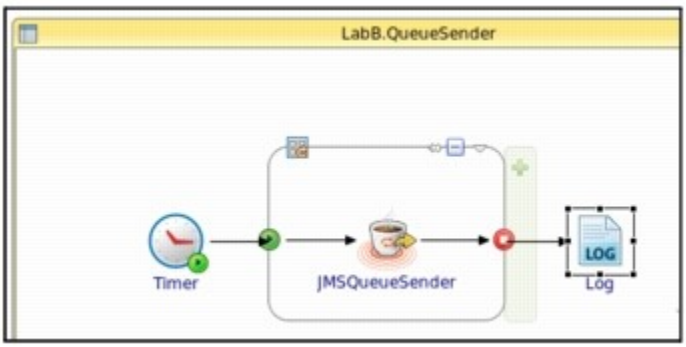
Lab B - Exercise 1: Compare Acknowledgement Modes

Overview

In this exercise, you will send multiple messages to a queue using a JMS Send Message activity, and compare two processes which consume these messages using a JMS Receive Message activity - one configured to use AUTO_ACKNOWLEDGE mode, and the other configured to use TIBCO_EMS_EXPLICIT_ACKNOWLEDGE



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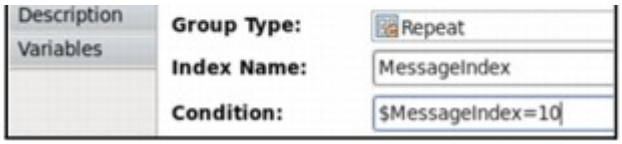
Steps

1. Create the QueueSender process and add JMSSendMessage activity.

- In Project Explorer, create the folder *EMS206Project/Processes/**LabB***
- Add a new BusinessWorks Process to **LabB**
  - Name: **`QueueSender`**
- From the *JMS* palette, add the **JMS Send Message** activity into the process diagram
- From the *General* palette, add the **Log** activity and **Timer** activity
- Create transitions:
  - From **Timer** to **JMSSendMessage**
  - From **JMSSendMessage** to **Log**

2. Create a group to send 10 messages.

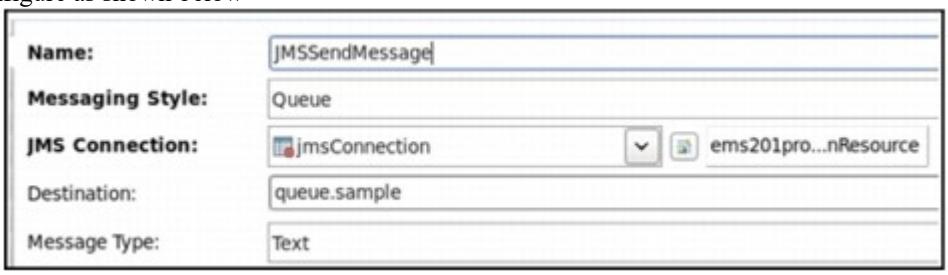
- Right-click **JMSSendMessage** activity and choose ***Create a Group > Repeat*** from the menu
- Select the group and in *Properties* view configure:
  - Name: **`MessageIterate`**
  - Index Name: **`MessageIndex`**
  - Condition: **`$MessageIndex=10`**



- **Save**

3. Configure the JMSSendMessage activity.

- Double-click the **JMSSendMessage** activity
- Select the *General* tab in *Properties* view
  - Configure as shown below



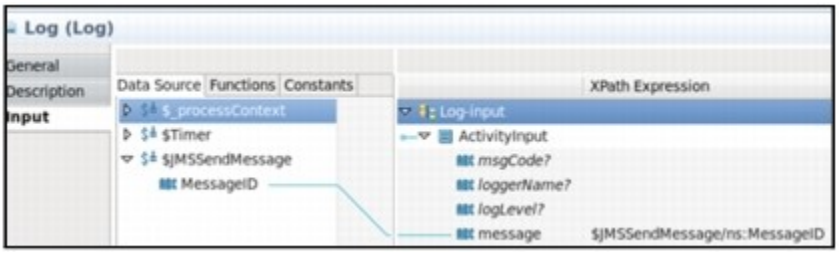
- Select the *Input* tab and in *Activity Input* > ***Body***, create the following XPath Expression

```
concat("Message number ",xsd:string($MessageIndex))
```

