SECTION 9
ACTIVITY SHEET

FOUNDATION TRAINING GUIDE

Suitable for Blue Prism version 6.2 or greater

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Section 9 Activity Sheet

In Section 9, you will learn about Blue Prism Work Queues.

Whether Items are 'Completed' or flagged as 'Exceptions', the results of the processing must be recorded for the purpose of robust auditing. Working directly from the source of the list does not enable thorough monitoring or control, which is why a Blue Prism Work Queue must always be used, irrespective of the size of the source list. A Work Queue enables the Process to compile the Items into a Queue, which has the built-in functionality to record the results of the processing and to store, manage, share and report on the Items being worked.

A Work Queue is essentially a list of Items, which is populated and then worked by a Process. This list can then be configured, to enable a Process to manage its own workload. Should a Process encounter a problem whilst working an Item within a Queue, then this Item can be tagged with information about the problem, which is then stored in the Work Queue ready to assist with a manual review.

Multiple Digital Workers can request Items from the same Work Queue at the same time, with each receiving different items from the Work Queue to process.

SECTION 9 ACTIVITY 1a	Video 9.1

In this activity, you will create a Process that uses the *Work Queue Business Object* to get, store and work Items from *Queue1*. You will also look at how Items are stored and recorded within the Work Queues Area of Control Room.

Create a Process and add a new Action Stage that uses an Internal Business Object to interact with a Work Queue.

- For this activity, you will be working in the Process Studio and Work Queues Areas of Blue Prism.

- Create a Process *Work Queue Item Processing* and add a new Action Stage.

- Open the Action properties and from the Business Objects drop-down menu, select *Internal Business Objects – Work Queues*.

- Select *Get Next Item* from the Actions drop-down menu.

- For the Queue Name Input Parameter value enter *"Queue1"*.

- Select the Outputs tab.

- Use the auto-generate icons to the left of the Store In column to create a Data Item for the *Item ID* and a Collection Stage for the Data Item.

- Add a Breakpoint to the End Stage, so you can observe the state of Data Item and Collection Stages while the Process is still live.

- Save and run the Process.

- Close the Breakpoint message window.

- Look at the Data Item and Collection properties to see their Current Values – which should now reflect the values, passed down to them from the Work Queue.

Observe how Items are stored and recorded within the Work Queues Area of Control Room.

- Switch to the Control Room Area of Blue Prism, and navigate to *Queue1* in the Queue Management tab.

- Refresh the interface and notice, how the first Item in the Queue is currently locked.

- It is important to note; that while an Item is locked it cannot be worked by another Process.
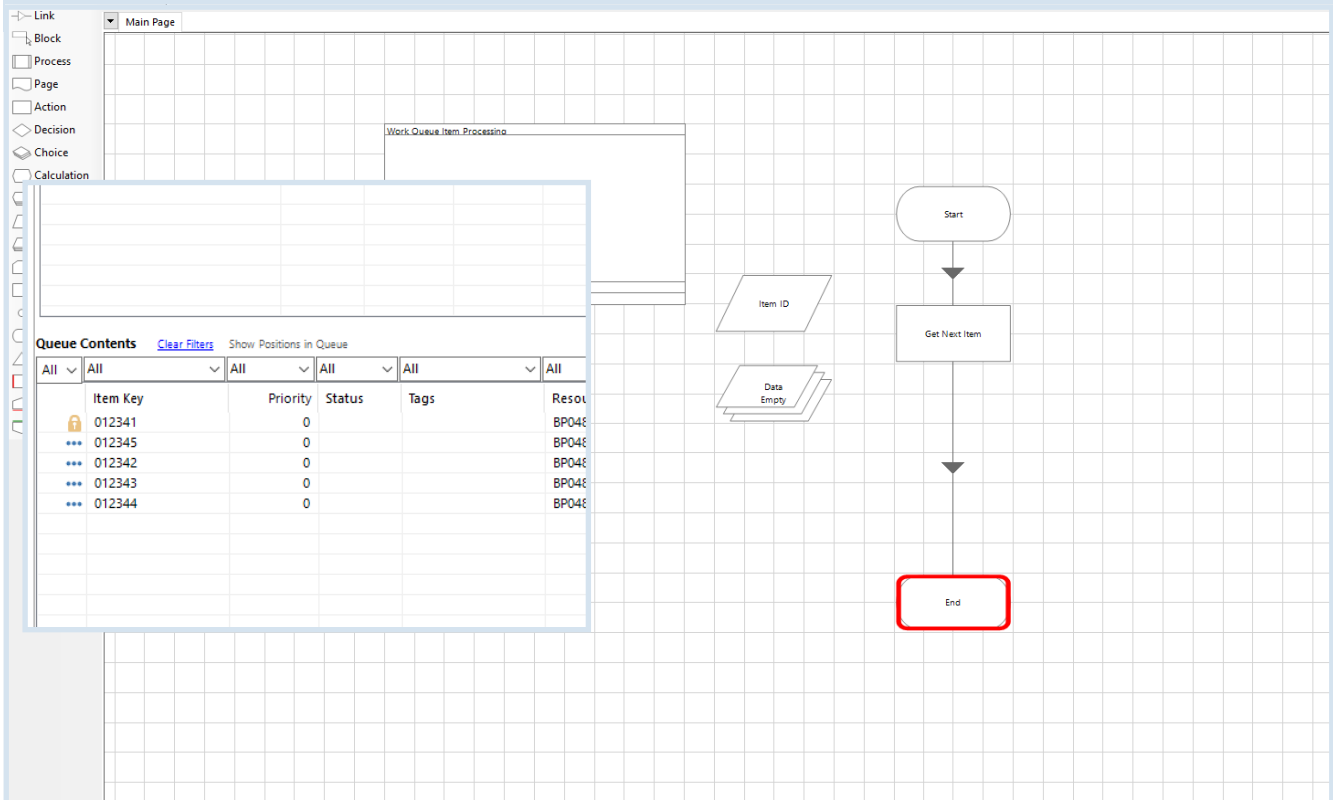
Update Process so details of the 'Completed' Item can be recorded in the Work Queues Area of Control Room.

