

Tutorial: How to use the Collection variable



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Introduction

This short tutorial demonstrates the use of the collection variable by creating two workflows that use a collection variable.

The Collection Variable

The collection variable is a collection of values stored in a single workflow variable. This variable type can be used to store any other type of variable data. If you add a number variable, it will contain a collection of numbers, or if the collection is built using a regular expression, it will store a collection of text values. However, a collection can only contain one type of variable data.

There are two workflow actions designed to work with a collection variable.

- The **For Each** loop action will iterate through each value in the collection and store it to another variable so the value is accessible by other workflow actions. Use the **For Each** action when each item in the collection must be processed.
- The **Collection Operation** action is used to perform other operations on a collection, such as adding or removing individual items, counting the number of items in a collection and retrieving an item at a specified position.



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Create a SharePoint List

Let's create a Tasks list for this tutorial.

- 1. In the Quick Launch menu, select Lists and click on Create.
- 2. In the Filter by section, select List and click on Tasks.
- 3. Enter a name for the list and click Create.
- 4. Finally create an item within the list. Enter any values you like.

Create New Columns

The first step is to create columns for our SharePoint Task list.

1. In the Nintex Workflow 2010 Ribbon, click on Create Column.

	List Tools			Administrator 🗸
Site Actions 👻 😏 Browse	Items List			Administrator
	Modify View - Current View:	E-mail a Alert RSS Link Me Feed	Sync to SharePoint Workspace Viron Diagram O Connect to Outlook A Open with Access Export to Excel Connect & Export	Customize List Settings

- 2. In the Column name, type "Email List" and select Single line of text as the type of information.
- 3. Repeat steps 1 and 2 for the following information:
 - a) Num 1
 - i. In the **Column name** field, type "Num1".
 - ii. Select Number as the type of information.
 - b) Num 2
 - i. In the Column name field, type "Num2".
 - ii. Select Number as the type of information.
 - c) Num 3
 - i. In the Column name field, type "Num3".
 - Select **Number** as the type of information. ii.
 - d) Total
 - In the Column name field, type "Total". i.

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ii. Select **Number** as the type of information.





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Enter a New Item

For this tutorial, we will enter some sample item data.

1. Click on Add new item.

Site Actions 🕶 🐋 Br	owse	List Tool Items	s List									Adminis	trator 🕶
Standard Datasheet N View R	lew tow atasheet	Create	Modify View - Create Column Navigate Up Manage Vi	All Items	E-mail a Link Sha	Alert Me +	RSS Feed ck	Sync to SharePoint Workspace Connect to Outlook Export to Excel	Open with Acce	55	Customize List	List Settings Setting	
Libraries Site Pages Shared Documents			s to show in this view	Parent Site of the "Team Site 1" list.	Owner Owner To add a n			itributors 📄 Readers	Email List	Num1	Num2	Num3	Total
Leave Request	⊕ <u>A</u>	dd new ite											

2. In the Title field, type "Sample Item 1".

Team Site 1	- Sample Item	1				□ ×			
Edit			_						
Save Cancel	Paste	Delete Attach Item File	ABC Spelling						
Commit	Clipboard	Actions	Spelling						
Title *		Sample Item	1						
Description									
Parent Site									
Owners *		Administrator ;							
Contributors		Enter users separated with semicolons.							
Contributors		Enter users s	8,/ 🔛						
Readers									
		Enter users s	eparated v	ith semicolon	15.	8 ₂ / 🛄			
Email List		user1@gmail	;user3@nii	ntex.com;use	r1@gmail.co	m;user1@gmail.cor			
Num1		5							
Num2		12							
Num3		8							
Total									
Created at 12/23 Last modified at 1	3/2011 11:14 AM by A 12/23/2011 11:14 AM	dministrator by Administrator		Save		Cancel			

- 3. In the **Owners** field, add an owner. In this case, we selected **Administrator**.
- 4. In the **Email List**, enter the following emails. Separate each email with a semi-colon.
 - a) user1@gmail.com
 - b) user3@nintex.com
 - c) user1@gmail.com
 - d) user1@gmail.com
 - e) user2@nintex.com
 - f) user2@gmail.com
 - g) user3@nintex.com

Note: As you can see, some of the email addresses repeat themselves. This is necessary to demonstrate the use of a collection that will not send a message to duplicate emails.

