

# Creating Element

To create an element for a command line tool select either *Actions* *Create element with external tool* in the main menu or the following icon on the toolbar:



The *Configure Element with External Tool* wizard appears. On the first page of the wizard input a name and external command-line tool. Letters, numbers and underscores are allowed in the name.

• Configure Element with External Tool

## General settings

To integrate a custom command-line tool into a workflow, create a workflow element that will run this tool.

Set up the element name. Select either a local executable file, an external tool provided with UGENE, or a custom external tool (see the "External Tools" page in the "Application Settings" dialog). Follow the wizard.

Element name

**External command-line tool**

☐ Executable path

☒ Integrated external tool

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Cancel

On the second page add the required input data:

Configure Element with External Tool

### Input data

To input data from other workflow element(s) to this element add one or several port(s) of the required type(s).

The incoming data will be either saved into a file and the file URL will be specified as an argument in the command to run the tool or an input string can be used directly in the command in case of the "String" type, "String data value" argument value.

Display name	Argument name	Type	Argument value	Description
Input data 1	Input-data-1	Sequence	URL to FASTA file with data	

Add input

Delete

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Cancel

On the third page of the wizard you can add parameters for the command line tool. Later you would be able to set values for the parameters in the Property Editor.

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## Parameters

Make the element configurable by adding one or several parameter(s).

The parameter(s) value(s) can be later set up in the "Property Editor" (located at the right side of the Workflow Designer window) when an element is selected on the scene. During a workflow execution the specified parameters are applied to each input dataset.

Display name	Argument name	Type	Default value	Description
Parameter 1	Parameter-1-	String	23	

Add parameter

Delete

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On the next page add the required output data:

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## Output data

To output data from this element to other workflow element(s) add one or several port(s) of the required type(s).

It is assumed that the external tool creates some file(s). This element reads the file(s) according to the specified type and format, and pass the data to the next element in the workflow. Alternatively, it is possible to pass the output file or folder URL, see the "String" type, "Output URL" argument value.

Display name	Argument name	Type	Argument value	Description
Output data 1	Output-data-1	Sequence	URL to FASTA file with data	

Add output
Delete

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Cancel

For each input or output you should:

- Input a name (letters, numbers, and underscores are allowed in the name).
- Select a type: multiple alignment, sequence, sequence with annotations, a set of annotations or string.
- Optionally input a description.

For each parameter added you should:

- Input a name (letters, numbers and underscores are allowed in the name).
- Select its type: boolean, number, string or URL.
- Optionally input the description.

On the next page of the wizard you should input the execution string, i.e. the command that would be executed.

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## Command

Specify the execution string in the format expected by the command-line tool. Use argument names added for ports and parameters on the previous wizard pages.

<My tool> \$Input-data-1 \$Output-data-1 -p1 \$Parameter-1-

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The signature of the execution string depends on the command that is launched. But the general rule is that input/output data and attributes have prefix \$. You can set the parameterized description for the new element (the description that appears not in property editor but on the element itself). In the parameterized description, you also can use parameters substitution with prefix \$. If the paths in the execution string contain spaces, they must be enclosed with quotes.

On the next wizard page, you can optionally input the description of the element. It would be shown on the element on the *Scene*. The description can be parameterized. This means that if you input e.g. an attribute name (with prefix \$), the name on the element would be substituted with the value of the corresponding parameter. For example input the following parameters:

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Element appearance

Set up appearance of the element in the Workflow Designer GUI. Note that it is possible to specify an argument name in the "Element description on the scene" field, so that this value is replaced by an exact value provided in the "Property Editor".

Element description on the scene

This element reads the \$Input-data-1 input file and calculates something with the \$Parameter-1-. The results is written to the \$Output-data-1.

Detailed element description

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On the next wizard page, you can see the final element summary:

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## Summary

Element name

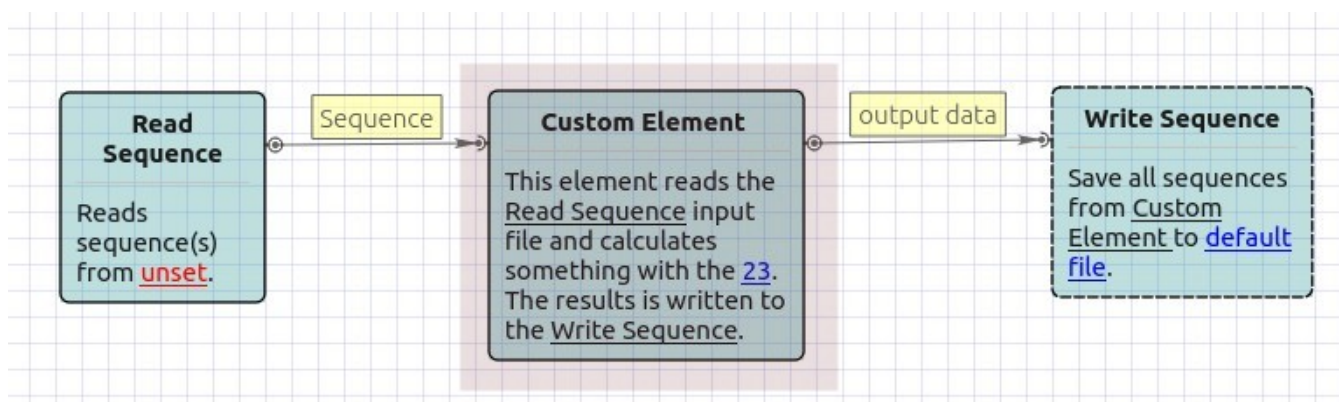
Element description on the scene

This element reads the \$Input-data-1 input file and calculates something with the \$Parameter-1-. The results is written to the \$Output-data-1.

Detailed element description

Command

The created element is added to the Workflow Designer scene, and can be connected with other elements in a workflow:



The new element also becomes available in the "Custom Elements with External Tools" group on the "Elements" tab of the Workflow Designer palette (at the left part of the window), so that you can use it at any time in other workflow.