- **Save** the project

4. Configure the log activity.

- Select the **Log** activity and choose *Properties*
  - Select the *Input* tab
    - Drag the **`$JMSSendMessage/MesssageID`** from *Data Source* to the **`message`** in *Activity Input*



- **Save**

5. Create and configure the Auto-Ack Queue Receiver process.

- Create one more process in **LabB**
  - Name: **`Auto-AckQueueReceiver`**
- Add the following activities to the process:
  - **JMS Receive Message**
  - **Log**
- Create a transition from **JMSReceiveMessage** to **Log**

6. Configure the process activities.

- **JMSReceiveMessage** activity, *Properties* > ***General***
  - Name:**`JMSQueueReceiver`**
  - Messaging Style: **Queue**
  - JMS Connection: **EMS206project.JMSConn** (Browse to select)
  - Destination Queue: **`queue.sample`**
  - Acknowledgement Mode: **Auto** (keep default)

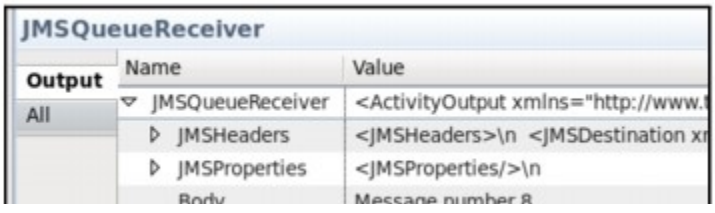
Tip: Scroll to the bottom of General Properties to reveal the Acknowledgement Mode options.

- Create mapping for the **Log** activity
  - With the **Log** activity selected, select *Properties* > ***Input***
  - Drag the **`$JMSQueueReceiver/Body`** from *Data Source* to *Activity Input* > ***message***

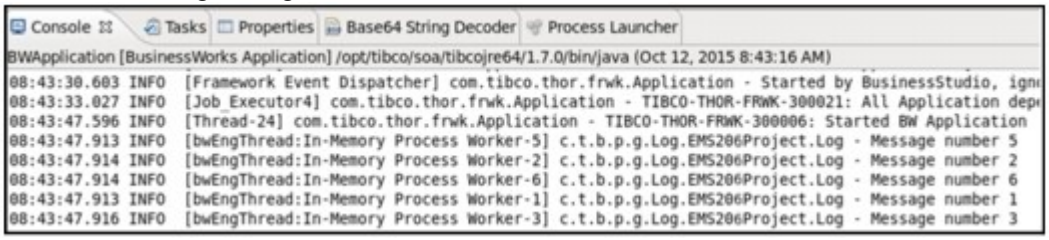
- **Save** your changes

7. Test sending and receiving multiple messages.

- Configure *EMS206Project* > *Module Descriptors* > ***Components*** list
  - Clear all components from the list
  - **Create Process Component** for the process *QueueSender* in LabB
  - **Sav**e
- Launch the debugger
  - Observe the flow while the job is running - **JMSSendMesssage** is activated repeatedly
  - Terminate the debugger
- Reconfigure **Components** list to include only *Auto-AckQueueReceiver*
  - **Save**
- Relaunch the debugger
  - Select *BusinessWorks Jobs* view and observe that the 10 individual jobs were executed
    - Each job received and processed a message from the queue
  - Select any of the completed jobs and observe the message processed by it
    - Click on the **JMS Queue Receiver**'s *Job Data* tab to view the message body



- You can see all Log messages in the *Console* view



- **Terminate** the debugger
- Switch to **Design** perspective

8. Create a new process to receive messages using TIBCO-EMS Explicit Acknowledge mode.

- In Project Explorer, select the *Auto-AckQueueReceiver* process
- Copy and paste it into the **LabB**
- Modify the copy
  - Name: **`TIBCO-EMS-ExplicitAckQueueReceiver`**
  - Update the **JMSQueueReceiver** activity
    - Acknowledge mode: **TIBCO EMS Explicit Client** (from the dropdown)
- From the *General Activities* palette, add the **Confirm** activity to the process

Tip: When using TIBCO EMS Explicit mode, the message must be explicitly confirmed to the server using the Confirm activity. Each message will be redelivered until it is confirmed or it expires.