Then update Process to see how an Item that has encountered a problem and has not worked through to completion, is recorded in the Work Queues Area of Control Room.

Update Process so details of the 'Completed' Item can be recorded in the Work Queues Area of Control Room.

- Return to your Process Diagram.

- Add another Action Stage before the End Stage.

- In the Action properties, select the *Mark Completed* Action in the *Work Queues* Business Object.

- Use the *Item ID* Data Item for the Input Value.

- Remove the Breakpoint from the End Stage.

- *Right-click* on the *Mark Completed* Action and select *Set Next Stage*.

- Run the Process.

- Return to the Work Queue and refresh the interface.

- The Item should have been stored and marked as 'Completed'.

Update Process to see how an Item that has encountered a problem and has not worked through to completion, is recorded in the Work Queues Area of Control Room.

- Change the *Mark Complete* Action to the *Mark Exception* Action.

- Enter a value for Exception Reason and enter *False* for the Retry Value.

- Reset and run the Process.

- Check the Work Queue again and look for your Exception Reason.
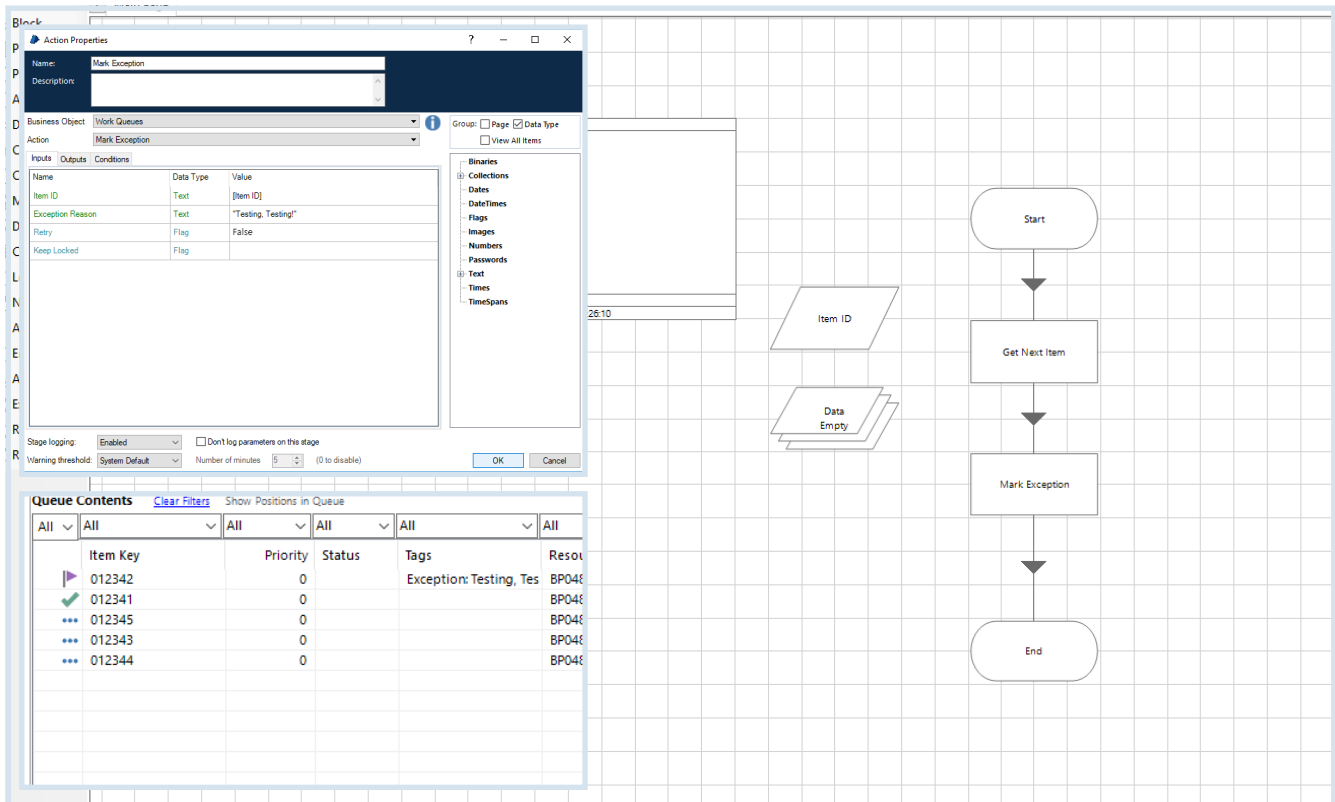
In this activity, you will populate the rows of a Collection Stage with Initial Values and use an Action to push each row of the Collection into the Work Queue, as individual Work Queue Items. You will then build a Decision Stage and a Circular Path into your Process, to work all of the Items within the Work Queue and determine when it has finished.

Configure Action to push each row of Collection into Work Queue, as individual Work Queue Items.

- For this activity, you'll be working in Process Studio.

- Create a new Process and add a Collection Stage.

- Name your Collection *New Items*.

- Add two fields named *Account ID* and *Note Text*.

