
Command Reference: For()

Start a block of commands as part of a “for” loop

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The `For()` command iterates through a block of commands between `For()` and matching `EndFor()` commands. A processor property is set to the value of the iteration property and can be used by other commands that support properties, using the `${Property}` notation. This command is an alternative to implementing loops in templates (see `ExpandTemplateFile()`), in particular for straightforward command logic. `For()` commands can iterate over:

- a list of supplied values
- a sequence of integers or floating-point double precision numbers specified with start, end, and increment
- values from a table column

`For()` commands can be nested. Status messages for run mode are accumulated in each command (this update is occurring over time – status messages for some commands may be cleared out each iteration). A limitation of using `For()` with properties is that command when edited may show time series identifiers and other command parameters as `${Property}` values, rather than actual data, because the values get expanded at run-time. This provides increased processing power but errors may not be evident until commands re run.

The following dialog is used to edit this command and illustrates the command syntax.

Edit For() command

This command starts a "for loop", which repeatedly executes a block of commands while changing the value of an iterator variable for each iteration. The iterator value is set as a processor property that can be accessed by other commands using the `${Property}` notation. Use an `EndFor()` command with matching name to indicate the end of the for loop.

For loop name: Required - the name will be matched against an `EndFor()` command name.

For loop iterator property: Optional - name of iterator property for iteration (default=for loop name).

☒ List ☐ Sequence ☐ Table

The for loop can iterate over a list of values, separated by commas. Currently the values are treated as strings.

List: Required - list of values for iterator.

Command:

For_List

For() Command Editor Illustrating Using a List for Iteration Values

List **Sequence** **Table**

The for loop can iterate using a sequence of values, given a start, end, and increment.
The type of property is detected from the start as either integer or double-precision (has decimal point).

Sequence start: Required - sequence start.

Sequence end: Required - sequence end.

Sequence increment: Optional - sequence increment (default=1).

For_Sequence

For() Command Editor Illustrating Using a Sequence of Integers for Iteration Values

List **Sequence** **Table**

The for loop can iterate using the values from a table column.
If necessary, copy a subset of values from a table using CopyTable() and other table commands.
Optionally, also set properties from other columns during iteration.
The table being iterated cannot have rows added to it during iteration.

Table ID: Required - identifier for table.

Table column: Required - name of table column.

Table property map: Optional - to set properties from table (default=none set).

For_Table

For() Command Editor Illustrating Using a Table for Iteration Values

The command syntax is as follows:

For (Parameter=Value, ...)

Command Parameters

Parameter	Description	Default
Name	The name of the “for” loop, which will be matched with the name of an EndFor () command to indicate the block of commands in the loop.	None – must be specified.
IteratorProperty	The processor property that will be set to the iterator property. The object type will depend on that used to provide the iteration property list. For example, if a column of strings from a table is used for iteration, the property will contain a string.	Same as Name.
List	A list of comma-separated values to be used as variables for the iteration.	None if list is used – must specified a list of values.
SequenceStart	Starting value when a sequence is specified for iteration, an integer or floating-point number (with decimal). Can be specified with \${Property}.	None if sequence is used.
SequenceEnd	Ending value for sequence. Can be specified with \${Property}.	None – must be specified if sequence is used.

Parameter	Description	Default
SequenceIncrement	Increment for sequence iterator.	1 or 1.0 depending on SequenceStart type.
TableID	The table identifier, when specifying the iterator as a column from a table. Can be specified with processor <code>\${Property}</code> .	None if table is used – must specify the table ID.
TableColumn	The table column name, when specifying the iterator as a column from a table.	None – must be specified if table is used.
TablePropertyMap	Specify the names of column names and corresponding processor property names to set. This allows other commands to access the values of those properties using <code>\${Property}</code> notation. Specify using format: ColumnName1:PropertyName1, ColumnName2:PropertyName2	None – only the iterator column value will be set as a property using <code>IteratorProperty</code> .

The following example illustrates a simple `For()` and `EndFor()` usage. In this example the `StationID` column in the input table is used to provide the list of values to iterate over. The following input table is a delimited file but could come from another source:

```
# Test table data for For() command tests
"Count","Val","StationID","Basin"
1,1.0,Station1,Basin1
2,2.0,Station2,Basin2
3,3.0,Station3,Basin3
4,4.0,Station4,Basin4
```

The following command file reads the above input table, iterates over the `StationID` column, and creates a simple output file:

```
ReadTableFromDelimitedFile(TableID="Table1",InputFile="Data\testtable.csv")
RemoveFile(InputFile="Results/Test_For_TableString_out.txt",IfNotFound=Ignore)
For(Name="TestFor",TableID="Table1",TableColumn="StationID")
WritePropertiesToFile(OutputFile="Results/Test_For_TableString_out.txt",
    IncludeProperty="TestFor",WriteMode=Append,FileFormat=NameTypeValue)
EndFor(Name="TestFor")
```

The resulting output file is as follows:

```
TestFor="Station1"
TestFor="Station2"
TestFor="Station3"
TestFor="Station4"
```

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