-- Create the Library table

CREATE TABLE Library (

book\_id NUMBER PRIMARY KEY,

book\_title VARCHAR2(100),

author VARCHAR2(100),

published\_year NUMBER,

available\_copies NUMBER

);

-- Create the Library\_Audit table to store old values for updates and deletes

CREATE TABLE Library\_Audit (

audit\_id NUMBER PRIMARY KEY,

book\_id NUMBER,

book\_title VARCHAR2(100),

author VARCHAR2(100),

published\_year NUMBER,

available\_copies NUMBER,

operation\_type VARCHAR2(10), -- 'UPDATE' or 'DELETE'

audit\_timestamp TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

-- Create a sequence for audit\_id

CREATE SEQUENCE library\_audit\_seq

START WITH 1

INCREMENT BY 1;

-- Create the BEFORE trigger to track updates and deletes

CREATE OR REPLACE TRIGGER Library\_Before\_Trigger

BEFORE UPDATE OR DELETE

ON Library

FOR EACH ROW

BEGIN

-- Insert old values into Library\_Audit before the operation (update or delete)

IF UPDATING THEN

INSERT INTO Library\_Audit (

audit\_id, book\_id, book\_title, author, published\_year, available\_copies, operation\_type

)

VALUES (

library\_audit\_seq.NEXTVAL, :OLD.book\_id, :OLD.book\_title, :OLD.author, :OLD.published\_year, :OLD.available\_copies, 'UPDATE'

);

ELSIF DELETING THEN

INSERT INTO Library\_Audit (

audit\_id, book\_id, book\_title, author, published\_year, available\_copies, operation\_type

)

VALUES (

library\_audit\_seq.NEXTVAL, :OLD.book\_id, :OLD.book\_title, :OLD.author, :OLD.published\_year, :OLD.available\_copies, 'DELETE'

);

END IF;

END;

/

-- Create the AFTER trigger (optional, in this case, no further action required)

CREATE OR REPLACE TRIGGER Library\_After\_Trigger

AFTER UPDATE OR DELETE

ON Library

FOR EACH ROW

BEGIN

-- No action is required in the AFTER trigger in this case

NULL;

END;

/

-- Insert sample data into the Library table

INSERT INTO Library (book\_id, book\_title, author, published\_year, available\_copies)

VALUES (1, 'Introduction to SQL', 'John Doe', 2020, 10);

INSERT INTO Library (book\_id, book\_title, author, published\_year, available\_copies)

VALUES (2, 'Advanced PL/SQL', 'Jane Smith', 2021, 5);

-- Perform an UPDATE operation on the Library table

UPDATE Library

SET available\_copies = 7

WHERE book\_id = 1;

-- Perform a DELETE operation on the Library table

DELETE FROM Library

WHERE book\_id = 2;

-- Check the Library\_Audit table to see the old values captured

SELECT \* FROM Library\_Audit;