- Populate a small range of new rows in the Initial Values Area – with values of your choosing.

- Add an Action Stage to your Process Diagram that uses the *Add to Queue* Action from the *Work Queues* Business Object.

- Enter *"Queue1"* as the Queue Name Input Parameter and use your Collection for the Data Input Parameter.

- Save and run the Process.

- Return to Control Room to see *Queue1* populated with the new Items.

Build Decision Stage and Circular Path into Process, to work all Items within the Work Queue and determine when it has finished.

- Open the *Work Queue Item Processing* Process.

- Add a Decision Stage after the *Get Next Item* Action Stage.

- Ensure that the *Mark Complete* Action Stage is following the *Yes* branch from the Decision Stage.

- Arrange your desktop so that you can see both Process Studio and the Work Queue in Control Room.

- Run the Process, occasionally pausing it and refreshing the Work Queue, to see the Items update to 'Completed' as the Process flows around the Circular Path, then onto the End Stage once all Items have been worked.

In this activity, you will create and configure a new Work Queue. Then, you will amend the *Work Queue Item Generation* Process, to produce Items for your new Work Queue and amend the *Work Queue Item Processing* Process to work the Items in the Queue. Finally, you will learn how to update a field within a Collection Stage using a Calculation Stage, so that a narrative of information is created as your Process carries out its work, which will then be saved to the Work Queue.

Create and configure a new Work Queue.

- For this activity, you will be working in the System Manager, Control Room and Process Studio Areas of Blue Prism.

- Navigate to the Workflow – Work Queues Area in System Manager.

- Create a new Work Queue.

- Provide the Key Name *Staff ID*.

