Blue Prism Labs

Lab 8: Work Queues

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Introduction

Work to be done is generally more than just a linear sequence of steps. The objective of a process is to work one transaction after another until the total volume is complete. In Lab 4, you learned that processes follow the "Prepare, Work, Clean up" sequence of events. We will now expand that to include the cyclical nature of working multiple transactions within a process. The new process view will need to add a "reset" step as well to be able to start the next transaction at the beginning and will look like the below pattern.

This pattern is accomplished through the use of a Work Queue. New cases can be fed into the queue, and the queue can be updated with results as each case is worked. The work queue feature provides functionality to store, manage, share and report on Process work items.

A work queue provides the following features:

- Multiple machines can work from the same queue at the same time, each retrieving different cases to work and thus, allowing you to scale efficiently.
- An individual case can be marked as "complete" if it has been worked satisfactorily, or marked as an "exception", if it could not be completed. This allows for better management and visibility of queue completion rates as well as allowing you to work through the items that were marked as "exception".
- Queued work can be monitored and maintained from Control Room allowing for easy and quick management of your digital workforce.
- Management Information such as volumes, performance levels, and exception details can be extracted from queue data. This will give you greater insight into the pathways that the digital workers followed and make decisions on further breaking out the process design flow for improving the case completion rates.

In this lab we will add the use of a Work Queue "Search Terms" to store and track all the different searches to be completed by the digital worker. We will load this queue with data from an excel sheet "Terms2.xlsx".

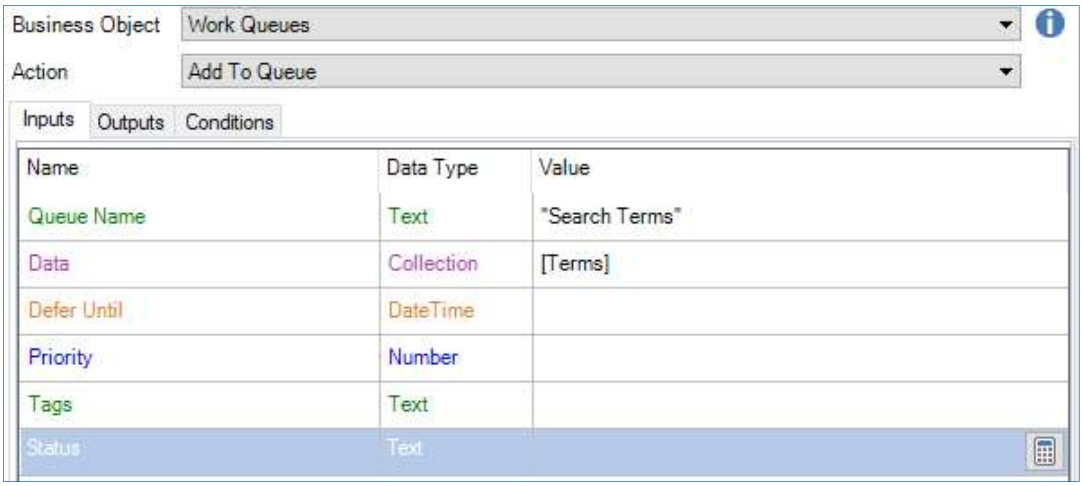
Lab 8: Work Queues

1) Open the process called “Lab 8 Process Start - BP”. There is a new page “Populate Queue” that will be used to load the Work Queue “Search Terms” with input from the excel sheet “Terms2.xlsx”. The steps for opening and reading the excel sheet have already been created using the same/similar steps from Lab 7 – Excel VBO. The final step that needs to be added to the page is to take the data and add it to the Work Queue.
Note: The retry loop you built in Lab 4 has been moved with the “Search” action to the “Search” subpage. This will be explained in more detail in Lab 9.

   Open the “Populate Queue” page. Drag an “Action” stage into the blank spot in the flow and connect the links between “Close workbook”, the new Action and “End” stages.

   Here, we will make use of another business object that is internal to Blue Prism which provides actions for controlling Work Queues.

   Name the new “Action” stage “Add to Queue”, set the “Business Object” to “Work Queues” and select the “Action” to be “Add to Queue”. Set the input Value of “Queue Name” to “Search Terms” in quotations. Set the input value of “Data” to “[Terms]”. Leave the rest of the inputs blank. Press “OK” to close.



   Your “Populate Queue” subpage is now complete and will load your Work Queue with search terms so that you can track each search separately!

