Magic Table in SQL Server

A Magic Table in SQL Server is not an official term in SQL Server documentation but is commonly used in the context of triggers. It refers to the special, temporary tables called `inserted` and `deleted` that SQL Server creates and manages during the execution of a trigger. These tables allow you to reference the state of a row before and after a data modification (INSERT, UPDATE, DELETE).

Inserted Table:

- This table holds a copy of the affected rows during an INSERT or UPDATE operation.
- During an INSERT operation, it contains the new rows that are being added.
- During an UPDATE operation, it contains the new values for the rows being updated.

Deleted Table:

- This table holds a copy of the affected rows during a DELETE or UPDATE operation.
- During a DELETE operation, it contains the rows that are being removed.
- During an UPDATE operation, it contains the old values for the rows being updated.

Example Use Case

Consider a table `Employees` and a trigger that logs changes to a `EmployeeChanges` table.

```sql
CREATE TABLE Employees (
    EmployeeID INT PRIMARY KEY,
    Name NVARCHAR(100),
    Position NVARCHAR(100),
    Salary DECIMAL(10, 2)
);

CREATE TABLE EmployeeChanges (
    ChangeID INT IDENTITY PRIMARY KEY,
    EmployeeID INT,
    ChangeType NVARCHAR(10),
    OldName NVARCHAR(100),
    NewName NVARCHAR(100),
    OldPosition NVARCHAR(100),
    NewPosition NVARCHAR(100),
    OldSalary DECIMAL(10, 2),
    NewSalary DECIMAL(10, 2),
    ChangeDate DATETIME DEFAULT GETDATE()
);
```

Trigger Example

Here's a trigger that uses Magic Tables to log changes:

```
CREATE TRIGGER trg_AfterEmployeeUpdate
ON Employees
AFTER UPDATE
AS
BEGIN
   INSERT INTO EmployeeChanges (EmployeeID, ChangeType, OldName, NewName,
OldPosition, NewPosition, OldSalary, NewSalary)
   SELECT
      d.EmployeeID,
      'UPDATE',
      d.Name,
      i.Name,
      d.Position,
      i.Position,
      d.Salary,
      i.Salary
   FROM
      deleted d
      INNER JOIN inserted i ON d.EmployeeID = i.EmployeeID;
END;
```

In this trigger:
- `deleted` holds the old values of the rows that are updated.
- `inserted` holds the new values of the rows that are updated.
- The trigger logs the old and new values into the `EmployeeChanges` table for auditing purposes.

Summary

Magic Tables (`inserted` and `deleted`) are temporary tables created by SQL Server during trigger execution. They are essential for capturing and referencing the state of data before and after modifications, enabling complex auditing and data integrity tasks within triggers.