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webMethods Flow Tutorial - No.4 Create a LOOP Operation

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Duration: 25 minutes

This tutorial demonstrates the power and convenience of using Flow, a simple drag-and-drop language for service development. In this tutorial you will create a service that maps requests to responses, use a **LOOP** operation to process a data array, and add logic to transform the data from one format to another prior to output.

Note: The **LOOP** operation is analogous to a “for-loop” statement in languages such as Java.

Prerequisites

This tutorial builds on concepts, techniques, and objects covered previously in:

- *1. Create an IS Package and Folders*
- *2. Create and Run a Flow Service*
- *3. Create Document Types*
- The tutorials above must be completed or you can import the solution: Completed Export of 3. Create Document Types.zip (http://techcommunity.softwareag.com/protected/download/developer-communities/webmethods/FreeTrial/Completed Export of 3. Create Document Types.zip) using these instructions: Import an IS Package (http://softwareag.com/)
- The IS must be started. Instructions on how to start the IS are found in the **Prerequisites** part of the 1. Create an IS Package and Folders (http://techcommunity.softwareag.com/pwiki/-/wiki/Main/webMethods+Flow+Tutorial+-+Create+an+IS+Package+and+Folders). Create an IS Package and Folders]] FLOW tutorial.

Step Outline

You create the services by:

- Creating a Flow service that maps requests to responses
- Adding and configuring the **MAP** and **LOOP** operations
- Adding transformation logic
- Importing a data file as input to the service

Step 1: Create a Flow Service to Map Requests to Responses

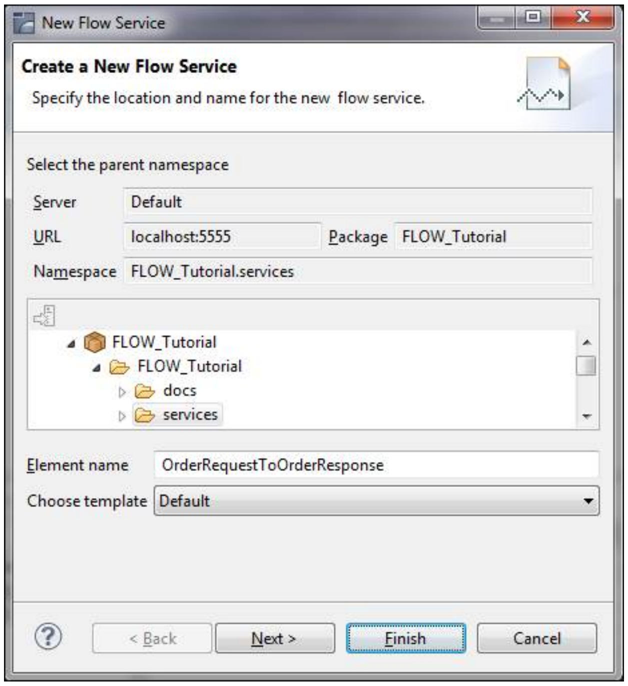
In this step: You create a Flow service that maps requests to responses.

To create the Flow service:

- Right-click on the **FLOW_Tutorial.services** folder and select **New > Flow Service**

Designer prompts you for a name.

- Name the new service **OrderRequestToOrderResponse** and click **Finish:**


New Flow Service

Create a New Flow Service

Specify the location and name for the new flow service.

Select the parent namespace

Server: Default

URL: localhost:5555 Package: FLOW_Tutorial

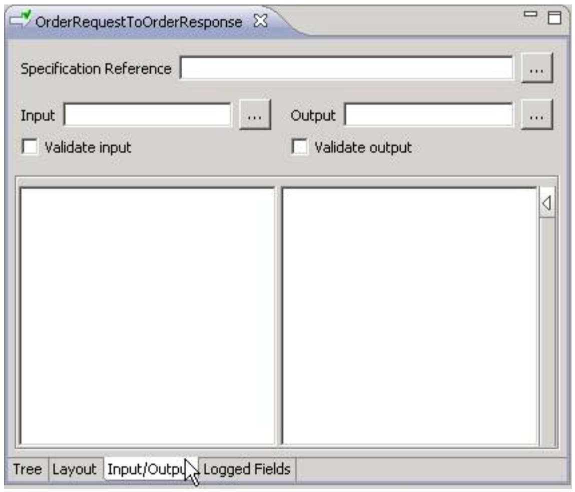
Namespace: FLOW_Tutorial.services

Element name: OrderRequestToOrderResponse

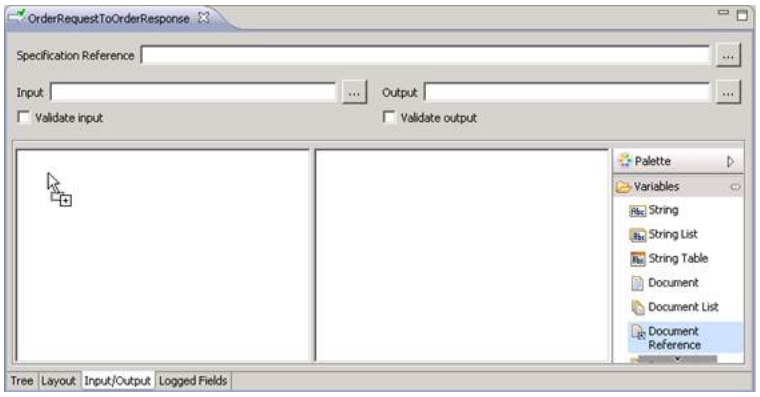
Choose template: Default

Designer displays the new service in the **Package Navigator** view, and opens the service in the **Flow Editor** in the top center panel of Designer.

