

Process Example - Instructions

Introduction

This document is distributed alongside the Process Examples processes to aid in their understanding and use.

The example process diagrams provided are not functional on their own, but are a collection of pages on a common theme.

Each page illustrates an example that can be copied (by cut and paste) into another diagram to supplement a 'real' process or object.

The themes of the Process Examples are as follows.

- Collections
- Databases
- Email
- Environment
- Files
- Queues

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Process Examples

The following sections outline all the pages with the Process Examples processes.

Process Examples - Adding work to a queue

The pages within this process contain various different examples of adding new items to a work queue.

| Page Name | Description |
|---|--|
| Populate Queue (add items all at once) | In this example the source data is used to build a collection of new items to be added to the queue in one go. |
| Populate Queue (add items one at a time) | In this example the source data is used to repeatedly populate a 1 row collection in order to add new items to the queue one at a time. |
| Populate Queue (add items with a new key field) | In this example the source data is used to create a 'key' field in the new item data collection. An example of when this might be used is if none of the item data is likely to be unique when used on its own. |
| Populate Queue (add items with a tag) | In this example the source data is used to determine what label (tag) to give new queue items. |
| Populate Queue (add items with a status) | In this example the source data is used to determine what status to give new queue items. |
| Populate Queue (add items with a priority) | In this example the source data is used to determine how to prioritise new queue items. |
| Populate Queue (add items with a deferral date) | In this example the source data is used to determine whether to add new items as 'deferred', i.e. unavailable until a certain date. |
| Populate Queue (add items using different collections) | In this example the source data is used to determine the type of item to create (Gas, Electric or Dual Fuel) and what data collection to use. |
| Populate Queue (ignore blank rows) | In this example not all source data might be loaded - blank rows in the source collection are ignored and not added to the queue. |
| Populate Queue (ignore duplicate item key) | In this example not all source data might be loaded - items with existing keys are ignored and not added to the queue. |
| Populate Queue (mark duplicate item key) | In this example all source data is added to the queue - items with existing keys are marked duplicates. |
| Populate Queue (check duplicate item key) | In this example not all source data might be loaded - existing items with matching key values are checked first. If an existing item is recent, a new item is not added; if the existing item is old, a new item is added. |

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| <p>Populate Queue (with permission)</p> | <p>In this example an environment lock is used to ensure that multiple machines do not populate the queue at the same time. This is useful way to prevent a data source (e.g. a spreadsheet) being simultaneously read by two machines.</p> <p>The lock represents 'permission' to load the queue, and only one machine can ever have the lock at one time. Once the queue loading is complete, the lock is released to enable other machines to get permission. An exception block is used to enable the lock to be released in the event of a problem.</p> |
| <p>Populate Queue (use transaction tag)</p> | <p>In this example, getting the source data for the Work Queue items and adding them to the Work Queue is done within a transaction, ensuring that the status of both is correct.</p> |

Process Examples - Collections

The pages within this process contain various different examples of working with collections.

The Blue Prism Utility Object, Utility – Collection Manipulation, will need to be installed to use these examples.

| Page Name | Description |
|---|---|
| <p>Add Rows</p> | <p>This example repeatedly adds a new row to the collection.</p> |
| <p>Remove Rows</p> | <p>This example checks whether the values on a row are all empty. If they are, the row is removed from the collection.</p> |
| <p>Remove All Rows</p> | <p>This example removes all rows from the collection.</p> |
| <p>Reuse Collection</p> | <p>This example erases all values from a collection before adding a new, clean row that is then filled with data.</p> |
| <p>Copy Rows</p> | <p>This example copies a subset of rows from a collection.</p> |
| <p>Append Rows</p> | <p>This example combines collections by appending rows.</p> |
| <p>Append Columns</p> | <p>This example combines collections by appending columns.</p> |
| <p>Copy Collection</p> | <p>This example simply uses a calculation to copy collections.</p> |
| <p>Sort Collection</p> | <p>This example sorts the rows in a collection.</p> |
| <p>Filter Collection</p> | <p>This example filters rows in a collection, creating a new collection containing only the rows that meet a search criteria.</p> |
| <p>Empty Collection Test (1)</p> | <p>This example counts the rows in the collection and then checks if the number is zero.</p> |

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| Empty Collection Test (2) | This example uses a collection to determine if the collection has rows. |
| Collection Structure Test (1) | This example uses a calculation where a 'template' collection is used as the 'Store In' value. If the calculation does not generate an exception, the test collection matches the template. |
| Collection Structure Test (2) | This example uses a multi-calculation to repeatedly assign a test value. If the calculations do not generate an exception, the test collection contains the required fields. |

Process Examples - Databases

The pages within this process contain various different examples of interacting with databases.