- 5. In the **Num1** field, type "5".
- 6. In the Num2 field, type "12".





7. In the **Num3** field, type "8".

Team Site 1	- Sample Item	1			
Save Cancel	Paste	Delete Attach Item File	ABC Spelling		
Commit	Clipboard	Actions	Spelling		
Title *		Sample Item	1		
Parent Site					
Owners *		Administrato		vith semicolons.	8 ./ [1]
Contributors		Enter users s	eparated v	vith semicolons.	§./ 🔝
Readers		Enter users s	eparated v	vith semicolons.	Ş ./ [1]
Email List		user1@qmail	; <u>user</u> 3@ni	ntex.com;user1@gma	iil.com;user1@gmail.co
Num1		5			
Num2		12			
Num3		8			
Total					
Created at 12/23 Last modified at 1	3/2011 11:14 AM by Ac 12/23/2011 11:14 AM	dministrator by Administrator		Save	Cancel

8. Click Save.



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Workflow Design

Now that we have a SharePoint list and columns sorted, we can begin to design the workflows. Two workflows will be created and should look as shown.





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Creating the Workflows

The first step is to create Workflow A. The first workflow will read the email list field and create a collection variable based on each of the emails. Only one email will be sent regardless of how many times the email appears in the list. A new collection will be created which has no duplicate email entries.

Create Workflow A

- 1. In the Ribbon, click on Workflow Settings and select Create a Workflow in Nintex Workflow.
- 2. Select the **Blank** template and click **Create**.

Create the Workflow Variables

1. Select the Workflow Settings drop-down and click on Variables.

Site Actions 👻 対 Browse	Nintex Workflow 2010			
Save Publish New Open	Close Print Import Export	Workflow Settings Zoom	Zoom Out	Catalog
File	Import/Export	🐁 Workflow Settings	View	Nintex Live Help
Workflow Actions 4 Search		A Variables		

- 2. In the **Workflow Variables** dialog, click **New**.
- 3. In the Name box, type "coll1" and select Collection as the Type.

Create Workflow Variable		□ ×
Workflow variables		
Save Cancel Help		
Commit Help		
Name	coll1	
Туре	 Single line of text Person or Group Multiple lines of text Integer Choice List Item ID Number Action ID Date and Time Collection Yes/No 	
Show on start form		

- 4. Repeat steps 2 and 3 for the following workflow variables.
 - a) In the Name box, type "coll2" and select Collection.
 - b) In the Name box, type "currcoll1" and select Single line of text.





c) In the Name box, type "exists" and select Yes/No.

Adding the Regular Expression workflow action

The **Regular expression** action will create a collection that consists of the emails in the email list field. Each email address is stored as an item within the collection.

- 1. Select and place a **Regular Expression** workflow action onto the design canvas.
- 2. In the **Pattern** box, type a semi-colon (;).

Configure Actio	n - Regular	expression					⊟ ×
General							
Save Cancel Act	ion Labels Co	ommon Variables	Run Now Run Now	? Help			
Pattern *	[;					Insert Reference 🖉
Operation		 Ignore case Replace text 		match) Split 🔘 Ex	tract	
Input text *		(1)					Insert Reference 🖓
Store result in *		{ItemPropert	/:Email_x(0020_Li	st}	v	4

- 3. In the **Operation** field, click on **Split**.
- 4. In the **Input text** field, select **Insert Reference**. Click on the **Item Properties** tab and select **Email List.** Click **OK.**

Configure Action -	Regular expre	ession						
General								
Save Cancel Action	Labels Common	Variables	Run Now	? Help				
Commit	Settings	Variables	Run Now	Help				
Pattern *								Insert Reference 🖉
	;							
		Ignore case	е					
Operation	© P	leplace tex	t 💿 Check	match) Split	Extract		
Input text *								Insert Reference
	{Ite	emPropert	y:Email_x	0020_L	ist}			}
Store result in *							•	

Adding a For Each workflow action

The next step is to add a **For Each** action loop, which will go through each item in the collection and store the current item into the variable **currcoll1.** This can then be used to send an email notification.