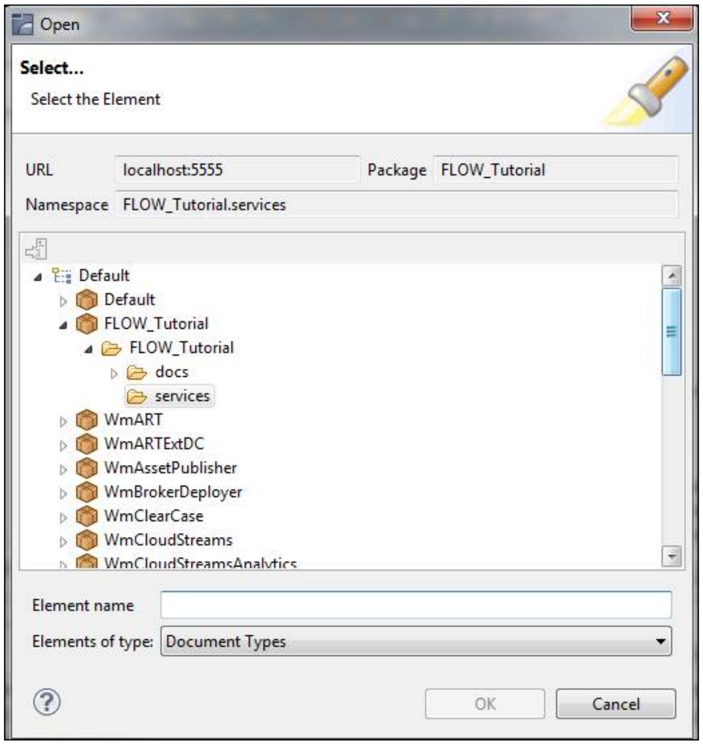
- Select the **Input/Output** tab at the bottom of the Flow Editor view



- Expand the **Palette** to the right of the **Flow Editor** view's **Input/Output** tab (or use one of the alternate methods described in the previous tutorial) to add a **Document Reference** to the left (input) side of the service signature



Designer displays the **Select…** dialog:


Open

Select...

Select the Element

URL: localhost:5555 Package: FLOW_Tutorial

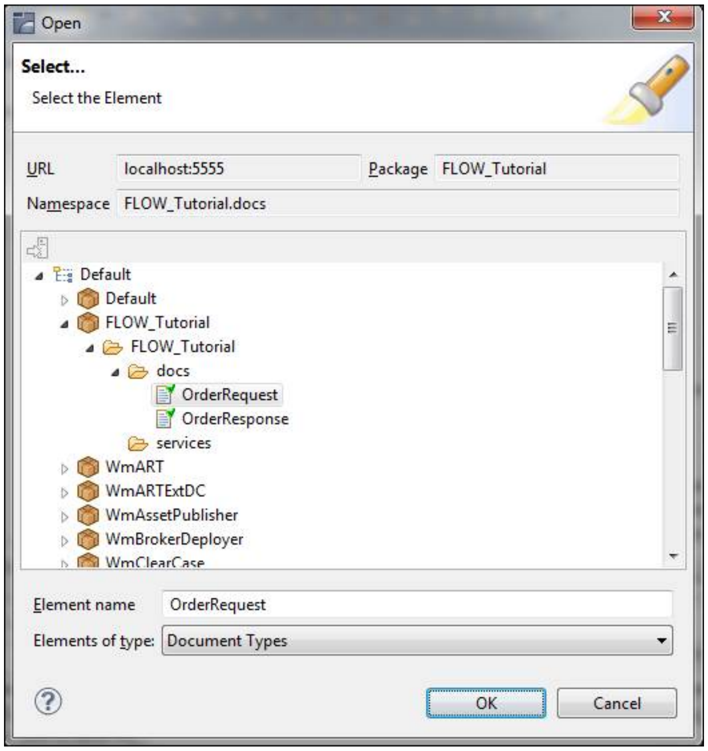
Namespace: FLOW_Tutorial.services

Default
- Default
- FLOW_Tutorial
  - FLOW_Tutorial
    - docs
    - services
- WmART
- WmARTExtDC
- WmAssetPublisher
- WmBrokerDeployer
- WmClearCase
- WmCloudStreams
- WmCloudStreamsAnalytics

Element name:

Elements of type: Document Types

- Click to expand the **FLOW_Tutorial -> docs** folder, select the **OrderRequest** Document Type, and click **OK**:


Open

Select...

Select the Element

URL: localhost:5555 Package: FLOW_Tutorial

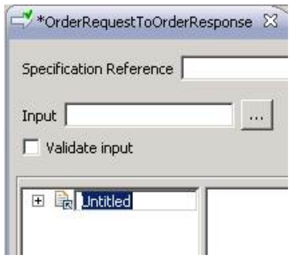
Namespace: FLOW_Tutorial.docs

Default
- Default
- FLOW_Tutorial
  - FLOW_Tutorial
    - docs
      - OrderRequest
      - OrderResponse
    - services
- WmART
- WmARTExtDC
- WmAssetPublisher
- WmBrokerDeployer
- WmClearCase

Element name: OrderRequest

Elements of type: Document Types

Designer creates the new document reference in the **Input/Output** tab:


*OrderRequestToOrderResponse

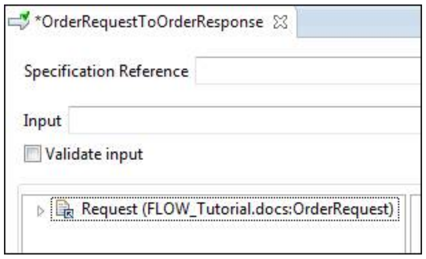
Specification Reference

Input

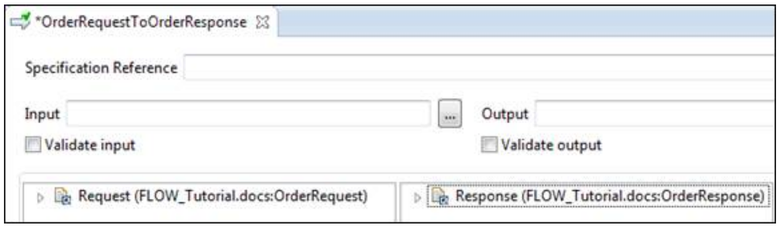
Validate input

Untitled

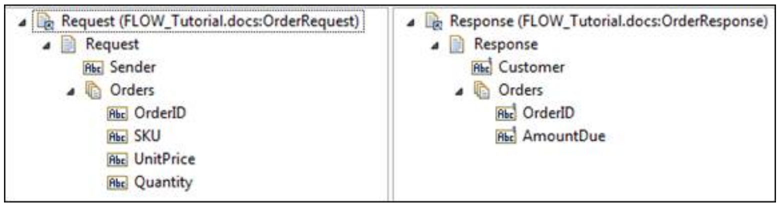
- Name the document **Request:**


*OrderRequestToOrderResponse
Specification Reference
Input
Validate input
Request (FLOW_Tutorial.docs:OrderRequest)

