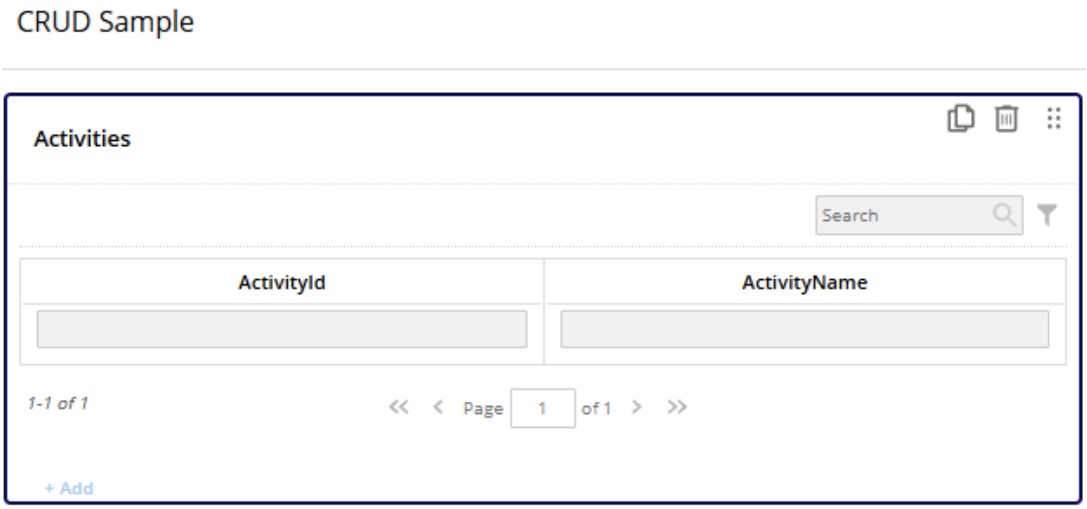
Laserfiche Forms – Tables/Collections CRUD Operations with SQL

This document outlines how to create a table or collection in a form that will update a SQL database table including inserts, updates, and deletes (CRUD - **C**reate, **R**ead, **U**pdate, **D**elete) using Laserfiche Forms Modern Designer and Workflow.

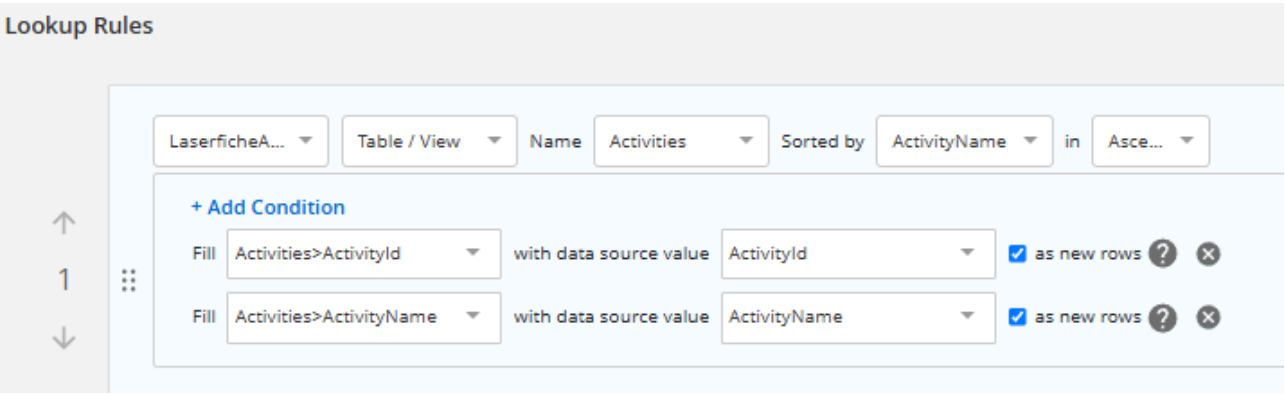
The sample uses a table called Activities. The table should be created with a unique identifier column set up as integer to auto increment, in this case ActivityId.

```
CREATE TABLE [dbo].[Activities](
	[ActivityId] [int] IDENTITY(1,1) NOT NULL,
	[ActivityName] [varchar](200) NULL
 CONSTRAINT [PK_Activities] PRIMARY KEY CLUSTERED
(
	[ActivityId] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY] TEXTIMAGE_ON [PRIMARY]
GO
```

Create a form using the modern designer then add a table with fields for ActivityId and ActivityName. The ActivityId can be set to readonly and can optionally be hidden using field rules



