SQL Server INSTEAD OF Trigger

Summary: in this tutorial, you will learn how to use SQL Server `INSTEAD OF` trigger to insert data into an underlying table via a view.

What is an INSTEAD OF trigger

An `INSTEAD OF` trigger is a trigger that allows you to skip an `INSERT` (https://www.sqlservertutorial.net/sql-server-basics/sql-server-insert/), `DELETE` (https://www.sqlservertutorial.net/sql-server-basics/sql-server-delete/), or `UPDATE` (https://www.sqlservertutorial.net/sql-server-basics/sql-server-update/) statement to a table or a view and execute other statements defined in the trigger instead. The actual insert, delete, or update operation does not occur at all.

In other words, an `INSTEAD OF` trigger skips a DML statement and execute other statements.

SQL Server INSTEAD OF trigger syntax

The following illustrates the syntax of how to create an `INSTEAD OF` trigger:

```
CREATE TRIGGER [schema_name.] trigger_name
ON {table_name | view_name }
```

```
INSTEAD OF {[INSERT] [,] [UPDATE] [,] [DELETE] }
AS
{sql_statements}
```

In this syntax:

First, specify the name of the trigger and optionally the name of the schema to which the trigger belongs in the `CREATE TRIGGER` clause.

Second, specify the name of the table or view which the trigger associated with.

Third, specify an event such as `INSERT` , `DELETE` , or `UPDATE` which the trigger will fire in the `INSTEAD OF` clause. The trigger may be called to respond to one or multiple events.

Fourth, place the trigger body after the `AS` keyword. A trigger's body may consist of one or more Transact-SQL statements.

SQL Server INSTEAD OF trigger example

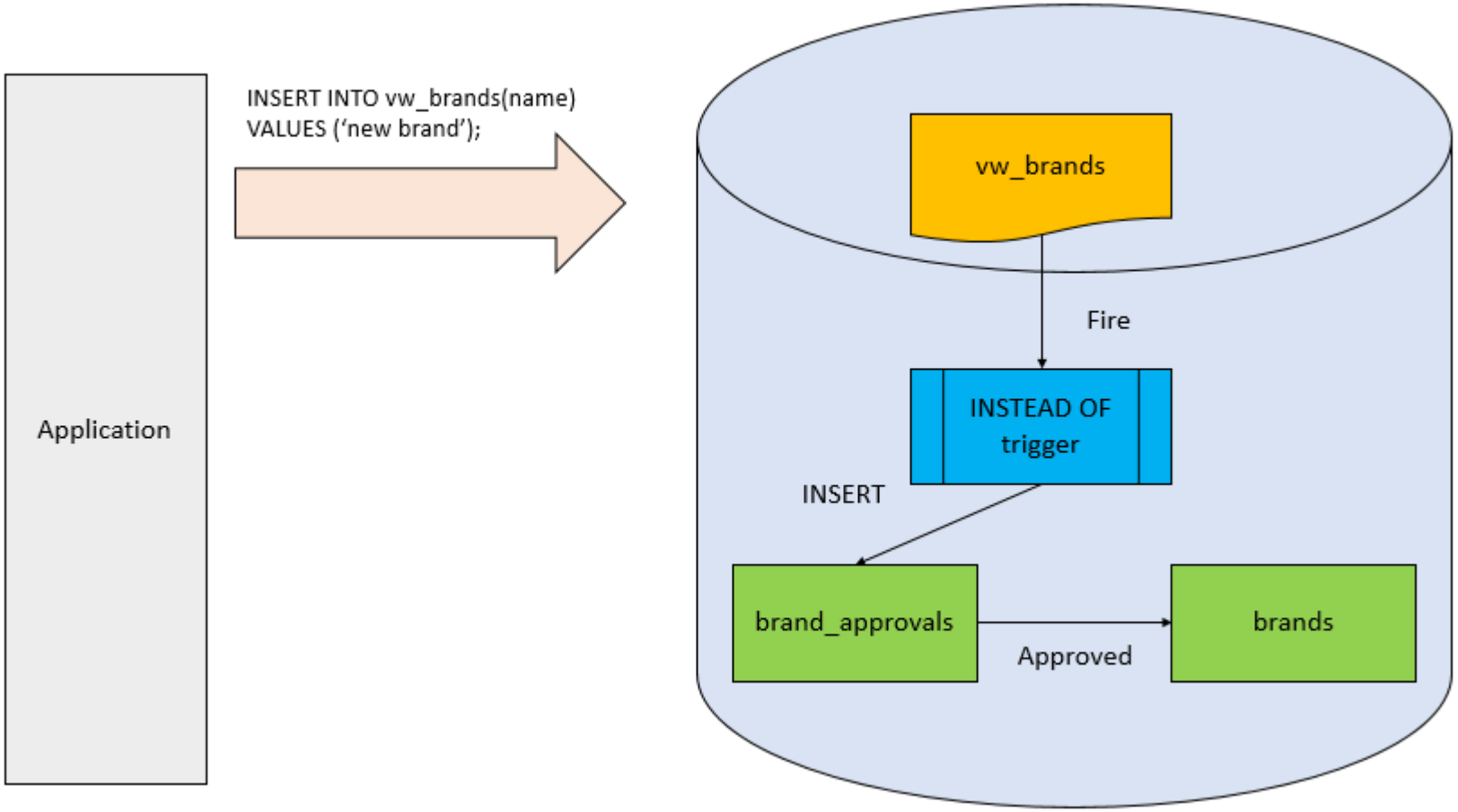
A typical example of using an `INSTEAD OF` trigger is to override an insert, update, or delete operation on a view (https://www.sqlservertutorial.net/sql-server-views/) .