- Add a **Document Reference** output to the service
- In the same way that you added the OrderRequest Document Reference to the input of the service, add a Document Reference to FLOW_Tutorial.docs:OrderResponseto the service output, and name it**Response**


*OrderRequestToOrderResponse
Specification Reference
Input
Output
Validate input
Validate output
Request (FLOW_Tutorial.docs:OrderRequest)
Response (FLOW_Tutorial.docs:OrderResponse)

You have now defined the input and output for the **OrderRequestToOrderResponse** service. You can expand the **Request** and **Response** nodes to display their structure, which was created by referencing the document types that you created previously:


Request (FLOW_Tutorial.docs:OrderRequest)
Request
Sender
Orders
OrderID
SKU
UnitPrice
Quantity
Response (FLOW_Tutorial.docs:OrderResponse)
Response
Customer
Orders
OrderID
AmountDue

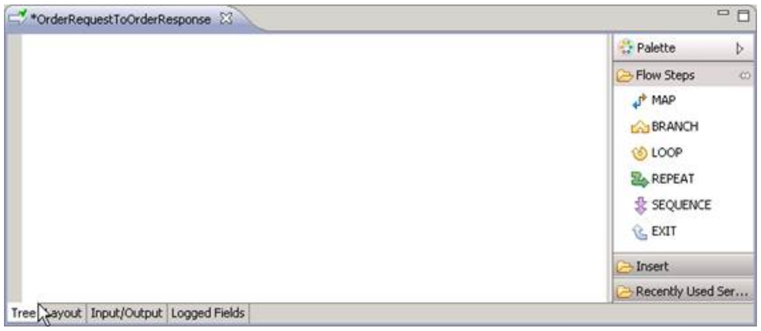
Step 2: Add Map and Loop Steps to the Service

In this Step: You will add two **MAP** steps and **LOOP** a step to the service.

To add a MAP step:

- Select the **Tree** tab at the bottom of the **Flow Editor**, and expand the **Palette** to the right of the editor.

The editor functions, including the **MAP** and **LOOP** tools are now available:



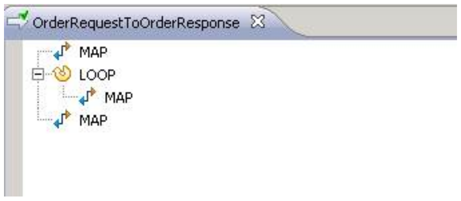
- Add the following steps to the service, in order:

a **MAP**

a **LOOP**

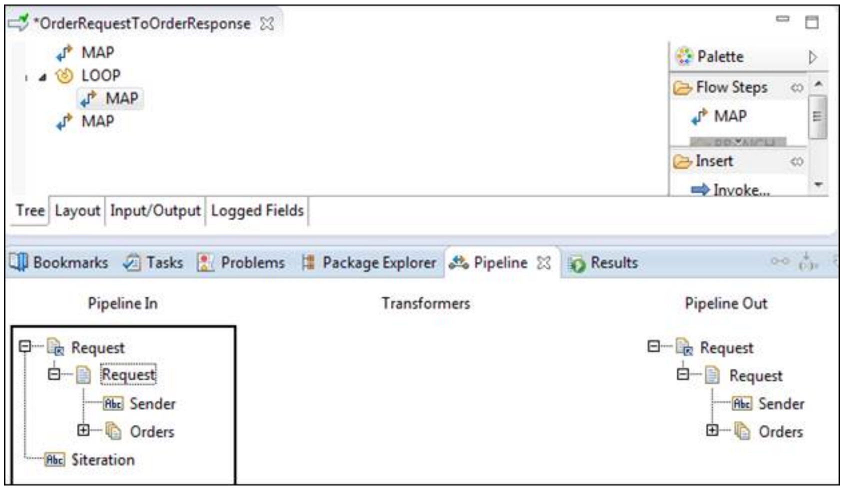
another **MAP** as a child of the **LOOP**

another **MAP** but not as a child of the **LOOP**



- Select the **Pipeline** tab in the bottom panel

The **Pipeline In** and **Pipeline Out** panels of the **Pipeline** view, show the objects **Request/Request/Orders** and **Response/Response/Orders** as Document Lists:

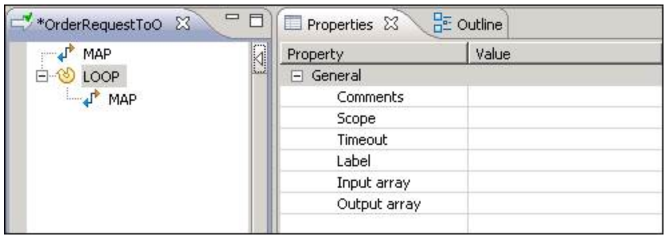


You can now set the **LOOP Input** array and **Output** array properties of the **LOOP** step.

To set the **Input** array property of the **LOOP** to **Request/Request/Orders:**

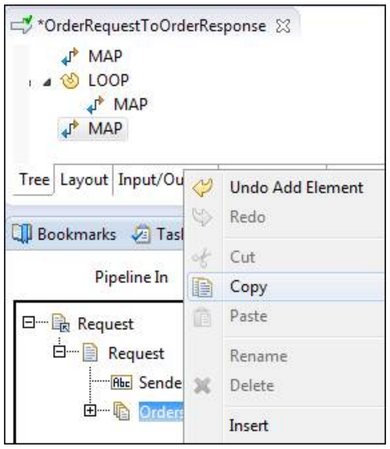
- Select the **LOOP** step in the flow editor

Designer displays the **LOOP** Properties:

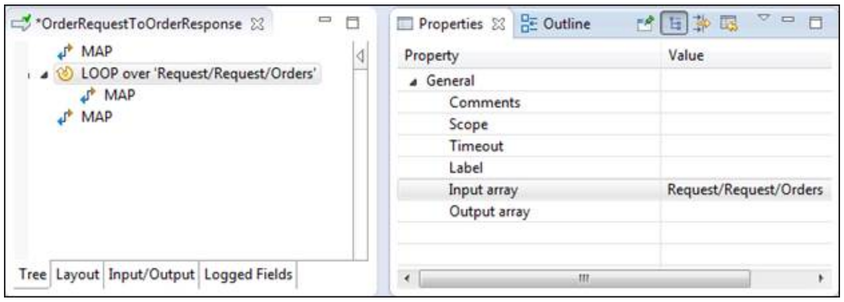


Property	Value
General	
Comments	
Scope	
Timeout	
Label	
Input array	
Output array	