2) Next we will modify the "Main Page" to pull search terms from the queue one at a time to perform the work in a cycle: Get item > Perform Work > Mark as complete and repeat until a stopping point is reached (i.e. the queue is empty or a stop was requested)

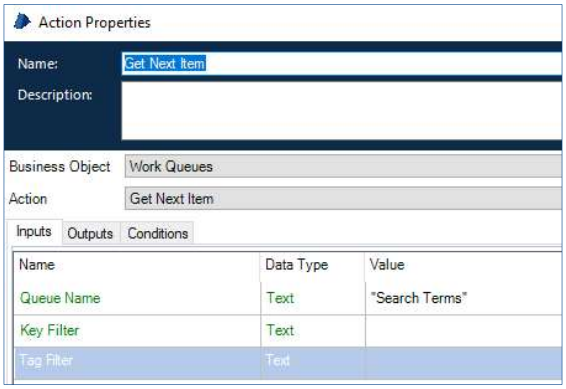
We will need one new Data Item and one new Collection to be added inside the "Data Items" Block. These items will store the data obtained once it is pulled from the queue – Item ID is an identifier within the queue and is used when updating any records (such as marking it when complete). The Collection will be used to store the data that was placed in the queue – in this case the "Search term" from the excel sheet.

The Data Item will be named "Item ID" and will be of type "Text". Leave Initial Value blank.

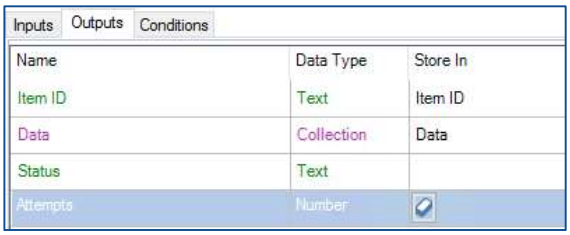
The new Collection will be named: "Data" and will contain 1 "Field" named "Search Terms" and type "Text".

3) Next, we need to add an Action stage between the "Prepare" and "Work" blocks which will first get the next item from the queue. Name this stage "Get Next Item", set the "Business Object" to "Work Queues" and the "Action" to "Get Next Item". Set the **Input value** for "Queue Name" to "Search Terms" in quotations. Also, set the **Output value** for "Data" to your Collection "Data" and "Item ID" to your Data Item "Item ID".

Input Values

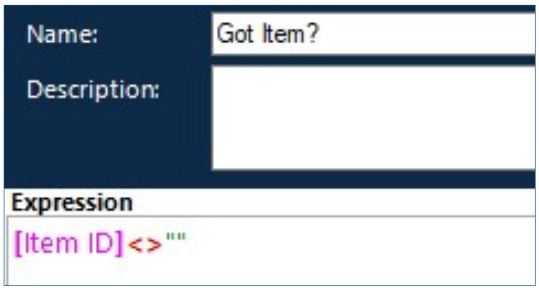


Output Values:

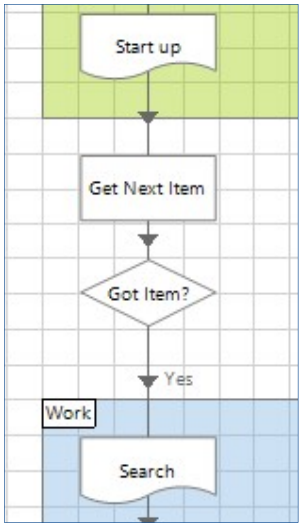


This action will grab the next item or case from the queue that the digital worker will work. The order of items in queue are worked in a FIFO (first in, first out) order but can be further controlled using Priority (higher priority items are worked before lower priority items). This allows you to control which items should be worked first and which can be done later.

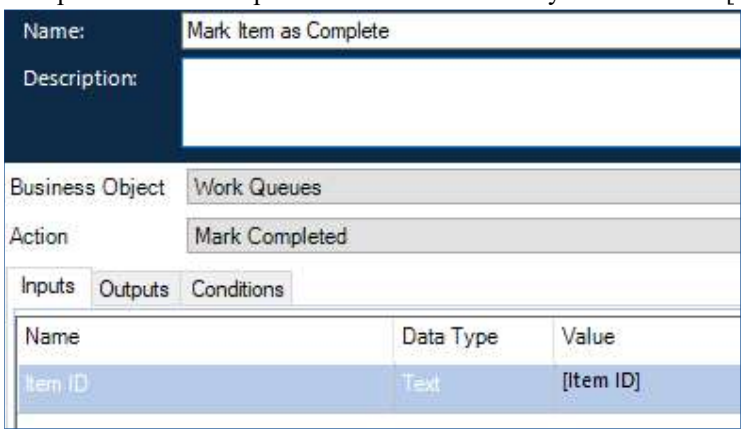
4) Next, we'll check to make sure that we have an item to be worked by adding a Decision stage right beneath the "Get Next Item" stage named "Got Item?" and use this expression for the condition: "[Item ID]<>"" ". The expression '<>' means "does not equal" and placing no data in between "" means it is comparing to blank or null. So the expression above is checking that the Item ID does not equal blank (ie: an item was retrieved from the queue).



5) Connect the links from “Start Up” to “Get Next Item” to “Got Item?” to “Search” as shown below.



6) After the work is performed on the item, we want to mark it as completed for tracking and so no other digital worker attempts to work it. Add an Action stage below “Record in Excel” and outside of the “Work” block. Name it “Mark Item as Complete”, set the “Business Object” to “Work Queues”, the “Action” to “Mark Completed” and the Input value for “Item ID” to your data item “[Item ID]”.