- Modify transitions as shown on the image below

- Select **Log** activity and choose *Input* tab
  - Message: **`$JMSQueueReceiver/Body`**
- Select **Confirm** activity
  - Confirm Event: **JMSQueueReceiver** (select from the dropdown)
- **Save** the changes

9. Test the TIBCO-EMS-ExplicitAck Queue Receiver process.

- Run the *QueueSender* process to send another set of ten messages to queue.sample
  - Configure the component list with the *QueueSender* as the only component
  - Run the debugger
  - Verify that the messages are sent
    - You can do so using EMS Admin Tool - by executing the command

      `show queue queue.sample`

      OR

You can check the *BusinessWorks Jobs* view in BusinessStudio to view **JMSSendMessage** activities

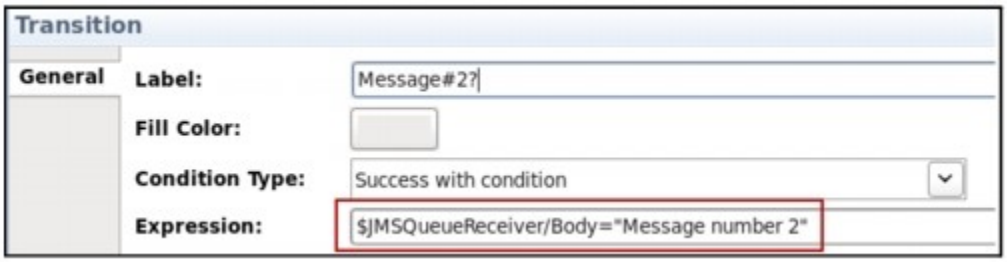
- Run *TIBCO-EMS-ExplicitAck Queue Receiver*
  - Configure the component list to contain *TIBCO-EMS-ExplicitAck Queue Receiver*
  - Run the debugger
  - Select the *Console* view to verify that all messages are received once

```
er-5] c.t.b.p.g.Log.EMS206Project.Log - Message number 5
er-1] c.t.b.p.g.Log.EMS206Project.Log - Message number 1
er-3] c.t.b.p.g.Log.EMS206Project.Log - Message number 3
er-2] c.t.b.p.g.Log.EMS206Project.Log - Message number 2
er-6] c.t.b.p.g.Log.EMS206Project.Log - Message number 6
er-7] c.t.b.p.g.Log.EMS206Project.Log - Message number 7
er-4] c.t.b.p.g.Log.EMS206Project.Log - Message number 4
er-8] c.t.b.p.g.Log.EMS206Project.Log - Message number 8
er-6] c.t.b.p.g.Log.EMS206Project.Log - Message number 10
er-7] c.t.b.p.g.Log.EMS206Project.Log - Message number 9
```

  - Notice that the result is the same as when running the **JMSQueueReceiver** with Auto Acknowledgement
- **Terminate** the debugger

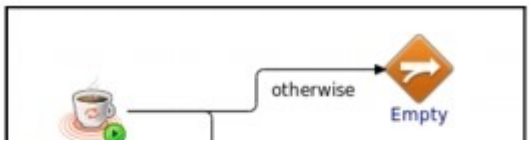
10. Modify the process to use conditional confirmation.

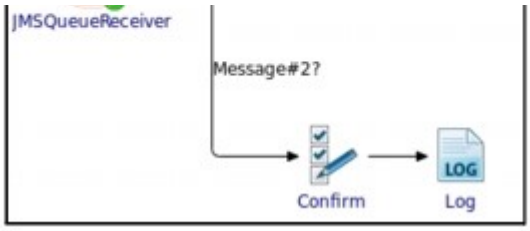
- Modify the *TIBCO-EMS-Explicit-Ack Queue Receiver* process
  - Add an **Empty** activity from the *Basic Activities* palette
  - Configure the transition from **JMSQueueReceiver** to **Confirm**
    - Label: **`Message#2?`**
    - Condition Type: **Success with condition** (from dropdown)
    - Expression: Build the Xpath to contain the boolean expression shown below:



Note: When this condition is tested, only the exact match in the message body will cause the message to be logged. Recall that the body of the message was configured in the Exercise 1, Step Configure the JMSSendMessage activity. on page 59 and verify that the capitalization and spacing is configured exactly the same as in the condition here.