- Select the last **MAP** in the service and copy the array element **Request/Request/Orders** from the **Pipeline** view:



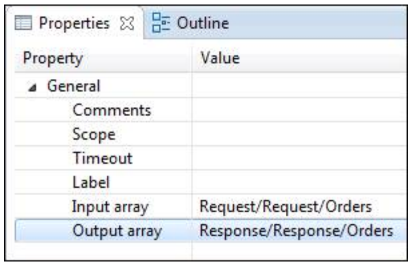
- Select the **LOOP** again to display the **LOOP Properties**
- Paste **Request/Request/Orders** directly into the **Input** array field:


*OrderRequestToOrderResponse
MAP
LOOP over 'Request/Request/Orders'
MAP
MAP
Tree
Layout
Input/Output
Logged Fields
Properties
Outline

Property	Value
General	
Comments	
Scope	
Timeout	
Label	
Input array	Request/Request/Orders
Output array	

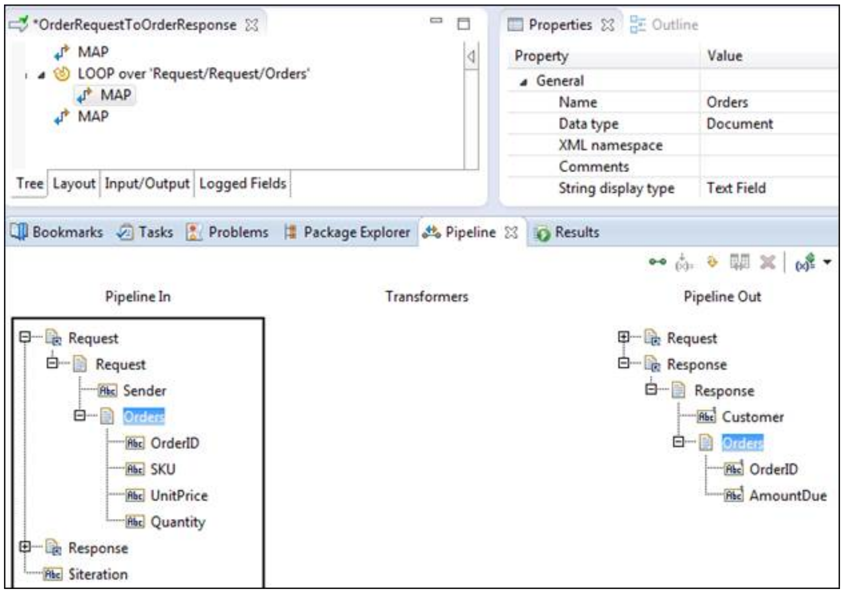
Best Practice: Copying and pasting reduces the chance of typing errors, especially when dealing with very complex structures and long names.

- Follow the same process to set the **LOOP Output** array property to **Response/Response/Orders:**



Property	Value
General	
Comments	
Scope	
Timeout	
Label	
Input array	Request/Request/Orders
Output array	Response/Response/Orders

If you select the **Map** step under the **LOOP** step and view the **Pipeline Editor**, you will notice that the **Pipeline In** and **Pipeline Out** now shows **Request/Request/Orders** and **Response/Response/Orders** as single **Documents** instead of **Document Lists:**



Property	Value
General	
Name	Orders
Data type	Document
XML namespace	
Comments	
String display type	Text Field

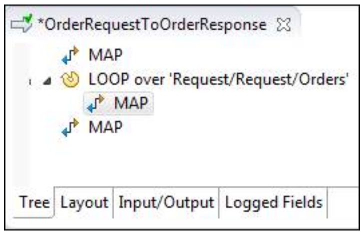
You may now safely map data within the **LOOP**.

Step 3: Map Data within the LOOP

In this step: You will map data within the **LOOP**.

To map the data:

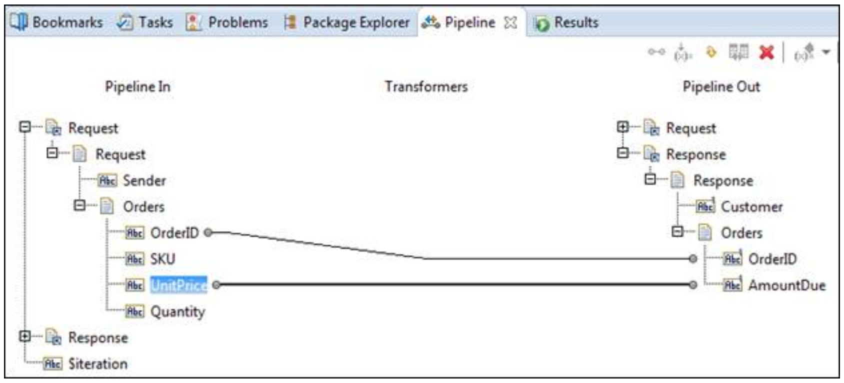
- select the nested **MAP** step:


*OrderRequestToOrderResponse
MAP
LOOP over 'Request/Request/Orders'
MAP
MAP
Tree
Layout
Input/Output
Logged Fields

- Link the following elements of the **MAP** step in the **Pipeline** tab:

Pipeline In: Request/Request/Orders/OrderID to: **Pipeline Out: Response/Response/Orders/OrderID**

Pipeline In: Request/Request/Orders/UnitPrice to: **Pipeline Out: Response/Response/Orders/AmountDue**