- Check that your new Work Queue is accessible in Control Room by clicking the *Control* tab and selecting *Queue2* in the Queue Management tab.
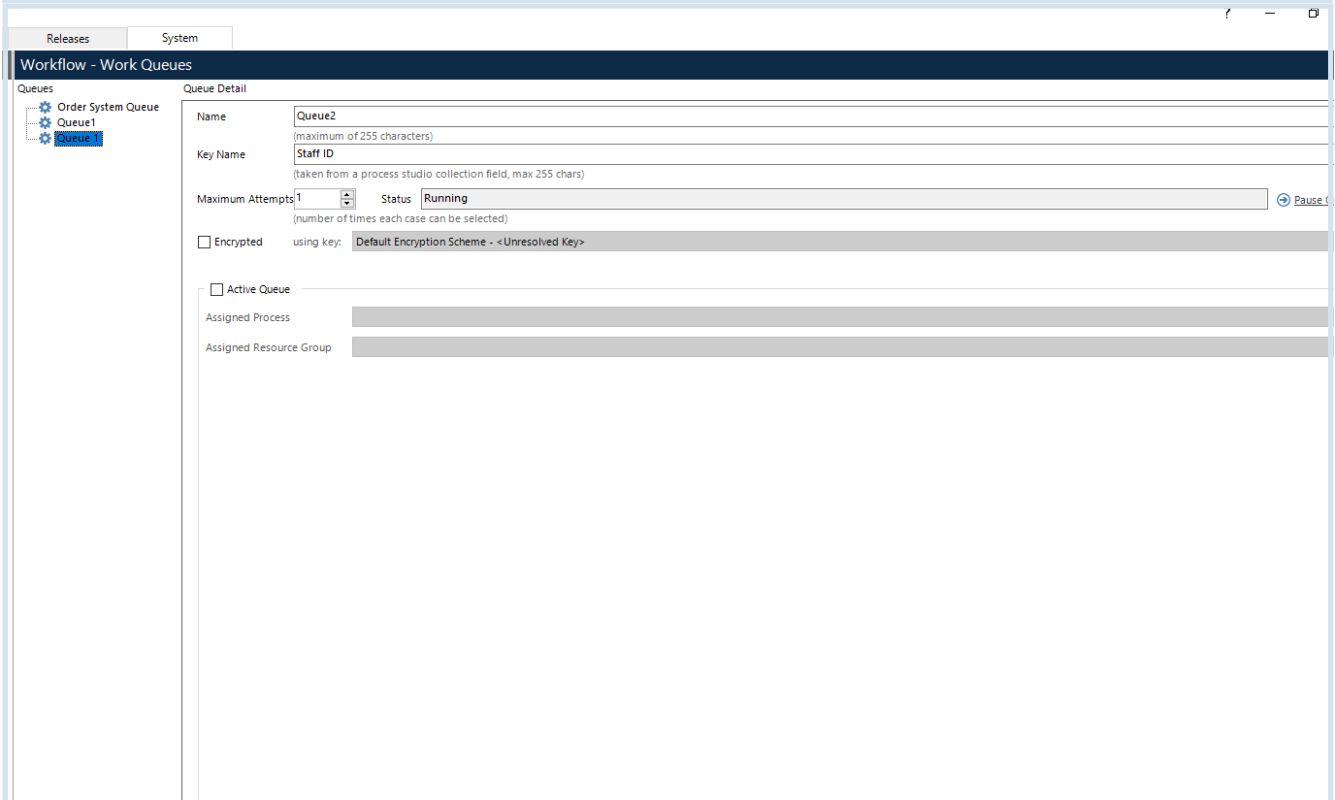
SECTION 9 ACTIVITY 4b	Video 9.3

Modify the *Work Queue Item Processing* Process, so that it can populate the new Work Queue with five Items.

- Open *Work Queue Item Generation*.

- Remove all existing fields from the Collection and then add the following fields:
  Name: *Staff ID*   Type: *Number*
  Name: *Surname*   Type: *Text*
  Name: *Forename*   Type: *Text*
  Name: *DOB*   Type: *Date*
  Name: *Full-Time*   Type: *Flag*

- Take care to spell *Staff ID* exactly as you did for the Key Name in System Manager.

- Add five Items to the Initial Values, making sure there is a variety of full-time and part-time staff.

- Save and run the Process.

- Check that your new Work Queue has been populated.

Modify the *Work Queue Item Processing* Process to work the new Items in your Work Queue and mark the Items as either 'Complete' or as 'Exceptions'.