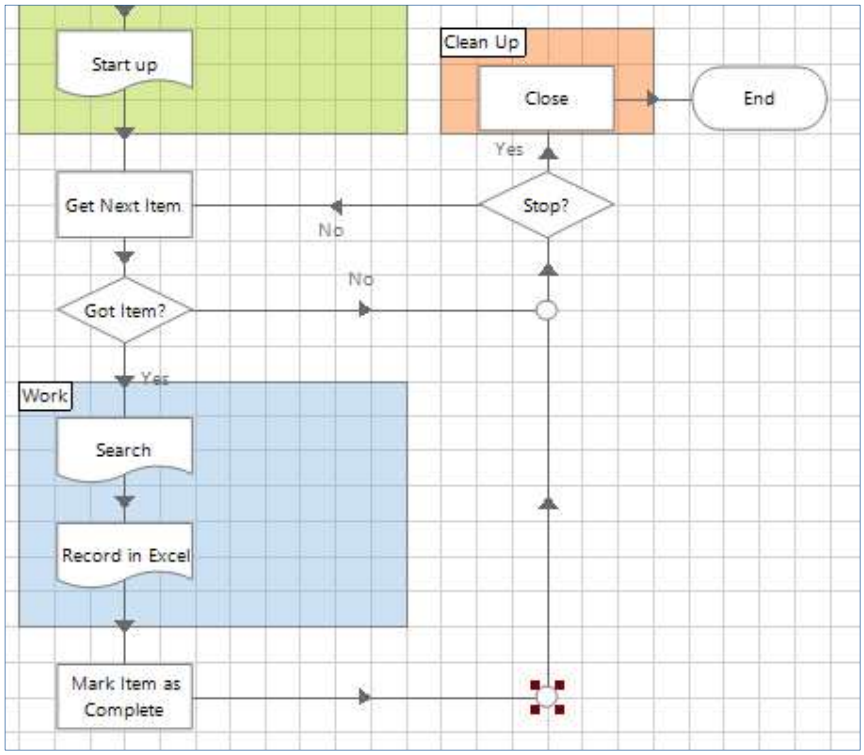


7) Now we need to complete our cycle by instructing the digital worker when to stop and jump out of the loop – such as when the queue is empty or if a stop is requested. A controller has the option to cleanly stop a digital worker from working on a queue for any reason which can be done by requesting a stop from the control room.

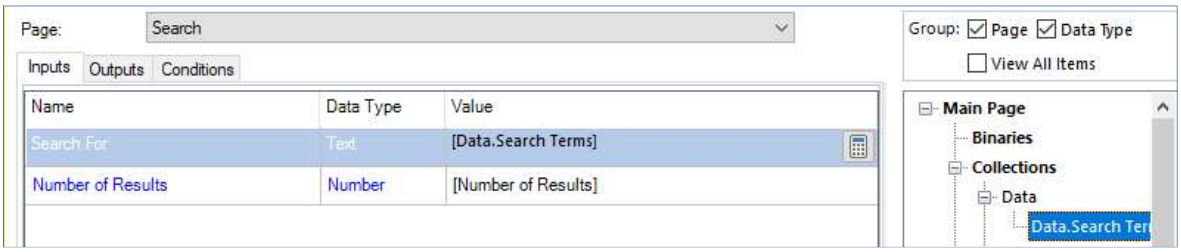
   We will need to add a decision stage directly under the "Close" stage. Name this stage "Stop?" and use this expression for the condition: "IsStopRequested() OR [Item ID]="" ".

   The expression "IsStopRequested()" is functionality that supports the stop requested from the control room and should be placed within the process between cases. This is very useful if a digital worker needs to be moved to a different type of work or maintenance needs to be done on the virtual machine, etc.

8) Connect "Record in Excel" to "Mark Item as Complete" to "Stop?". Add 2 anchor points between "Mark Item as Complete" and "Stop?" Use these to make it a box. Connect the "Yes" path from "Stop?" to the "Close" stage and the "No" path back to "Get Next Item". Then, connect the "No" path from "Got Item?" to an anchor before "Stop?"



9) Finally, we need to tell the "Search" and "Record in Excel" page stages which values to search for. An input parameter has been defined for this purpose for both pages. Open the Search page stage and set the Input value for "Search for" to "[Data.Search Terms]" by dragging it from the right panel under "Collections" > "Data". This is where the search term is stored when it is pulled from the queue. Do this for both page stages.



10) Now you can run your process and watch it work through the cycle! Click the "Reset" button in the upper left:

11) Click the "Go" button in the upper left:

12) Watch your process run! When finished, feel free to close both the browser and the process.

Note: In this lab you modified the process to utilize a Work Queue to track each transaction (Each search) and have the digital worker process a list of transactions. Work Queues are completely customizable to match the needs of the business. They can also be used to view and track all the history within the queue and of the digital worker(s) actions!