

## LAB TASKS 1

```
----- DML Trigger for Enforcing Referential Integrity
CREATE TABLE parent_table (
    parent_id NUMBER PRIMARY KEY,
    parent_data VARCHAR2(100)
);

CREATE TABLE child_table (
    child_id NUMBER PRIMARY KEY,
    parent_id NUMBER,
    child_data VARCHAR2(100),
    CONSTRAINT fk_parent FOREIGN KEY (parent_id) REFERENCES parent_table(parent_id)
);

CREATE OR REPLACE TRIGGER trg_referential_integrity
BEFORE INSERT OR UPDATE ON child_table
FOR EACH ROW
DECLARE
    v_exists NUMBER;
BEGIN
    SELECT COUNT(*) INTO v_exists FROM parent_table WHERE parent_id = :NEW.parent_id;
    IF v_exists = 0 THEN
        RAISE_APPLICATION_ERROR(-20001, 'Referential integrity violated: Parent record not found.');
```

END IF;

```
END;
/
```

Script Output x

Task completed in 0.064 seconds

Table PARENT\_TABLE created.

Worksheet Query Builder

===== DML Trigger for Enforcing Referential Integrity

```
CREATE TABLE parent_table (  
    parent_id NUMBER PRIMARY KEY,  
    parent_data VARCHAR2(100)  
);  
  
CREATE TABLE child_table (  
    child_id NUMBER PRIMARY KEY,  
    parent_id NUMBER,  
    child_data VARCHAR2(100),  
    CONSTRAINT fk_parent FOREIGN KEY (parent_id) REFERENCES parent_table(parent_id)  
);  
  
CREATE OR REPLACE TRIGGER trg_referential_integrity  
BEFORE INSERT OR UPDATE ON child_table  
FOR EACH ROW  
DECLARE  
    v_exists NUMBER;  
BEGIN  
    SELECT COUNT(*) INTO v_exists FROM parent_table WHERE parent_id = :NEW.parent_id;  
    IF v_exists = 0 THEN  
        RAISE_APPLICATION_ERROR(-20001, 'Referential integrity violated: Parent record not found.');    END IF;  
END;  
/
```

Script Output x

Task completed in 0.064 seconds

Table CHILD\_TABLE created.

----- DML Trigger for Enforcing Referential Integrity

```
CREATE TABLE parent_table (  
    parent_id NUMBER PRIMARY KEY,  
    parent_data VARCHAR2(100)  
);  
  
CREATE TABLE child_table (  
    child_id NUMBER PRIMARY KEY,  
    parent_id NUMBER,  
    child_data VARCHAR2(100),  
    CONSTRAINT fk_parent FOREIGN KEY (parent_id) REFERENCES parent_table(parent_id)  
);  
  
CREATE OR REPLACE TRIGGER trg_referential_integrity  
BEFORE INSERT OR UPDATE ON child_table  
FOR EACH ROW  
DECLARE  
    v_exists NUMBER;  
BEGIN  
    SELECT COUNT(*) INTO v_exists FROM parent_table WHERE parent_id = :NEW.parent_id;  
    IF v_exists = 0 THEN  
        RAISE_APPLICATION_ERROR(-20001, 'Referential integrity violated: Parent record not found.');
```

```
    END IF;
```

```
END;
```

```
/
```

Script Output x

Task completed in 0.064 seconds

Trigger TRG\_REFERENTIAL\_INTEGRITY compiled

## LAB TASKS 2

```
--=====DDL trigger that logs all schema changes (e.g., table creations, modifications, and drops) in a dedicated audit table.
CREATE TABLE schema_audit (
  ddl_date      TIMESTAMP,
  ddl_user      VARCHAR2(30),
  object_created VARCHAR2(30),
  object_name   VARCHAR2(30),
  ddl_operation VARCHAR2(30)
);

CREATE OR REPLACE TRIGGER log_schema_changes
AFTER DDL ON SCHEMA
BEGIN
  INSERT INTO schema_audit (ddl_date, ddl_user, object_created, object_name, ddl_operation)
  VALUES (
    SYSTIMESTAMP,
    SYS_CONTEXT('USERENV', 'CURRENT_USER'),
    ORA_DICT_OBJ_TYPE,
    ORA_DICT_OBJ_NAME,
    ORA_SYSEVENT
  );
END;
/

CREATE TABLE test_table (
  id NUMBER PRIMARY KEY,
  name VARCHAR2(50)
);
ALTER TABLE test_table ADD (age NUMBER);
DROP TABLE test_table;
SELECT * FROM schema_audit;
```

Script Output x Query Result x

Task completed in 0.675 seconds

22000.00000 - missing \$\$ keyword

Table SCHEMA\_AUDIT created.

Worksheet Query Builder

-----DDL trigger that logs all schema changes (e.g., table creations, modifications, and drops) in a dedicated audit table.

```
CREATE TABLE schema_audit (  
    ddl_date          TIMESTAMP,  
    ddl_user          VARCHAR2(30),  
    object_created    VARCHAR2(30),  
    object_name       VARCHAR2(30),  
    ddl_operation     VARCHAR2(30)  
);  
  
CREATE OR REPLACE TRIGGER log_schema_changes  
AFTER DDL ON SCHEMA  
BEGIN  
    INSERT INTO schema_audit (ddl_date, ddl_user, object_created, object_name, ddl_operation)  
    VALUES (  
        SYSTIMESTAMP,  
        SYS_CONTEXT('USERENV', 'CURRENT_USER'),  
        ORA_DICT_OBJ_TYPE,  
        ORA_DICT_OBJ_NAME,  
        ORA_SYSEVENT  
    );  
END;
```

```
CREATE TABLE test_table (  
    id NUMBER PRIMARY KEY,  
    name VARCHAR2(50)  
);  
ALTER TABLE test_table ADD (age NUMBER);  
DROP TABLE test_table;  
SELECT * FROM schema_audit;
```

Script Output x Query Result x

Task completed in 0.675 seconds

Trigger LOG\_SCHEMA\_CHANGES compiled