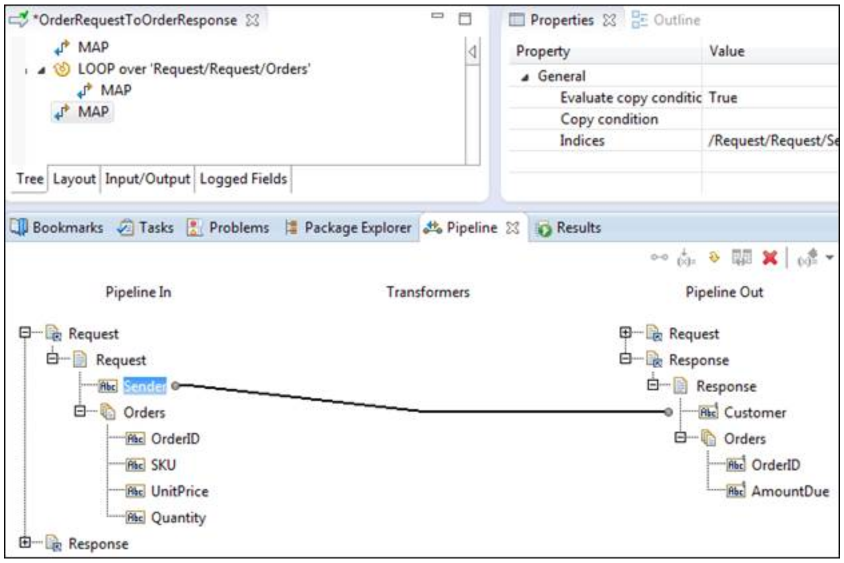


Note: You can map elements by:

- Selecting the source element, then dragging and dropping it at the destination element or by:

- Selecting the source and selecting the destination elements, then clicking the **Link** (
) button
- Select the last **MAP** in the service and link the **Sender** data as follows:

Pipeline In: Request/Request/Sender to: **Pipeline Out: Response/Response/Customer**



Property	Value
General	
Evaluate copy conditic	True
Copy condition	
Indices	/Request/Request/Se

- **Save**
  your new **OrderRequestToOrderResponse** service

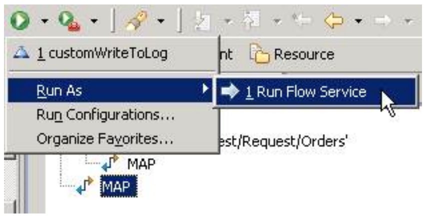
You can now run the service and load a file as input to the service.

Step 4: Run the Service with Data from an Input File

In this step: You will run the service and input data by loading an XML file.

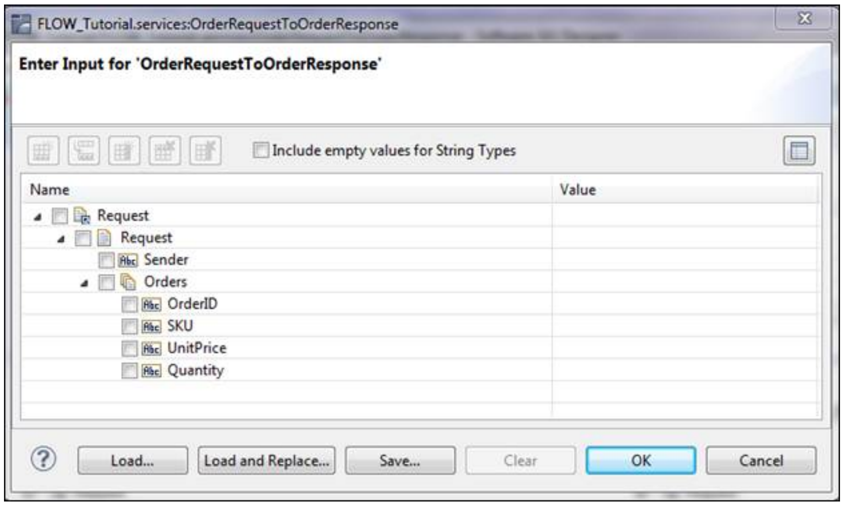
To load the input file and run the service:

- Select the **OrderRequestToOrderResponse** editor tab (
  OrderRequestToOrderResponse
  ), pull down the Run (
) menu from the Designer toolbar and choose to **Run As -> Run Flow Service**



Designer displays the Input dialog.

- Select **Load…** button


FLOW_Tutorial.services:OrderRequestToOrderResponse

Enter Input for 'OrderRequestToOrderResponse'

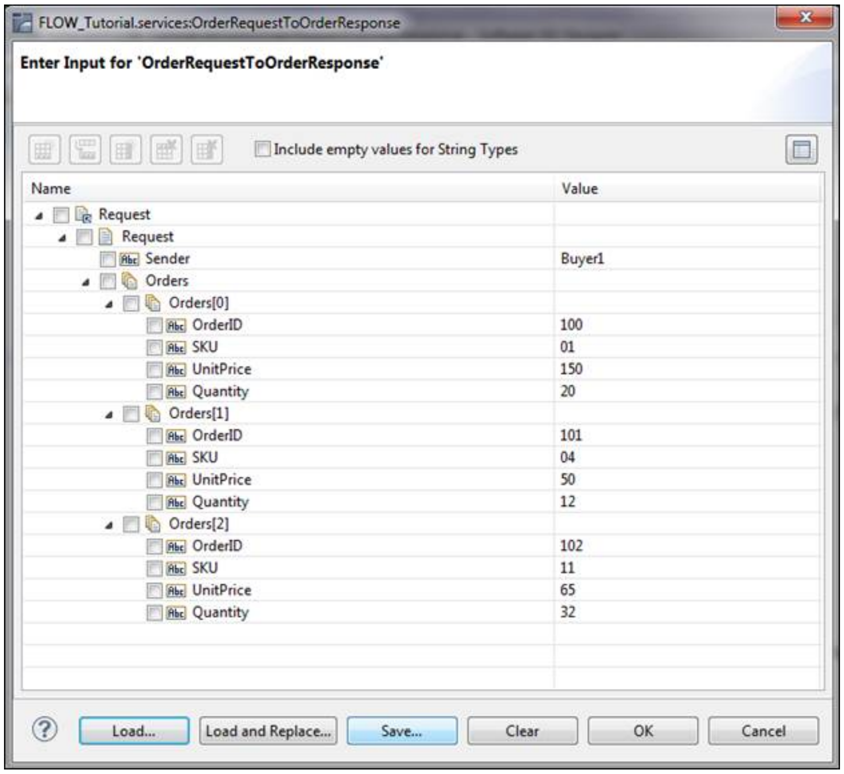
Include empty values for String Types

Name	Value
Request	
Request	
Sender	
Orders	
OrderID	
SKU	
UnitPrice	
Quantity	

Designer displays the **Open** explorer dialog.