  - Add and configure a new transition from **JMSQueueReceiver** to **Empty**
    - Label: **`Otherwise`**
    - Condition Type: **Success with no matching condition** (from dropdown)
  - **Save**

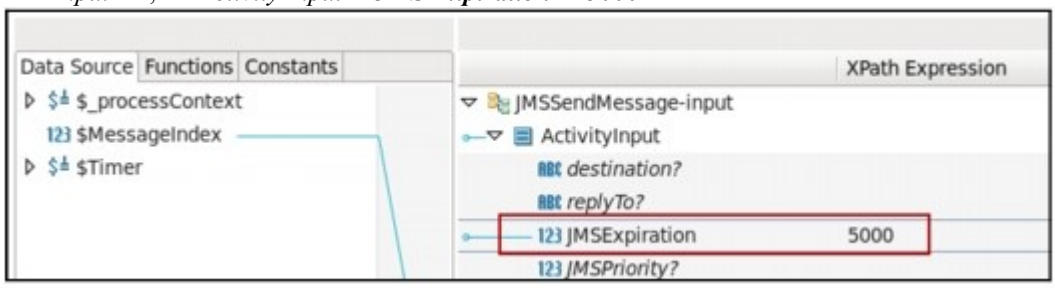




11. Update the queue sender process to configure the message expiry.

Note: Message expiry is configured to avoid the infinite perpetual redelivery of messages that are not confirmed.

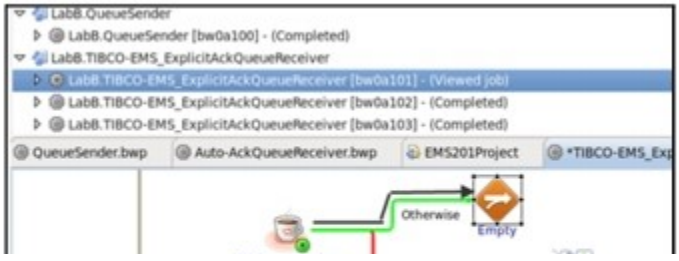
- Modify the *QueueSender* process
  - Select the **JMSSendMessage** Activity
  - In the *Input* tab, set *Activity Input* > ***JMS Expiration*** to 5000

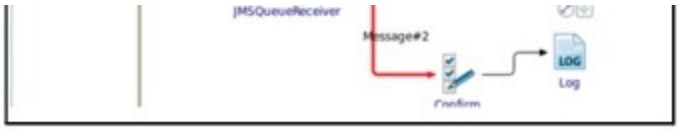


  - **Save**

12. Test the conditional confirmation.

- Configure the Components list for the following processes:
  - *Queue Sender*
  - *TIBCO-EMS-Explicit-Ack Queue Receiver*
- Launch the debugger
- Select the *BusinessWorks Jobs* view
  - Verify that *Queue Sender* is executed once
  - Observe there is more than 10 instances of *TIBCO-EMS-Explicit-Ack Queue Receiver*
  - Wait until you notice that new jobs are not being generated any more
    - This may take over a minute of real-time
- Explore the completed job executions
  - Select the first completed job for *TIBCO-EMS-Explicit-Ack Queue Receiver*
    - Notice that the green arrow indicates that the message is not confirmed





  - The same message is processed again shortly after as it has been redelivered by the EMS Server
- Select *Console* to verify that only the message number 2 is confirmed and logged

```
ibco.thor.frwk.Application - TIBCO-THOR-FRWK-300021: All Application dependencies are
.thor.frwk.Application - TIBCO-THOR-FRWK-300006: Started BW Application [EMS206Project
y Process Worker-4] c.t.b.p.g.Log.EMS206Project.Log - Message number 2
y Process Worker-1] c.t.b.p.g.Log.EMS206Project.Log - ID:EMS-SERVER.7513561B6F9223:13
```

  - All other messages were redelivered over and over again until they expire
- The message in the EMS Server window confirms that 9 messages expired

■ **Terminate** the debugger