Note: The **Index** parameter is optional and can be left blank. If a variable is selected, the position of the current item will be stored into the selected variable.

- 1. In the Target collection field, select coll1.
- 2. In the Store result in field, select currcoll1. Click Save.

Configure A	ction - For each				□ ×
General					
Save Cancel	Action Labels Cor	mmon Variables	? Help		
Commit	Settings	Variables	Help		
Target collectio	n *	coll1		v	^
Store result in	*	currcoll1		×	
Index				•	
Stop processing	9			•	

Adding a Collection Operation workflow action to the For Each action

Place a **Collection Operation** action within the For Each workflow action. This will ensure that duplicate email notifications are not sent and will check if the current item has already been added to the second collection. If it has, we can tell it to not add it and not to send a notification email. Configure the Collection Operation as follows.

- 1. In the Target Collection field, select coll2.
- 2. Click on Exists.
- 3. In the Value field, select Workflow Data and then select currcoll1 in the drop-down menu next to Workflow Data.
- 4. In the Store result in field, select exists.

Configure A	Configure Action - Collection operation									
General										
Save Cancel	Action Labels Common	Variables Help								
Commit	Settings	Variables Help								
Target collectio	n *	12								
🔘 Add 🔘 Rem	nove 🔘 Count 🔘 Get 🌘) Exists								
🔘 Sort 🔘 Pop	🔘 Join 🔘 Clear 🔘 Re	move duplicates (Remove by value							
Value *	Value * Workflow Data 💌 currcoll1 💌									
Store result in *										





Adding a Run If workflow action to the For Each action

A Run if action is used to make sure duplicate emails are not processed. This action needs to be placed within the For Each workflow action. The Run if action will check the result of the collection operation action.

Note: The actions encapsulated in the **Run If** action only execute if the current email is not already in the second collection.

- 1. In the Condition field, select if any value equals value.
- 2. In the Where field, select Workflow Data; exists; Value; No.

Configure A	ction - Run if												□ ×
General		_			_	_	_	_	_		_	_	_
		æ	a fx	?									
Save Cancel	Action Labels	Common	Variables	Help									
Commit	Settings		Variables	Help									
Condition		If an	ny value eq	uals valı	lue					•			
Where		Wor	kflow Data	-	 exist 	s 💌							
		equa	equals										
Value Value Value													
Add condition:			×										



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Adding a Send Notification action within the Run If workflow action

The next action will send an email to the current email in the collection. To do this, add a **Send Notification** action within the **Run If** action. Configure the action as show below.

As like all the previous actions, we need to configure the Send notification action so an email is sent.

- 1. In the **To** field, click on the **Insert Reference** icon.
- 2. Click on Lookup and scroll down to Workflow Variables.
- 3. Select currcoll1, click Add and then Ok.
- 4. In the **Subject** field, type in the subject of your email. For this example, we will enter "Test email".
- 5. Click Save.

Configure Action - Send notification							
General							
Save Cancel Action	bels Common Variables Help						
Commit Set	tings Variables Help						
To *	<pre>{WorkflowVariable:currcoll1}; </pre> Send individually addressed notifications	60					
сс		1					
From		8					
Importance	Normal 💌						
Subject *	Test Email	<u>9</u>					
Attachments	Attachments 🔲 Include list item attachments						
	Insert Reference 🖑						
Rich Text 💌		Insent Reference «					
	☑ Include message header and footer (email only)						
Delivery type	💿 Email 💿 IM 💿 User preference						

Add a Collection Operation action to the Run If workflow action

The final step for Workflow A is to add any non-duplicate emails to another collection to ensure emails are only sent once. This collection contains a list of all the emails sent. The **Collection Operation** action can do this for us.

- 1. Select and drag a **Collection Operation** workflow action within the **Run If** action.
- 2. In the **Target Collection** field, select **coll2** in the drop-down menu.





- 3. In the Value field, select Workflow Data: currcoll1.
- 4. Click Save.

