

Does the Automator support array variables?

Topic

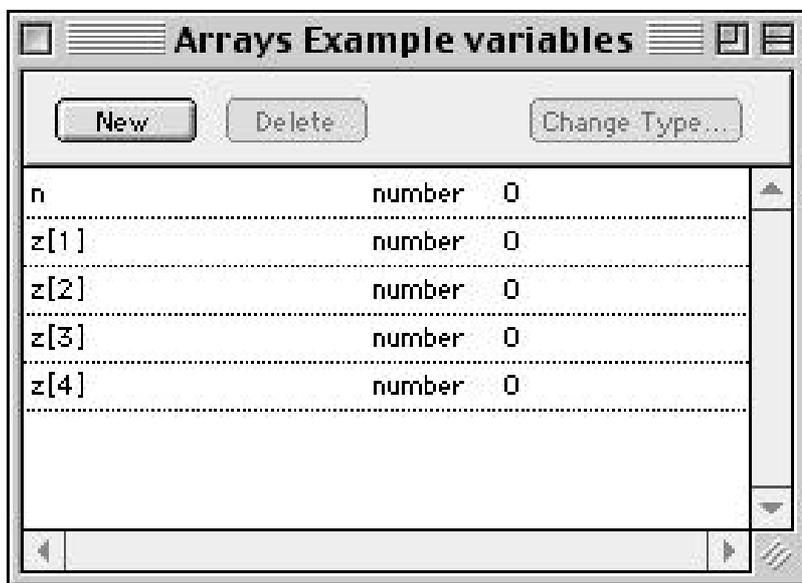
Beginning with Automator 2.0.8, the Automator fully supports array variables. Arrays are variables that are referenced using a name and an index. The combination of the two uniquely identifies the variable.

The power of this is that it allows you to perform the same process repeatedly using a loop, but using different data each time round the loop.

Discussion

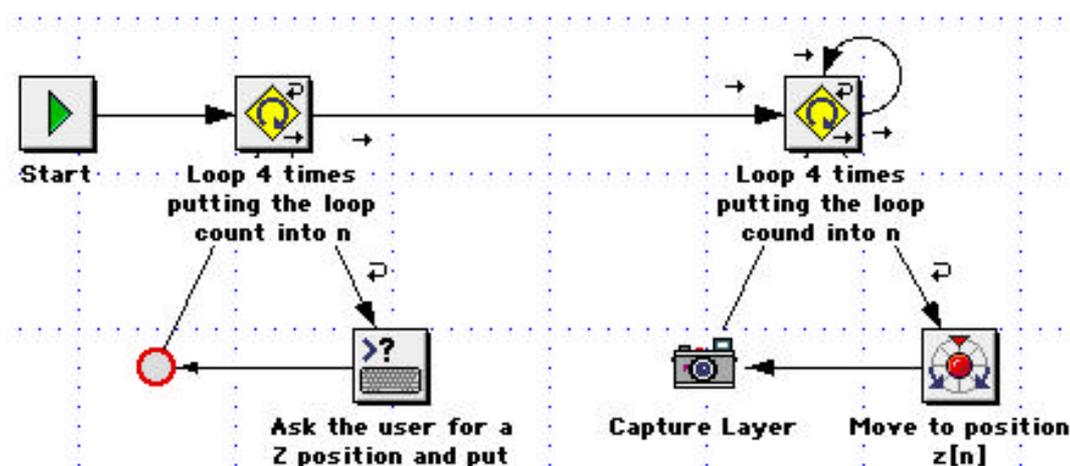
As an example, imagine that we would like to write an automation that asks the user for a series of Z-focus positions, then repeatedly moves to each position and captures a picture to a new layer.

First, we have to set up an array variable in the Automator with as many indices as we want Z positions. We do this by creating variables called `z[1]`, `z[2]`, `z[3]` and so on. In this example we will make 4 array variables. We also create a variable called `n` that we will use as a loop counter.



Our automation will have two halves. The first loop will ask for a series of Z positions (four in this case). The second half will repeatedly move to each Z position and capture a frame. The capture loop will repeat until the user stops the automation.

Here is the complete automation :



Ask the user for a Z position and put the reply into z[n]

Capture Layer

Move to position z[n]

The two really interesting tasks here are the "Input" task and the "Move To" task. Here is the setup for the "Input" task:

The dialog box is titled "Setup task 'Ask the user for a Z position an...'" and contains the following elements:

- A label "Ask the user:" followed by a text input field containing the string "Input position "+str(n)+"?".
- A dropdown arrow to the right of the input field.
- A label "Put the answer in:" followed by a dropdown menu showing "Custom (z[n])...".
- Two radio buttons: the first is selected and labeled "Use output variable as default answer"; the second is labeled "Use this:" followed by a dotted text box containing "Auto/1/3" and a dropdown arrow.
- Three buttons at the bottom: "New Variable...", "Cancel", and "OK".

We can see from this task that instead of putting the answer in z[1] or z[2], we put the answer in z[n]. When the task is executed, the Automator looks at the value of n and translates z[n] into z[1], z[2], z[3] or z[4]

In the "Move To" task, we use the array variable as an input to the task. Here is the task setup for the "Move To" task:

The dialog box is titled "Setup task 'Move to position z[n]'" and contains the following elements:

- A label "Position:" followed by a text input field containing "z[n]".
- A dropdown arrow to the right of the input field.
- A unit symbol "µm" to the right of the dropdown arrow.
- Three buttons at the bottom: "New Variable...", "Cancel", and "OK".

Here, we use z(n) as the position to move the focus drive to. The Automator again looks at the value of n and translates z(n) into z[1], z[2], z[3] or z[4].