

## Creating DML Triggers: Part I

### Terminology

Directions: Identify the vocabulary word for each definition below.

1. **DML trigger** A trigger which is automatically fired (executed) whenever a SQL DML statement (INSERT, UPDATE or DELETE) is executed.
2. **Row Trigger** fires once for each row affected by the triggering event.
3. **Statement Trigger** is fired once on behalf of the triggering event, even if no rows are affected at all.

### Try It / Solve It

1. When creating a DML statement trigger on a table we must define when they execute and how many times.
2.

```
CREATE OR REPLACE TRIGGER log_emp_changes
  AFTER INSERT ON employees BEGIN
    INSERT INTO audit_table (action)
      VALUES ('Inserting');
END;
```
3. A statement trigger executes once for the whole DML statement whereas a row trigger executes once for each row affected by the DML statement
4. False, statement triggers do
5. Before insert statement trigger: 1 time  
Before update statement trigger: 1 time  
After update row trigger: 3 times  
After Delete statement trigger: 1 time
6.
  - A.

```
CREATE OR REPLACE TRIGGER log_emp_changes
  BEFORE UPDATE of salary ON employees BEGIN
    INSERT INTO audit_table (action)
      VALUES ('Inserting');
END;
```
  - C.

```
CREATE OR REPLACE TRIGGER log_emp_changes
  BEFORE INSERT ON employees BEGIN
    IF TO_CHAR(SYSDATE, 'HH24') Between 8 AND 18 THEN
      INSERT INTO audit_table (action)
        VALUES ('Inserting');
    ELSE
      RAISE_APPLICATION_ERROR(-20204, 'Attempt to update outside working hours');
    END IF;
END;
```

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```
E.  
CREATE OR REPLACE TRIGGER log_emp_changes  
  BEFORE UPDATE OF salary ON employees_copy BEGIN  
    IF TO_CHAR(SYSDATE, 'HH24') Between TO_CHAR(SYSDATE, 'HH24')  
      AND TO_CHAR(SYSDATE, 'HH24')+1 THEN  
      RAISE_APPLICATION_ERROR(-20204,  
        'Attempt to update outside working hours');  
    ELSE  
      INSERT INTO audit_table (action)  
        VALUES ('Inserting');  
END IF;  
END;
```