Configure A	Configure Action - Collection operation						
General							
Save Cancel	Action Labels Common	-	? Help				
Commit	Settings	Variables H	Help				
Target collectio	Target collection * coll2						
💿 Add 💿 Remove 💿 Count 💿 Get 💿 Exists							
💿 Sort 💿 Pop 💿 Join 💿 Clear 💿 Remove duplicates 💿 Remove by value							
Index							
Value *	Wa	rkflow Data	•	currcoll1 💌			

This is the end of Workflow A, now we begin on workflow B.

Creating Workflow B

Workflow B generates a collection of numbers based on the three number fields in the list item: **Num1**, **Num2** and **Num3**. The collection is then cycled through and each item is added to another number variable stored in the list field **Total**. Essentially, we want to add the three fields together using a **Collection Variable** action, **Math operation** action and **For Each** action loop.

To create this workflow, follow the steps outlined below.

Create the Workflow Variables

- 1. Select the Workflow Settings drop-down and click on Variables.
- 2. In the Workflow Variables dialog, click New.
- 3. In the Name field, type "currNum" and select Number as the type.

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- 4. Repeat steps 2 and 3 for the following information.
 - a) Name: numColl, Type: Collection
 - b) Name: total, Type: Number



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Configure the Collection Operation Workflow Actions

We're going to place three Collection Operation actions within an Action Set workflow action.

1. To begin, select and drag an **Action Set** workflow action onto the design canvas.

2. Now do the same thing for three **Collection Operation** workflow actions and add onto the design canvas.

- 3. Double-click on the first **Collection Operation** action to open the workflow dialog.
- 4. In the **Target Collection** field, select **numColl** from the drop-down menu.
- 5. In the Value field, select List Lookup.
- 6. In the **Source** field, select **Current Item** and **Num1**.

Configure A	Configure Action - Collection operation						
General			_				
Save Cancel	Action Labels Comm		? Help				
Commit	Settings	Variables	Help				
⊚ Add ⊚ Rem	Target collection * numColl						
Value *	s	st Lookup Lookup det ource Cur eld Nur	rent iter				

Collections Operation action - number 2

- 7. Double -click on the second **Collection Operation** workflow action to open the dialog.
- 8. Repeat steps 3-4.
- 9. In the **Source** field, select **Current item** and **Num2.**
- 10. Click Save.

The third and final Collection Operation action

11. Double -click on the third **Collection Operation** action.

- 12. Repeat steps 3-4.
- 13. In the Source field, select Current item and Num3.
- 14. Click Save.



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Configure a For Each Workflow Action

The next step is to add a **For Each** action loop to iterate though each number in the collection and store the current item into the workflow variable **currNum** created earlier.

- 1. In the **Target Collection** field, select **numColl** in the drop-down menu.
- 2. In the **Store result in** field, select **currNum** in the drop-down menu.
- 3. Click Save.

Configure Action - For each							□ ×
General							
Save Cancel	Action Labels Co	mmon Variables	? Help				
Commit	Settings	Variables	Help				
Target collectio	n *	numColl				v	
Store result in *		currNum					
Index						•	
Stop processing	9					•	

Configure a Math Operation Workflow Action

Now we can add a **Math Operation** action within the **For Each** action to add the current number to the total and store it in a workflow variable.

- 1. In the Calculation field, select Workflow Data: Total: Plus: Workflow Data: currNum.
- 2. In the Store result in field, select total.
- 3. Click Save.

Configure A	Configure Action - Math operation						
General							
Save Cancel		abels	Çommon	Variables	? Help		
Commit	Se	ettings		Variables	Help		
Calculation *	Calculation * Workflow Data 💌 total 💌						
			Plus		×		
	Workflow Data 💌 currNum 💌						
Store result in *			total			×	





Configure a Set Field Value workflow action

Last of all, the Set Field Value action is used to set the Total field in the list item, to the calculated total of all the numbers in the collection.

- 1. In the Set field, select Total.
- 2. In the Equals field, select Workflow Data; total.

Configure Action - Set field value						
General						
	🏝 📝 🧳	Afx 🤇				
Save Cancel	Action Labels Common	Variables He	þ			
Commit	Settings	Variables He)			
Set Total Equals Workflow Data total						

The workflow is now complete.

This tutorial has demonstrated two workflow actions designed to work with the collection variable type and you can now start using the collection variable for workflows you are creating.



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