The Blue Prism Utility Objects, Data – OLEDB and Data - SQL Server, will need to be installed to use these examples.

| Page Name | Description |
|--|--|
| Read SQL Server (basic) | In this example a SQL statement is used to fill a collection. |
| Read OLEDB (basic) | In this example a SQL statement is used to fill a collection. |
| Update SQL Server (basic) | In this example a SQL statement is used to update a table. |
| Read SQL Server (into a work queue) | In this example the results from a database query are used to load a work queue. Each new item is added individually so the corresponding row in the database can be updated with detail from the new item. |
| Update SQL Server (from a work queue) | In this example queue results are used to update the database from where the queue was originally loaded. After each row is updated, the corresponding queue item is tagged so the update cannot be repeated. If the database row cannot be found, the queue item is tagged differently so it can be dealt with separately. |

Process Examples - Email SMTP/POP3

The pages within this process contain various different examples of working with email using SMTP and POP3.

The Blue Prism Utility Object, Email - POP3/SMTP, will need to be installed to use these examples.

| Page Name | Description |
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| Send Email (basic) | This is a simple example of how to use the Send Email action in the Email - POP3/SMTP object. |
| Get Mail (basic) | This is a simple example of how to use the Get Email action in the Email - POP3/SMTP object. |
| Send Mail (using a work queue) | <p>A more robust method of sending emails is to use a Work Queue, configured with a high number of retry attempts, into which pending email requests are added.</p> <p>Logic can then be placed within your process, or a separate email process, to ensure that emails are always sent.</p> <p>This example shows both how to add items to a pending email work queue, and how to send them.</p> |
| Get Mail (using a work queue) | This example shows how to loop through all items in an email inbox and add them to a Blue Prism work queue. |

Process Examples - Environment Checks

The pages within this process contain various different examples of checking the environment a process is working in.

It is good practice to ensure that a Resource PC is correctly configured for the process and objects it is about to use.

The Blue Prism Utility Objects, Utility – File Management and Utility – Environment, will need to be installed to use these examples.

| Page Name | Description |
|--------------------------|--|
| Font Smoothing | In this example a check is made to see if Font Smoothing is switched on. Character matching is dependent on smoothing being off, so an exception is thrown if it is found to be enabled. |
| Screen Resolution | In this example a check is made to see what the current screen resolution is. Some integration techniques may rely on a specific resolution, so here an exception is thrown if the resolution is not set correctly. |
| Folder Existence | This example checks that a folder exists. This example could be used to ensure that all folders used by a process to get or save files exist. |

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| File Existence | <p>This example checks that a file exists.</p> <p>This example could be used to ensure that a file actually exists before a process attempts to use it.</p> |
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Process Examples - Files

The pages within this process contain various different examples of working with files.

The Blue Prism Objects, Utility – File Management, MS Excel VBO, Utility – XML, and Utility – Collection Manipulation, will need to be installed to use these examples.

| Page Name | Description |
|----------------------------------|--|
| Read CSV File | This simple example reads a CSV file into a collection. |
| Read Excel File | This simple example reads an Excel file into a collection. |
| Read XML File | <p>This simple example reads an Excel file into a collection.</p> <p>The structure of the XML file you want to read needs to be known to be able to read it using this method.</p> <p>This action uses a utility object called Utility – XML, please contact Blue Prism for this object if it has not been distributed with the product.</p> |
| Validate File Structure | This example checks for blanks by testing whether all the values on each row are empty. If they are, the row is removed from the collection. |
| Remove Blank Rows | This example checks for blanks by testing whether all the values on each row are empty. If they are, the row is removed from the collection. |
| Sort File Data | <p>This example sorts a collection by one of the fields within the collection.</p> <p>It assumes that the file data has already been read into a collection.</p> |
| Read Files (basic) | This example searches for files in a folder and then reads them one by one. Once a file has been read it is renamed to exclude it from any future searches. |
| Read Files (intermediate) | This example searches for files in a folder and then reads them one by one. If a file is read successfully it is moved to an archive folder, otherwise it is moved to an exception folder. |