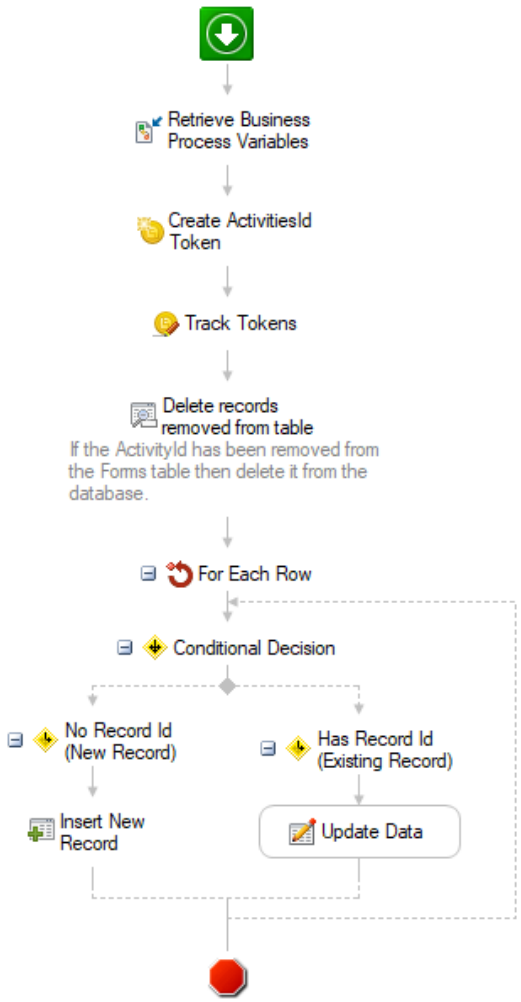
Create a Lookup Rule for the table to be populated from the Activities table with results “as new sets”.



Create a Workflow in Workflow Designer to update the SQL data using the data from the Forms table.

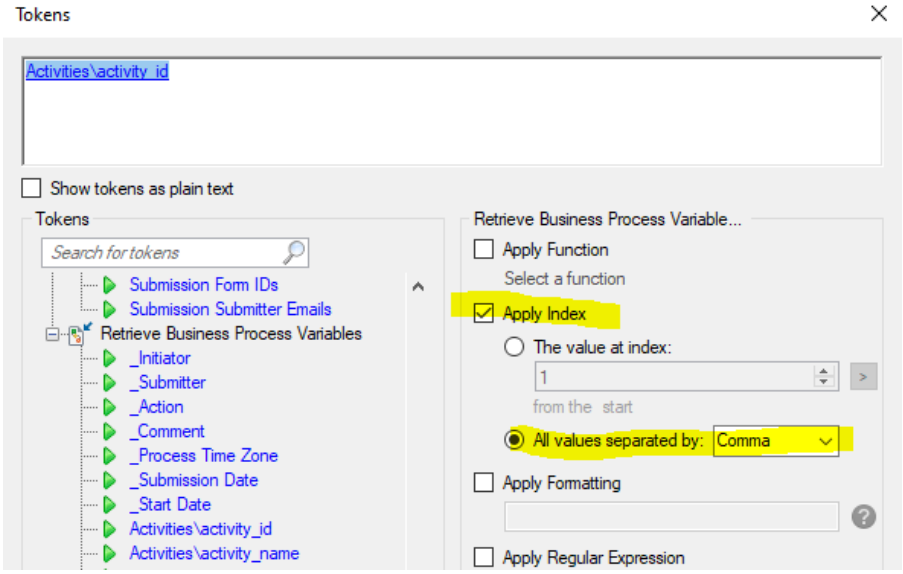
Set the Workflow Properties to be “Started by Laserfiche Forms”

Overall Workflow

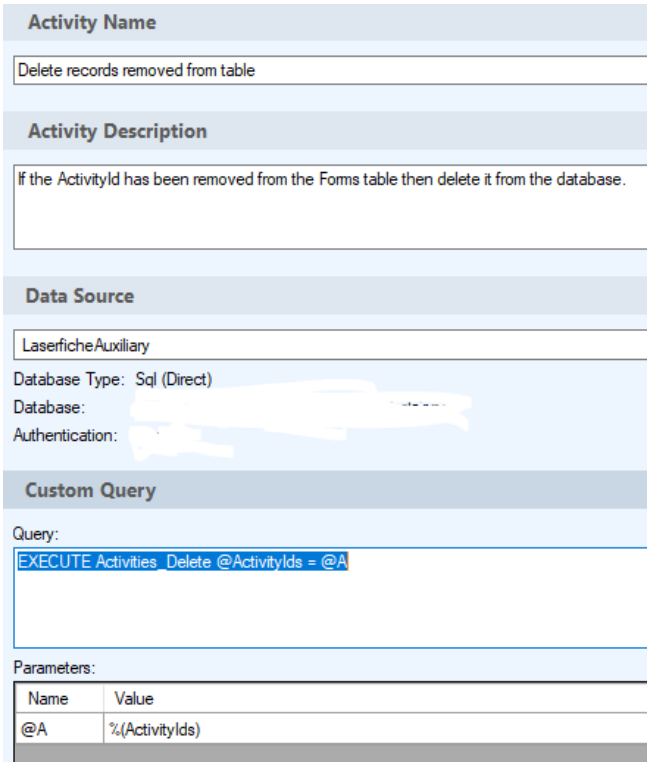


- **Retrieve Business Process Variables**
  - Set this step to retrieve the Activities table from the form
- **Create ActivityIds Token**
  - This token will get the activity_ids from the ActvitiesTable
  - Use the token builder dialog to Apply Index with comma separated values so that all record ids will be contained in a single string
  - This string will be passed to a stored procedure so that it can compare all the records returned from the form against the database table in order to determine which records have been deleted from the form table so that they can be deleted from the SQL table.