- In this activity, the Exceptions will be Business Exceptions. As some Decision logic will need to be constructed around the full-time Flag value in the Data Collection, with full-time being marked as 'Complete' and part-time being marked as 'Exceptions'. Remember to use Dot Notation when using Collections in Expressions.

- Return to the *Work Queue Item Generation* Process.

- Add a new blank field to your Collection, with the name *Summary* and *Text* Data Type. This will be used to store values as the Item is being processed.

- Save and run the Process to input the new Items into the Work Queue.

- Create some logic that records a time value for each Item that is processed.

- In *Work Queue Item Processing*, add a Calculation Stage and an Action Stage before both *Mark Complete* and *Mark Exception* Stages.

- The Calculation Stage will generate a time value and store it in the *Summary* field in the Collection.

- The Action Stage will ensure that these Item updates, are saved back to the Work Queue.

- The *Set Data* Action in the *Work Queues* Business Object, will save each update of the Collection back to the Work Queue.

- After running the Process, these updates will be visible in the Session Log.
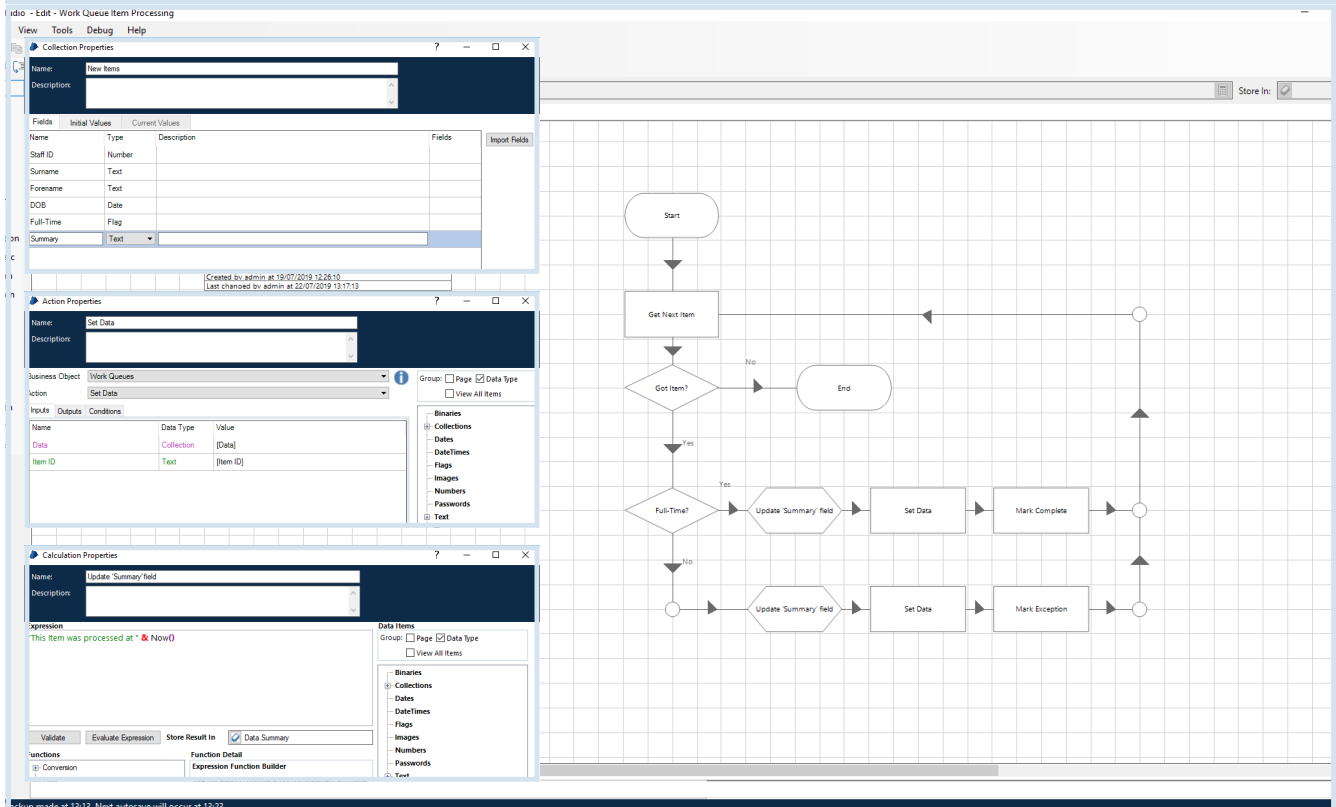
In this activity, you will set up a *Defer Until* Parameter in the *Add To Queue* Action. So, that the Items added to the Queue won't be released to a Process until the specified date and time. You will then learn how to change an Item's deferral date in Control Room, to manually override a Defer Date. Finally, you will learn how to Defer an Item being worked by a Process, by using an Action Stage within your Process, to return the Item to the queue before completion. Which can then be resumed at a later date.