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| <p>Read Files (advanced)</p> | <p>This example searches for files in a folder and then reads them one by one. If a file is read successfully it is moved to an archive folder, otherwise it is moved to an exception folder.</p> <p>The key assumption here is that items added to the queue will only be worked if they have a certain tag, and the tag is only applied once the file has been moved to the archive folder.</p> <p>In the event of an exception any new items that have not been tagged will be deleted.</p> |
| <p>Read Files (with permission)</p> | <p>In this example an environment lock is used to ensure that multiple machines do not try to read files at the same time.</p> <p>The lock represents 'permission' to read files, and only one machine can ever have the lock at one time. Once the reading is complete, the lock is released to enable other machines to get permission. An exception block is used to enable the lock to be released in the event of a problem.</p> |
| <p>Move File</p> | <p>This example is an attempt to mitigate against potential problems when moving a file. Although this page may at first seem convoluted, moving a file is not always as straight forward as it may seem.</p> <p>For example, a large file may take some time to move. Similarly, if the destination folder contains many files the operating system (Windows) may take some time to check the folder does not already contain a file with the same name.</p> |
| <p>Maintain Folder</p> | <p>In this example a folder is cleaned of old files. All the sub-folders are found first, then the 'created' date of all the files are checked against a date threshold value. If all the files in a sub-folder are deleted the subfolder is deleted too.</p> <p>This sort of logic could be used to keep a archive folder from growing too big.</p> |

Process Examples - Getting Work from a queue

The pages within this process contain various different examples of getting items from a work queue.

| Page Name | Description |
|--|---|
| <p>Get Next Item (simple)</p> | <p>This example simply asks the queue for the next available item. If the Item ID is returned as blank text it means no item is available.</p> |
| <p>Get Next Item (using a key filter)</p> | <p>This example asks the queue for the next available item that has a specific key value. If the Item ID is returned as blank text it means no item is available.</p> |

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| Get Next Item (using a tag filter) | This example asks the queue for the next available item that has a specific tag. If the Item ID is returned as blank text it means no item is available. |
| Get Next Item (using successive tag filters) | This example uses successive tag filters to work items in a controlled order - Gas items first, Electric items second and Dual Fuel items last. |
| Get Next Item (using different collections) | <p>This example asks for the next available item, but uses a dynamic collection because the queue contains items with different data collection structures.</p> <p>In this example all collections have a common field called 'Fuel Type', and this is used to apply the values in the dynamic collection to the appropriate structured collection.</p> |
| Check For Pending Items | This example gets the IDs of pending items and uses a loop to test if the collection is empty or not. |

Process Examples - Maintaining work queues

The pages within this process contain various different examples of maintaining work queues

| Page Name | Description |
|---|---|
| Maintain Queue (delete old items) | <p>In this example the queue is automatically cleaned of old items by calculating a 'data threshold' and then deleting any items older than that date.</p> <p>Note that an environment lock is used to ensure only one machine does this work at any one time.</p> |
| Maintain Queue (delete pending items) | <p>In this example the queue is cleaned of pending items - in some situations it is desirable to remove all unworked items prior to loading new work.</p> <p>Note that an environment lock is used to ensure only one machine does this at any one time, and a substantial time out is used to keep any other machines waiting while the queue is being maintained.</p> |
| Maintain Queue (check for locked items) | In this example a check is made for items that have been (wrongly) left locked. Items that are still locked after a certain period of time are deemed to be exceptions. |
| Maintain Queue (synchronise two queues) | In this example completed items in one queue require that a corresponding item is created in another queue. This arrangement could be used to manage 'Day 1' and 'Day 2' queues. |
| Maintain Queue (synchronise many queues) | In this example a collection of queue names is used to move cases through a sequence of stages. |