- The token is used in this manner to avoid doing a For Each Row loop.
- Passing this token to a Custom Query delete statement directly resulted in “conversion failed when converting the nvarchar value '2, 3, 4' to data type int” errors, so it was passed to a stored procedure instead so that the aggregated string could be parsed correctly.

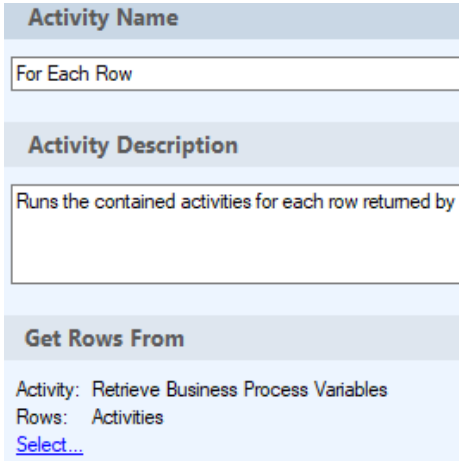


- **Track Tokens**
  - Optional step that is used for troubleshooting so that the token in the previous step can be viewed in the log.
- **Delete records removed from table**
  - Custom query – takes token containing all ids returned from form table and passes it to a stored procedure which executes the deletes (***see Activities_Delete stored procedure code below***).

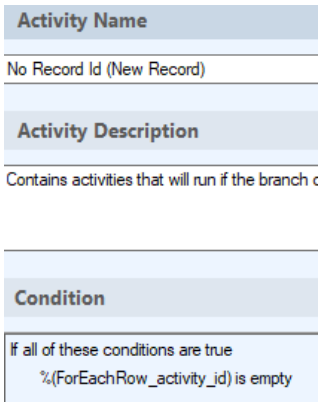


- **For Each Row**

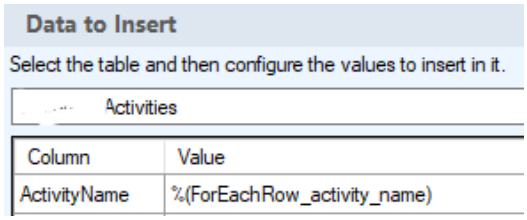
- Loop through each row of the forms table



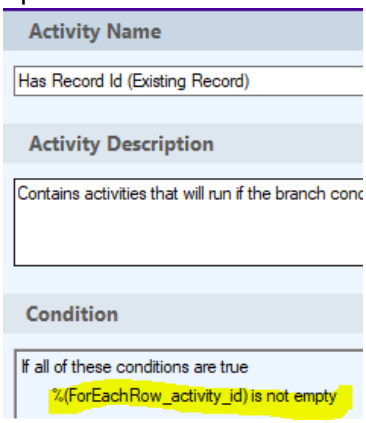
- **No Record Id (New Record)**
  - Check to see if the row returned from the table has a populated Id
  - If there is no Id then it must be a new record; Ids are automatically generated in SQL when a record is inserted because of the Identity column that was set up in the table build.



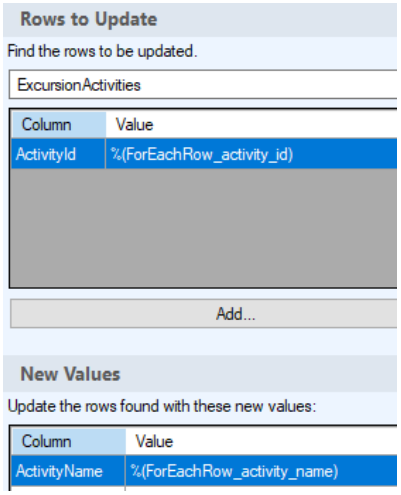
- **Insert New Record**
  - Don't need to insert the Id column as it is autogenerated by SQL, only insert other column(s).
  - Use the Insert Data tool



- **Has Record Id (Existing Record)**
  - If the row returned from a table has Id populated then it already exists in the database and should be updated



- **Update Data**
  - Use the Update Data tool



Save and publish the Workflow without any starting rules.

Create the Stored Procedure used by the “Delete records removed from table step”

```
CREATE PROC [dbo].[Activities_Delete]
(@ActivityIds VARCHAR(MAX))

AS

WITH ActivityIds AS
(SELECT
        value AS ActivityId
FROM
        STRING_SPLIT(@ActivityIds,',')
)

DELETE FROM
        Activities
WHERE
        ActivityId NOT IN (SELECT ActivityId FROM ActivityIds)
```

In the Forms Process Designer, add a Workflow Service Task to run the workflow after the Form submission.

The form table should now be able to create, update, and delete records from a SQL Table.