameter is the name of the variable passed into or out of a procedure. (True or False)

60. What is an argument? \_\_\_\_\_

- a. A parameter
- b. A variable
- c. A value

61. Choose the correct syntax to create a procedure named get\_name with two values p\_id and p\_name.

- a. CREATE PROCEDURE (p\_id NUMBER, p\_name VARCHAR2) get\_name IS...
- b. CREATE PROCEDURE get\_name (p\_id NUMBER, p\_name VARCHAR2) IS...
- c. CREATE PROCEDURE get\_name (p\_id NUMBER(3), p\_name VARCHAR2(25)) IS...



62. The name of a variable can be passed into a procedure as an argument. (True or False)

63. Formal parameter data types are defined with sizes. (True or False)

64. What is an actual parameter (circle answers)?

- a. A variable
- b. A literal value
- c. An expression

65. What is the default parameter mode if no mode is specified? \_\_\_\_\_

66. What is the parameter mode for a\_emp\_name in the query\_emp procedure in the following example?

```
DECLARE
  a_emp_name employees.last_name%TYPE; a_emp_sal
employees.salary%TYPE; BEGIN
  query_emp(178, a_emp_name, a_emp_sal);
DBMS_OUTPUT.PUT_LINE('Name: ' || a_emp_name);
DBMS_OUTPUT.PUT_LINE('Salary: ' || a_emp_sal); END;
```

67. What is the actual parameter of the get\_name procedure? \_\_\_\_\_

```
CREATE PROCEDURE get_name (p_id
  INTEGER)
  IS ...
BEGIN ... END;
```

```
DECLARE
  v_id NUMBER(3) := 50; BEGIN
  subproc(v_id); END;
```

- a. p\_id
- b. v\_id
- c. 50

68. What is the correct method for calling the procedure add\_dept (circle answers)?

```
CREATE OR REPLACE PROCEDURE add_dept
  (p_name IN departments.department_name%TYPE, p_loc IN
departments.location_id%TYPE := 25) IS BEGIN
  INSERT INTO departments (department_id, department_name, location_id) VALUES
  (departments_seq.NEXTVAL, p_name, p_loc);
END add_dept;
```

- a. EXECUTE add\_dept ('Administration', 25);
- b. add\_dept ('Administration', 25);
- c. add\_dept ('Administration', p\_loc=>25);
- d. add\_dept ('Administration');

69. Which mode of parameters cannot have a DEFAULT value? \_\_\_\_\_

70. What command is used to remove a procedure from the database?  
\_\_\_\_\_

71. A function is a named PL/SQL block that can accept optional IN parameters and must return a single value. (True or False)

72. A function can be called as part of a PL/SQL expression only. (True or False)

73. What can a function do that a procedure cannot do (circle answer)?

- a. Use all parameter three modes
- b. Require a RETURN statement
- c. Be called in a SQL expression

74. What is a valid call of the get\_sal function shown below (circle answers)?

```
CREATE OR REPLACE FUNCTION get_sal
(p_id employees.employee_id%TYPE) RETURN
NUMBER IS
v_sal employees.salary%TYPE := 0; BEGIN
SELECT salary INTO v_sal
FROM employees WHERE employee_id = p_id; RETURN v_sal;
END get_sal;
```

- a. v\_salary := get\_sal (100);
- b. get\_sal (100);
- c. DBMS\_OUTPUT.PUT\_LINE (get\_sal(100));
- d. SELECT get\_sal(100) FROM dual;

75. A RETURN statement cannot be included in an exception handler in a function. (True or False)

76. What is wrong with the following code?  
\_\_\_\_\_

```
CREATE FUNCTION annual_comp (sal
employees.salary%TYPE,
comm_pct IN employees.commission%TYPE) RETURN
NUMBER(5,2)
IS
RETURN (sal*12) + NVL(comm_pct,0)*12*sal; END
annual_comp;
```

77. A function cannot be used in a WHERE clause. (True or False)

78. A function can be used in the SET clause of an UPDATE statement. (True or False)

79. Which of the following SELECT statements using the function double\_sal will work (circle answers)?

```
CREATE OR REPLACE FUNCTION double_sal (p_salary IN
employees.salary%TYPE) RETURN NUMBER IS
```

```
BEGIN  
  RETURN (p_salary * 2); END;
```

- a. SELECT \* FROM employees WHERE double\_sal (salary) > 20000;
- b. SELECT last\_name, double\_sal (salary) FROM employees WHERE department\_id = 50;
- c. SELECT SUM double\_sal (salary) FROM employees;

80. What is the correct statement to remove the double\_sal function from your schema? \_\_\_\_\_

- a. DELETE FUNCTION double\_sal;
- b. DROP FUNCTION double\_sal;
- c. ALTER FUNCTION double\_sal DISABLE;
- d. DROP SUBPROGRAM double\_sal;

81. Which data dictionary view is used to see the code of a function you created?  
\_\_\_\_\_

82. Which dictionary view will list all the PL/SQL subprograms in your schema?

83. Which data dictionary view will contain the list of tables that you have privileges to?  
\_\_\_\_\_

84. Which privileges are found for tables but not for views (circle answers)?

- a. SELECT
- b. UPDATE
- c. INDEX
- d. ALTER

85. Christina creates a view called EMP\_VIEW that is based on a SELECT from her EMPLOYEES table. She now wants Tony to be able to query the view. What is the smallest set of object privileges that Christina must grant to Tony?  
\_\_\_\_\_

86. Which statement will fail? \_\_\_\_\_

- a. GRANT ALTER ON dept\_view TO PUBLIC;
- b. GRANT INSERT, UPDATE ON employees TO TOM, SUSAN;
- c. GRANT SELECT ON departments TO PUBLIC;

87. To invoke a subprogram using Definer's Rights, a user needs only EXECUTE privilege on the subprogram. The user does NOT need any privileges on the objects referenced by SQL statements within the subprogram. (True or False)

88. Jared creates a procedure called DEL\_REGION using Definer's Rights, which deletes a row from his REGIONS table. What privilege(s) will Pete need to be able to execute Jared's procedure?  
\_\_\_\_\_

89. Petra owns a DEPARTMENTS table. Zachary needs to update the location\_id column of Petra's table, but no other columns. Which SQL statement should Petra execute to allow this?

\_\_\_\_\_

- a. GRANT UPDATE ON departments TO zachary;
- b. GRANT UPDATE (location\_id) ON departments TO zachary;
- c. GRANT UPDATE ON departments (location\_id) TO zachary;
- d. GRANT UPDATE ON departments.location\_id TO zachary;

90. What command is used to remove privileges from a user? \_\_\_\_\_

91. What is the clause to invoke Invoker's Rights?

92. Procedure UPD\_EMPS includes an UPDATE on the EMPLOYEES table. The procedure was created using Invoker's Rights. Which of the following statements are true (circle answers)?

- a. The creator of the procedure needs UPDATE privilege on EMPLOYEES.
- b. The user who executes the procedure needs EXECUTE privilege on the procedure.
- c. The user who executes the procedure needs UPDATE privilege on EMPLOYEES.
- d. The user who executes the procedure does not need any privileges.