- Download and select the file: FLOW_Tutorial_4_Input.xml (http://techcommunity.softwareag.com/protected/download/developer-communities/webmethods/FreeTrial/FLOW_Tutorial_4_Input.xml) and click **Open**

Designer displays the data loaded from the input file. The input file contains the following **Orders:**


FLOW_Tutorial.services:OrderRequestToOrderResponse

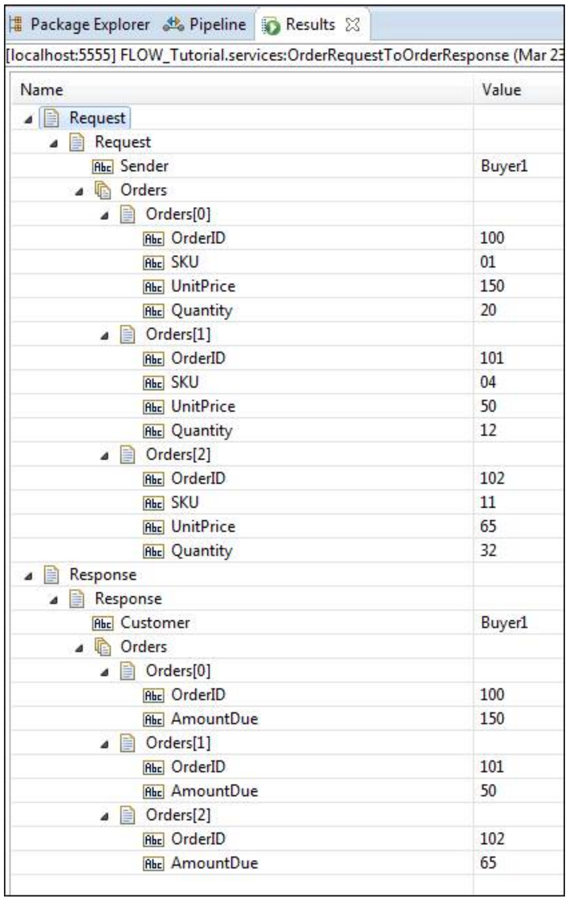
Enter Input for 'OrderRequestToOrderResponse'

Include empty values for String Types

Name	Value
Request	
Request	
Sender	Buyer1
Orders	
Orders[0]	
OrderID	100
SKU	01
UnitPrice	150
Quantity	20
Orders[1]	
OrderID	101
SKU	04
UnitPrice	50
Quantity	12
Orders[2]	
OrderID	102
SKU	11
UnitPrice	65
Quantity	32

Sender	Buyer1			
Orders	**OrderID**	**SKU**	**UnitPrice**	**Quantity**
	100	01	150	20
	101	04	50	12
	102	11	65	32

- Select **OK.** Designer runs the service and displays the **Results** tab:



[localhost:5555] FLOW_Tutorial.services:OrderRequestToOrderResponse (Mar 23

Name	Value
Request	
Request	
Sender	Buyer1
Orders	
Orders[0]	
OrderID	100
SKU	01
UnitPrice	150
Quantity	20
Orders[1]	
OrderID	101
SKU	04
UnitPrice	50
Quantity	12
Orders[2]	
OrderID	102
SKU	11
UnitPrice	65
Quantity	32
Response	
Response	
Customer	Buyer1
Orders	
Orders[0]	
OrderID	100
AmountDue	150
Orders[1]	
OrderID	101
AmountDue	50
Orders[2]	
OrderID	102
AmountDue	65

You can verify that the input file data is mapped correctly by comparing the values in the **Input** dialog to those in the **Results** pane.

Step 5: Add Transformation Logic to the Data Mapping

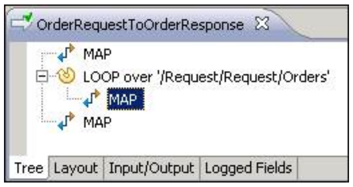
Flow provides Transformers that enable you to quickly and easily implement data transformations. Transformers are lightweight service invocations that can be consolidated into a single **MAP** step.

In this step: You will insert a Transformer into the **MAP** step to transform data as it is being processed by the service.

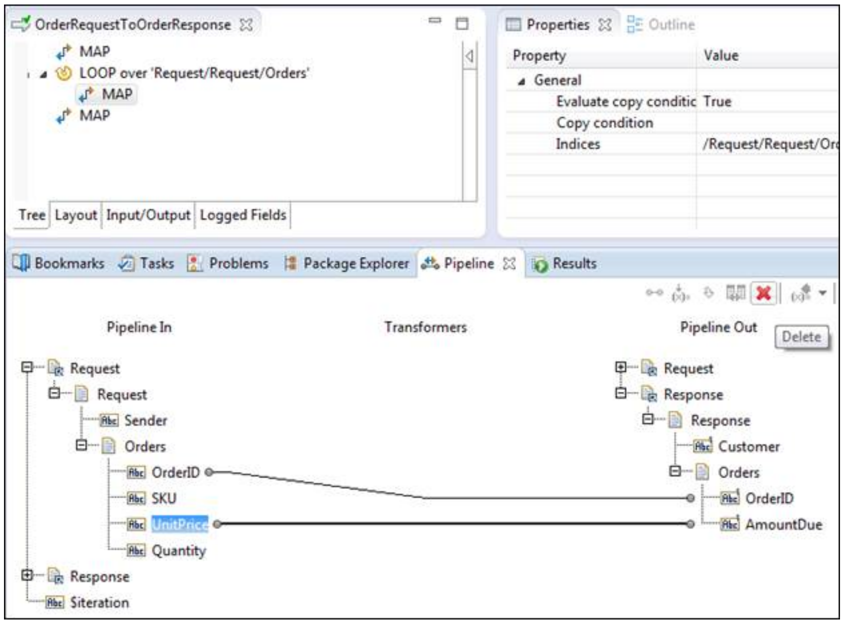
Note: You need to delete the link between UnitPrice and AmountDue before you add the Transformer.