Suppose, an application needs to insert new brands into the `production.brands` table. However, the new brands should be stored in another table called `production.brand_approvals` for approval before inserting into the `production.brands` table.

To accomplish this, you create a view (https://www.sqlservertutorial.net/sql-server-views/sql-server-create-view/) called `production.vw_brands` for the application to insert new brands. If brands are inserted into the view, an `INSTEAD OF` trigger will be fired to insert brands

into the `production.brand_approvals` table.

The following picture illustrates the process:



This diagram does not show the schema name of all the database objects for the sake of simplicity.

The following statement creates a new table (https://www.sqlservertutorial.net/sql-server-basics/sql-server-create-table/) named `production.brand_approvals` for storing pending approval brands:

```
CREATE TABLE production.brand_approvals(
    brand_id INT IDENTITY PRIMARY KEY,
    brand_name VARCHAR(255) NOT NULL
);
```

The following statement creates a new view (https://www.sqlservertutorial.net/sql-server-views/sql-server-create-view/) named `production.vw_brands` against the `production.brands` and `production.brand_approvals` tables:

```
CREATE VIEW production.vw_brands
AS
SELECT
    brand_name,
    'Approved' approval_status
FROM
    production.brands
UNION
SELECT
    brand_name,
    'Pending Approval' approval_status
FROM
    production.brand_approvals;
```

Once a row is inserted into the `production.vw_brands` view, we need to route it to the `production.brand_approvals` table via the following `INSTEAD OF` trigger:

```
CREATE TRIGGER production.trg_vw_brands
ON production.vw_brands
INSTEAD OF INSERT
AS
BEGIN
    SET NOCOUNT ON;
    INSERT INTO production.brand_approvals (
        brand_name
    )
    SELECT
        i.brand_name
    FROM
        inserted i
    WHERE
        i.brand_name NOT IN (
            SELECT
                brand_name
            FROM
                production.brands
        );
END
```

The trigger inserts the new brand name into the `production.brand_approvals` if the brand name does not exist in the `production.brands` .

Let's insert a new brand into the production.vw_brands view:

```
INSERT INTO production.vw_brands(brand_name)
VALUES('Eddy Merckx');
```

This `INSERT` statement fired the `INSTEAD OF` trigger to insert a new row into the `production.brand_approvals` table.

If you query data from the production.vw_brands table, you will see a new row appear:

```
SELECT
        brand_name,
        approval_status
FROM
        production.vw_brands;
```

brand_name	approval_status
Eddy Merckx	Pending Approval
Electra	Approved
Haro	Approved
Heller	Approved
Pure Cycles	Approved
Ritchey	Approved
Strider	Approved
Sun Bicycles	Approved
Surly	Approved
Trek	Approved

The following statement shows the contents of the `production.brand_approvals` table:

```
SELECT
        *
FROM
        production.brand_approvals;
```

brand_id	brand_name
1	Eddy Merckx

In this tutorial, you have learned about SQL Server `INSTEAD OF` trigger and how to create an `INSTEAD OF` trigger for inserting data into an underlying table via a view.