

trigger on Library table. The System should keep track of the records that are being updated or deleted. The old value of updated or deleted records should be added in Library_Audit table.

Perform before update and After delete trigger.

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Step 1: Create the Audit Table

First, ensure you have the Library_Audit table set up to store the old values. Here's a sample structure for the audit table:

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```
CREATE TABLE Library_Audit (  
    Audit_ID NUMBER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,  
    Old_Title VARCHAR2(255),  
    Old_Author VARCHAR2(255),  
    Old_Published_Year NUMBER,  
    Old_ISBN VARCHAR2(20),  
    Action VARCHAR2(20), -- To store the action type: 'UPDATE' or 'DELETE'  
    Action_Timestamp TIMESTAMP DEFAULT SYSTIMESTAMP  
);
```

Step 2: Create the Trigger for Before Update

This trigger will fire before an update operation on the Library table, capturing the old values of the record that is being updated.

sql

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```
CREATE OR REPLACE TRIGGER trg_Before_Update_Library  
BEFORE UPDATE ON Library  
FOR EACH ROW  
BEGIN  
    INSERT INTO Library_Audit (Old_Title, Old_Author, Old_Published_Year, Old_ISBN, Action)  
    VALUES (:OLD.Title, :OLD.Author, :OLD.Published_Year, :OLD.ISBN, 'UPDATE');  
END;  
/
```

Step 3: Create the Trigger for After Delete

This trigger will fire after a delete operation on the Library table, capturing the old values of the record that is being deleted.

sql

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```
CREATE OR REPLACE TRIGGER trg_After_Delete_Library
AFTER DELETE ON Library
FOR EACH ROW
BEGIN
    INSERT INTO Library_Audit (Old_Title, Old_Author, Old_Published_Year, Old_ISBN, Action)
    VALUES (:OLD.Title, :OLD.Author, :OLD.Published_Year, :OLD.ISBN, 'DELETE');
END;
/
```

Explanation of the Triggers

1. Library_Audit Table:

- This table stores the old values for records that are updated or deleted, along with an action indicator and a timestamp of when the action occurred.

2. Before Update Trigger:

- This trigger (trg_Before_Update_Library) captures the values of the Library table before they are updated. It uses the :OLD qualifier to access the old values.
- It inserts these old values into the Library_Audit table, along with the action type 'UPDATE'.

3. After Delete Trigger:

- This trigger (trg_After_Delete_Library) captures the values of the Library table after a record is deleted.
- Similar to the update trigger, it uses :OLD to access the old values and stores them in the Library_Audit table, along with the action type 'DELETE'.