To delete the data mapping into **Response/Response/Orders/AmountDue** on the nested **MAP** step:

- Select the **MAP** step, then select the **Pipeline** tab:


OrderRequestToOrderResponse
MAP
LOOP over '/Request/Request/Orders'
MAP
MAP
Tree
Layout
Input/Output
Logged Fields

- Select the link between the **UnitPrice** and **AmountDue** elements, and click the **Delete** **Pipeline View** toolbar button:

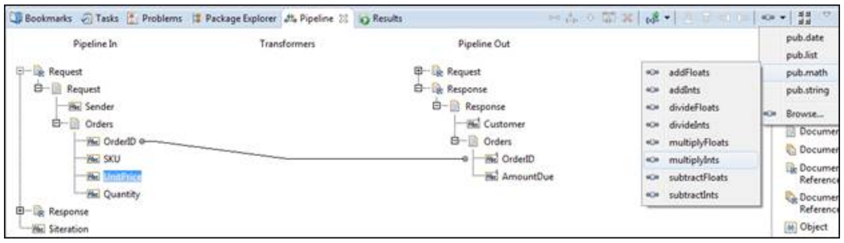


You can now add a Transformer to the service.

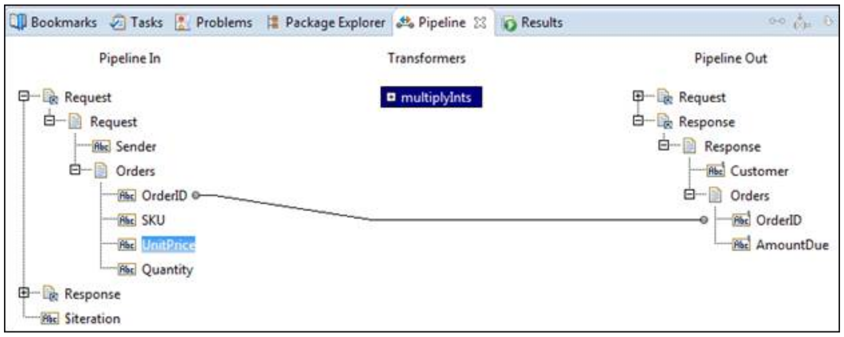
To add the transformer **pub.math:multiplyInts:**

- From the **Pipeline** view toolbar, click the arrow down part of the **Transformer** menu

  select **pub.math**, then select **multiplyInts:**



Designer adds the **pub.math:multiplyInts** Transformer to the **Pipeline.**

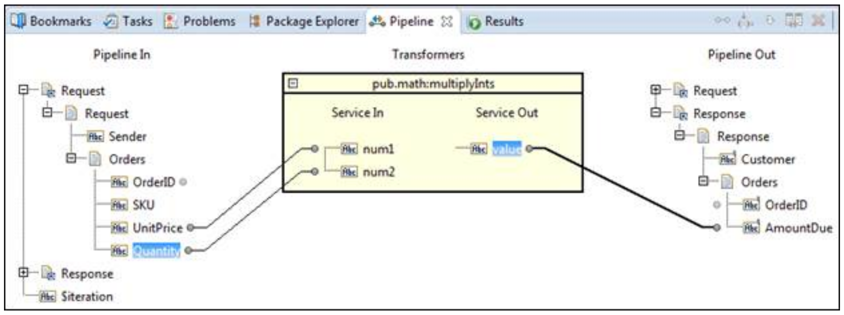


- Expand the Transformer, then map the following inputs:

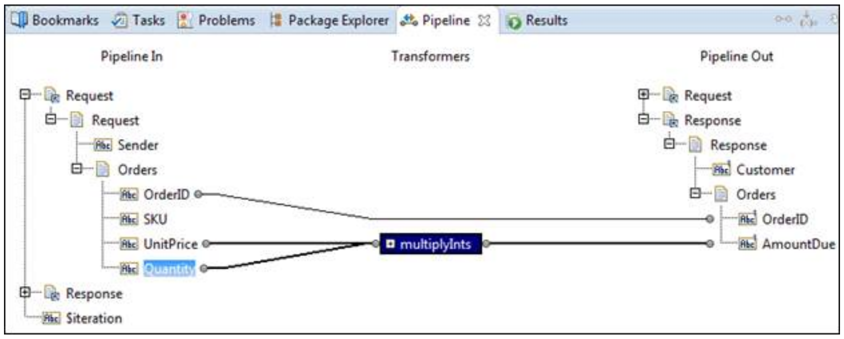
Request/Request/Orders/UnitPrice to: **num1** of the transformer **Service In**

Request/Request/Orders/ Quantity to: **num2** of the transformer **Service In**

- Map the Transformer **Service Out** value variable to: **Response/Response/Orders/AmountDue**



- Collapse the Transformer to review the service mapping:



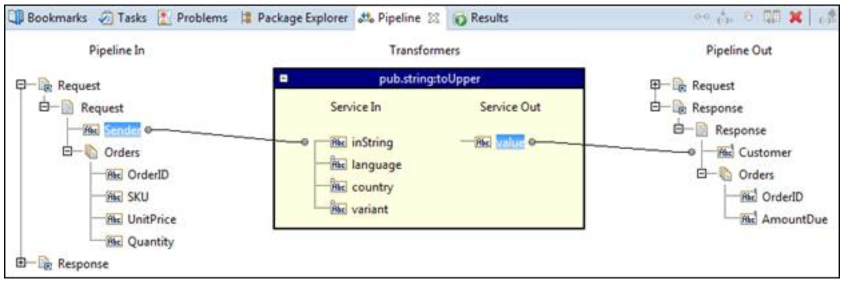
To add the transformer **pub.string:toUpper** to the final **MAP** step:

- Select the final **MAP** step, and delete the link between **Request/Request/Sender** and **Response/Response/Customer**
- add the Transformer **pub.string:toUpper** to the final **MAP** step, and map the input and output as follows:

Request/Request/Sender to: inString

- map the output as follows:

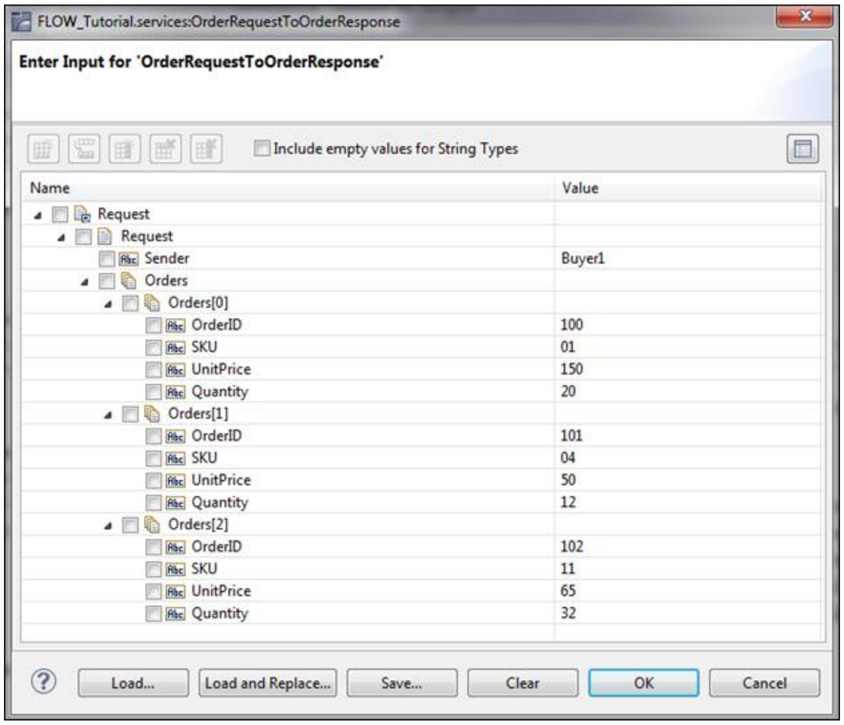
value to: **Response/Response/Customer**



Select the **Save** button. You can now run the service again.

- Select **Run** from the **Designer** toolbar:

Designer displays the data loaded from the input file:



FLOW_Tutorial.services:OrderRequestToOrderResponse

Enter Input for 'OrderRequestToOrderResponse'

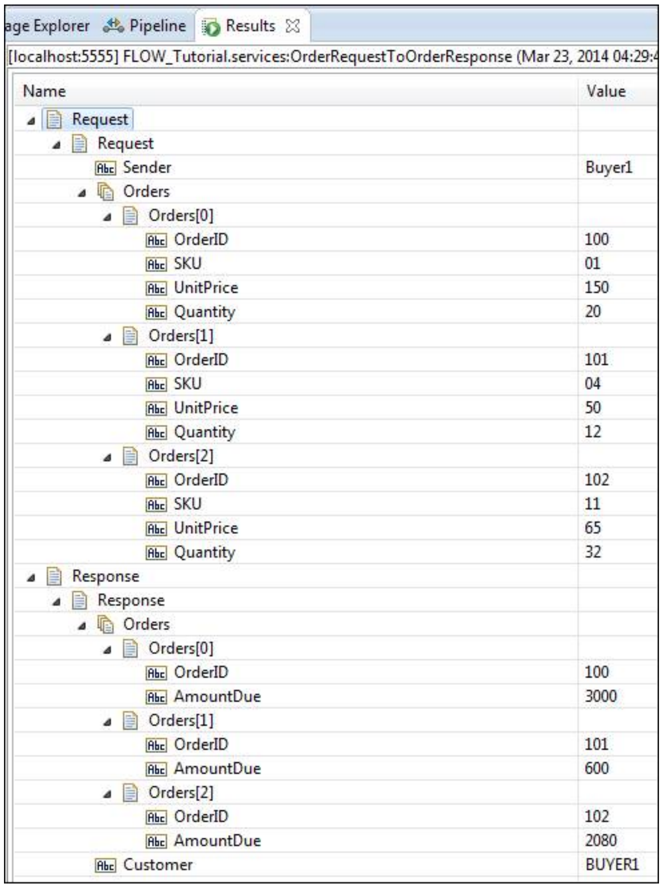
Include empty values for String Types

Name	Value
Request	
Request	
Sender	Buyer1
Orders	
Orders[0]	
OrderID	100
SKU	01
UnitPrice	150
Quantity	20
Orders[1]	
OrderID	101
SKU	04
UnitPrice	50
Quantity	12
Orders[2]	
OrderID	102
SKU	11
UnitPrice	65
Quantity	32

Sender	Buyer1			
Orders	**OrderID**	**SKU**	**UnitPrice**	**Quantity**
	100	01	150	20
	101	04	50	12
	102	11	65	32

- Select **OK**

Designer runs the service and displays the **Results** tab:



[localhost:5555] FLOW_Tutorial.services:OrderRequestToOrderResponse (Mar 23, 2014 04:29:4

Name	Value
Request	
Request	
Sender	Buyer1
Orders	
Orders[0]	
OrderID	100
SKU	01
UnitPrice	150
Quantity	20
Orders[1]	
OrderID	101
SKU	04
UnitPrice	50
Quantity	12
Orders[2]	
OrderID	102
SKU	11
UnitPrice	65
Quantity	32
Response	
Response	
Orders	
Orders[0]	
OrderID	100
AmountDue	3000
Orders[1]	
OrderID	101
AmountDue	600
Orders[2]	
OrderID	102
AmountDue	2080
Customer	BUYER1

Conclusion

You have created a typical Flow service that maps one data structure to another, loops over arrays, and performs simple data transformation.

Note: You can also use the **REPEAT** function to perform operations similar to **LOOP**. If you are familiar with Java, you can think of a **REPEAT** as a “while loop”.

To import the solution of this tutorial download Completed Export of 4. Create a LOOP Operation.zip (http://techcommunity.softwareag.com/ecosystem//export/sites/default/public/webmethods/products/esb_and_integration/codesamples/.attachments/20140411140654865_000_Completed_Ex (http://techcommunity.softwareag.com/protected/download/developer-communities/webmethods/FreeTrial/Completed Export of 4. Create a LOOP Operation.zip) and follow the directions in the Import an IS Package (http://techcommunity.softwareag.com/pwiki/-/wiki/Main/Import+an+IS+Package) tutorial.

41 Attachments (http://techcommunity.softwareag.com/pwiki?p_p_id=36&p_p_lifecycle=0&p_p_state=pop_up&p_p_mode=view&_36_struts_action=%2Fwiki%2Fview_page_attachments&p_r_p_185834411_nodeName=Main&p_r_p_185834411_title=webMethods+Flow+Tutorial+-+No.4+Create+a+LOOP+Operation&_36_redirect=http%3A%2F%2Ftechcommunity.softwareag.com%2Fpwiki%2F-%2Fwiki%2FMain%2FwebMethods%2BFlow%2BTutorial%2B-%2BNo.4%2BCreate%2Ba%2BLOOP%2BOperation%2Fpop_up%3F_36_viewMode%3Dprint)

115947 Views

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Good sample/example for a fresher..........

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Thanks!