Set up a *Defer Until* Parameter to release Items in the Queue at a specified date and time.

- For this activity, you will be working in Process Studio and Control Room.

- Open the *Work Queue Item Generation* Process.

- Open the *Add To Queue* Action properties and set up a *Defer Until* Parameter

- Open the *Add To Queue* Action properties.

- Notice, the Defer Until row in the Inputs Area, which is of *DateTime* Data Type. This is where you can configure a Defer Parameter.

- In this example, the Item has been deferred until 5 minutes in the future - *Now() + MakeTimeSpan (0, 0, 5, 0)*.

- Return to *Work Queue Item Processing* and run the Process, to see that no Items are retrieved from the Work Queue.

Manually override the Defer Date set in your Process, via Control Room.

- In the Queue Management Area of Control Room, select one of the deferred Items in the Work Queue. You can identify Items that have been deferred, as deferred Items will have a Date value in the Next Review column.

- *Right-click* and select *Change Deferral Date*, then change it to a few seconds in the future.

- Configure your Process to Defer an Item, whilst it is being worked. By entering an Expression *Now() + MakeTimeSpan(0, 0, 5, 0)* in the *Work Queue Item Processing*, change the *Mark Complete* Action to Defer.

- Enter an Expression *Today() " " & LocaalTime() + MakeTimeSpan(0, 0, 5, 0)* for the Until Input Parameter, similar to the Expression you set in the *Add To Queue* Action previously.

- Step through the Process to observe how an Item is retrieved and partially worked, before being returned to the Work Queue incomplete, after being deferred.

- Once you are happy with how the Defer Parameter works, remove the Defer Parameters and return your Processes to how they were, before these changes were made.

In this activity, you will take a closer look at how Exception Item Retries operate within a Work Queue. You will then learn about the Retry and Keep Locked Input Parameters, to provide greater control over Exception Item Retries.

Experiment with how Exception Item Retries operate within a Work Queue.

- For this activity, you will be working in the Control Room and System Manager Areas of Blue Prism.

- The *Work Queue Item Processing* Process should be set up to differentiate between full-time and part-time staff, by marking part-time outcomes as Exception Items in the Work Queue. In practice, this would be an intentional Business Exception that would not require another attempt. However, in this activity it will be used to demonstrate how Exception Item Retries work.

- Set up the Work Queue so that it reworks an Exception Item up to *2* times in the Workflow Area of System Manager, increase the Max Attempts value for *Queue2* to *2* and click *Apply*.

- Create and run a Session for *Work Queue Item Generation*, to load the Work Queue with Items.

- Create and run a Session for *Work Queue Item Processing* to work the Items.

- Publish your Processes so you can use them in Control Room.

- Once the Sessions are complete, refresh Control Room.

- Notice, that for all the Exception Items there are duplicates, this is because the Exception Items were retried twice. The Work Queue sees that Item 2 has attempts remaining and inserts a new cloned Item into the queue before Item 3. This cloned item will be the next available Item, and not Item 3. Item 2 is worked again and marked as an Exception for a second time. The queue sees that no more attempts are allowed to work Item 2 and does not create a new Item. The Process then moves on to the next Item in the queue.

Use Retry and Keep Locked Input Parameters, to provide greater control over Exception Item Retries.

- Open the *Work Queue Item Processing* Process.

- Look at the *Mark Exception* Action properties.

- Notice, two Flag Input Parameters called Retry and Keep Locked.

- When Retry is *True*, the queue will generate another attempt if the limit of Max Attempts has not been reached.

- When Retry is *False*, it will override Max Attempts and prevent any further attempts regardless of the number of attempts available.

- When Keep Locked is *True*, the new cloned Item will instantly lock. The Process will have control of this new Item and can continue working.

- When Keep Locked is *False*, any new Item that is created is freely available, for any Blue Prism Process working from the same queue, to pick up as the next Item.