

## Tema 5 – PL/SQL

1. What are triggers commonly used for in the database?
2. List the types of events that cause a database trigger to fire?
3. What is the most important thing to check before creating a database trigger?
4. When creating a DML statement trigger on a table, what are the components that you must define?
5. A business rule states that each time one or more employees are added to the employees table, an audit record must also be created. This rule could be enforced using application code, but we have decided to enforce it using a DML statement trigger.
  - A. Create an audit table by executing the following SQL statement:

```
CREATE TABLE audit_table
  (action VARCHAR2(15),
   user_name VARCHAR2(30) DEFAULT USER,
   last_change_date TIMESTAMP DEFAULT SYSTIMESTAMP);
```

- B. Create the duplicate table employees\_dup for the employees table.
  - C. Create a statement level trigger that inserts a row into the audit table immediately after one or more rows are added to the employees\_dup table. The audit table row should contain value “Inserting” in the action column. The other two columns should have their default values. Save your trigger code for later.
  - C. Test your trigger by inserting a row into employees, then querying the audit table to see that it contains a row.
  - D. Make sure the trigger does not fire with a DELETE by deleting the employee you just entered. Recheck the audit\_table table to make sure that there is not another new row.
6. What is the difference between a statement trigger and a row trigger?
  7. A row trigger fires at least once even if no rows are affected. True or false?
  8. Imagine that the following four DML triggers have been defined on the employees table: a BEFORE INSERT statement trigger, a BEFORE UPDATE statement trigger, an AFTER UPDATE row trigger, and an AFTER DELETE statement trigger. An UPDATE statement updates three employee rows. How many times will each trigger fire?